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**SOCIAL SCIENCES
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EDITOR

PROF. DR. İRFAN YILDIZ

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CHAPTER 1

ANTIOXIDANT ACTIVITY DETERMINATIONS BY COMPARATIVE PLANT SEEDS EXTRACTION METHODS

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1. INTRODUCTION

Medicinal plants have been traditionally used as natural healing medicines in folk medicine for many years (Wangchuk, 2018). Plants are an important source of drug formulations. In recent years, interest in medicinal plants and their benefits has increased. Bioactive compounds have numerous benefits, such as lowering blood pressure, preventing heart disease, providing a protective effect against cancer, or lowering blood sugar. Different parts of plants contain different bioactive compounds. The bioactive compounds found in medicinal plants and the antioxidant activity they contain have paved the way for these plants to be used as preservatives in the food and cosmetics industry. Volatile oils obtained from plant seeds are used for medical and industrial purposes. Seeds are one of the parts of the plant with the highest concentration of bioactive molecules (Gómez-Mejía et al., 2020).

The procedures and optimization of extraction methods are very important for the recovery of bioactive components from plant material. The quality of plant seed oil varies according to extraction methods. In recent years, new and effective extraction methods have been developed to expand the scope of conventional extraction methods. These extraction methods have advantages over conventional methods such as shorter extraction times, higher extraction yields, and lower solvent volumes. These new extraction methods are also known as green extraction methods (Khongthaw et al., 2021). Conventional methods such as soxhlet, percolation, maceration, boiling, filtration, and infusion are currently used, but better results are obtained using green methods such as supercritical fluid extraction, pressurized liquid extraction (or accelerated solvent extraction), ultrasonic-assisted extraction, enzyme-assisted extraction, and microwave-assisted extraction methods. Since these green extraction methods can be used at high temperatures and pressures, extraction times are significantly shorter, so these methods are preferred.

It is known that oils and their components obtained from plants by different extraction methods have a wide range of pharmacological and biological activities (Getahun et al., 2020). In this section, various methods studied in recent years for the extraction and isolation of bioactive substances from plant seeds are examined and the advantages and disadvantages of these methods are presented comprehensively.

2. COMPARISON OF PROPERTIES AND YIELDS OF BIOACTIVE COMPONENTS IN EXTRACTS OBTAINED FROM VARIOUS PLANT SEEDS BY CONVENTIONAL AND NEW EXTRACTION METHODS AND THEIR POTENTIAL APPLICATIONS

Extracts contain many plant metabolites, including phenolics, flavonoids, and fatty acids the types and numbers of which vary depending on the type

of seed and the method by which it is obtained. Flavonoids have the highest concentration in extracts obtained from plant seeds, followed by fatty acids. These plant metabolites have beneficial medicinal effects for human health.

In this section, we will briefly discuss the methods most commonly used by researchers for the extraction of plant seeds in the reviewed manuscripts.

Soxhlet extraction is mainly used for the extraction of organic compounds from solid samples. It is desired that the compounds are thermally stable at the boiling temperature of the solvent. The most important disadvantages of Soxhlet extraction compared to other solid sample preparation techniques are that it requires a long time and uses a large amount of organic solvent. Making large amounts of solvent harmless is not only expensive, but also a source of environmental problems (Büyüktuncel, 2012).

Hydro-distillation is a type of distillation. In the hydro-distillation extraction application, the plant sample and water are mixed, then the mixture is heated. The essential substances in the heated mixture are carried in the steam, then the steam is condensed and the substances are separated. It is a widely used extraction method to separate phytochemical compounds from the plant sample.

Pressurized liquid extraction is a technique developed for extraction of solid and semi-solid samples. The most critical factor affecting yield and selectivity in pressurized liquid extraction is the temperature applied during extraction. By keeping the sample to be extracted in a high-pressure environment, higher temperatures are used for conventional solvents, ensuring that they remain in liquid form. Its disadvantages are its high cost and matrix dependency.

Microwave-assisted extraction is a technique used to extract active ingredients from medicinal plants by using microwave energy to heat sample-containing solvents, thereby extracting analytes from the sample matrix into the solvent. Working at high temperature increases the solubility of the analyte of interest and reduces solvent viscosity, leading to more efficient sample preparation and reduced extraction times. Microwave-assisted extraction is selective, fast and provides more accurate and precise results than other methods. The disadvantage is that the selected solvents absorb microwave radiation (i.e. polar solvents).

Ultrasound-assisted extraction is one of the most effective methods used in the extraction of plant samples, with high efficiency, short extraction time, low solvent consumption, but high sensitivity (Maksoud et al., 2021; Dai and Mumper, 2010). This method is based on the mechanical effect of the acoustic cavity caused by ultrasound, which leads to increased surface contact between solvents and increased permeability of the cell walls of plant samples. Therefore,

under the influence of ultrasound, the physical and chemical properties of cell walls change, facilitating the release of compounds from plant cells into the solvent (Dai and Mumper, 2010; Azwanida, 2015). Its disadvantage is that it requires large amounts of solvent and filtration.

Supercritical fluid extraction is a technique used to extract components from a solid or liquid material by using a supercritical fluid (such as carbon dioxide) above or below its critical point. Supercritical fluid, which can be an element, substance or mixture; temperature above the critical temperature and pressure above the critical pressure can be applied. Supercritical fluids can be compressed, so their density can be changed. The higher the density of a supercritical fluid, the higher its dissolving ability. High selectivity is achieved by manipulating the dissolving power by changing the temperature and pressure. Disadvantages include high cost, dependence on matrix, difficulty in extracting more polar analytes since CO₂ is nonpolar, and difficulty in extracting wet or liquid samples and solutions.

Enzyme-assisted extraction is one of the new methods that rely on enzymes to break down the cell wall of the plant sample and facilitate the extraction of bioactive substances found in the plant. Commonly used enzymes for this method include cellulase, pectinase and protease.

The aim of the researchers in the presented manuscripts was to extract oils by changing the extraction conditions to obtain maximum efficiency from plant seeds and to determine the extraction method quality by analyzing the physicochemical properties, fatty acid composition, antioxidant activity and chemical composition of these essential oils.

Fennel seeds grown in Egypt and Pakistan were extracted by two methods. The extracts were analyzed by determining the total phenolic content and using different antioxidant methods. Total phenolic content was obtained for Egyptian fennel and Pakistani fennel by supercritical fluid extraction under 206 bar pressure. Antioxidant values were found to be higher in Pakistani fennel seeds than Egyptian fennel by supercritical fluid extraction method as FRAP, ABTS and ORAC. Among the extraction methods they compared, the researchers found that supercritical fluid extraction had higher essential oil yield, anti-inflammatory and antioxidant activities in the analysis of Pakistani fennel with ethanol solvent (Tanveer et al., 2024).

In this study, the amounts of kaempferol, apigenin, rutin, quercetin, silibinin and taxifolin were investigated in the extracts obtained by ultrasonic-assisted, supercritical fluid and soxhlet extraction of Date seed grown in the Balikesir region. Total bioactive compound amounts were found to be with ultrasonic-assisted, soxhlet and supercritical fluid methods. As a result of ultrasonic-assisted extraction taxifolin, silibinin, kaempferol, quercetin and rutin values were obtained, which are 3.46 times more effective than soxhlet

and 16.29 times more effective than supercritical fluid. It has been reported that jujube seeds reduce the chronic diseases and risk of cancer and may shed light on subsequent studies that the plant seed can be used for pharmaceutical purposes (Nuralin, 2024).

Soxhlet, ultrasonic-assisted, and supercritical fluid extractions were compared to study the effects on yield and composition of tea seed oil grown in Iran. The oil obtained by supercritical fluid extraction is better in appearance than the oils obtained by other extraction methods. Palmitic, stearic, oleic, linoleic and gadoleic fatty acids were determined in the oil samples. Researchers reported that supercritical fluid extraction is a very useful method to extract tea seed oil without organic solvent (Rajaei et al., 2005).

Nigella sativa L. seed oil is rich in polyunsaturated fatty acids and bioactive components. The quality, phenolic compounds, antioxidant activity and antimicrobial activity of *Nigella sativa* L. seed oil obtained by three extraction methods were investigated. It has been reported that the oil obtained by supercritical fluid extraction has high DPPH and ABTS activities and strong antimicrobial activity against microorganisms *Staphylococcus aureus* and *Penicillium roqueforti* (Albakry et al., 2023).

It was aimed to recover oils from apple seeds using three different extraction methods. Researchers reached the best optimization parameters to obtain an apple seed oil with the highest yield and rich in fatty acid components by using response surface methodology. Similar yields were obtained when compared with the ultrasound-assisted extraction method ($17.20 \pm 2.3\%$), supercritical fluid ($19.3 \pm 2.1\%$) and soxhlet ($19.1 \pm 1.5\%$). It was reported that the oil obtained with the ultrasound-assisted extraction method was rich in high amounts of unsaturated fatty acids and two important antioxidants (phloretin and foridzin) (Gasparini et al., 2023).

Ultrasound-assisted extraction was compared with conventional methods to extract phenolic compounds from date palm (*Phoenix dactylifera* L.) pulp and seed. Total phenolic content was found to be (18.53 mg GAE/g) in ultrasound-assisted date seed samples extracted with ethanol. Phenolic content of conventionally extracted seed samples was found to be between 1.30-14.46 mg GAE/g. Phenolic content was found to be the highest in the part extracted with ultrasound-assisted extraction method of date seed samples treated with methanol solvent. These have been reported as syringic acid, epicatechin gallate, epicatechin, p-hydroxybenzoic acid and coumaric acid. When researchers examined the extracts obtained from date samples, they reported that the highest yield was obtained with ultrasound-assisted extraction (Shi et al., 2023).

The oil yield and bioactive compounds of camellia seed (*Camellia oleifera* C. Abel) extracts prepared by supercritical fluid, aqueous, pressing and solvent

extraction were investigated. The highest oil yield (92.42%) was obtained by supercritical fluid extraction, and the contents of 89.34, 3173.23 and 6.20 mg/kg polyphenol, β -sitosterol and squalene were analyzed, respectively. When the quality of camellia seed oil obtained by different methods was examined, it was reported that the highest quality oil was obtained by the supercritical fluid extraction method (He et al., 2023).

The yield, properties and composition of pomegranate seed oil were investigated by soxhlet and microwave-assisted, ultrasound-assisted, subcritical extraction. Oil yield was obtained between 11.32% and 15.66% with soxhlet. High punicic acid content was found in microwave-assisted and subcritical extraction samples. Squalene, β -sitosterol and tocopherols were found in pomegranate seed oil. Three tocopherols (α , γ and δ) were detected in pomegranate seed oil, with γ -tocopherol being dominant. While relatively higher squalene and β -sitosterol contents were obtained with ultrasound-assisted extraction, the highest tocopherol content was reported in oils obtained with subcritical extraction (Liu et al., 2022).

Apricot kernel oil yield was compared using three extraction methods. The optimum extraction conditions fatty acid composition consisted of stearic acid and palmitic acid. The total content of cis-linolenic acid and cis-oleic acid was found to be 93%. The highest oil yield was achieved with soxhlet extraction. However, it has been reported that the green extraction method, ultrasound-assisted method, is advantageous in increasing oil extraction yield by reducing processing time, using less solvent and preserving the quality of the extracted oil (Hao et al., 2022).

Bioactive compounds were obtained from roasted date kernel using various solvent systems and extraction methods. Extraction efficiency, flavonoid compounds and antioxidant activity of the extracts were investigated. Phytochemicals and antioxidants in *Phoenix dactylifera* L. cv Kabkab were found using water, aqueous ethanol, aqueous acetone systems and ultrasound-assisted, microwave-assisted extraction and maceration and decoction-infusion extraction methods, which are combinations of these two methods. Fewer phytochemicals were extracted in the aqueous acetone solvent system compared to other systems. Although the extraction performance was high in maceration, other methods were shorter than maceration. Among the new methods, the highest and lowest performances were found with ultrasound-assisted and microwave-assisted extraction methods (Pourshoab et al., 2022).

Three different extraction techniques were compared for the extraction of hemp seed oils: microwave and ultrasound-extraction techniques and mechanical cold pressing extraction technique. Oil yield was found as $41.0 \pm 2.1\%$ (w/w) - $54.0 \pm 2.7\%$ (w/w). The free radical scavenging activity of the oils was examined and it was reported that it showed 94% activity. The

combination of unsaturated fat and saturated fatty acids in hemp seed oil and its antioxidant value revealed that this oil can be used as vegetable oil (Mookerjee et al., 2022).

Ultrasound-assisted and conventional extraction methods were used for the extraction of *Nigella sativa* L. seeds. Total phenolic content and DPPH radical scavenging activity values of black cumin seeds were found. Optimum extraction conditions were determined with 59.1% ethanol solvent, 44.6°C temperature and 32.5 min extraction time to increase the efficiency of phenolics in *Nigella sativa* L. seeds by ultrasound-assisted extraction. Thus, total phenolic content and DPPH radical scavenging activity were found to increase by compared to conventional extraction. Epicatechin was found between 1.88-2.37 mg/g and rutin was found between 0.96-1.21 mg/g in *Nigella sativa* L. extracts. It was reported that ultrasound-assisted method could be a suitable extraction method for the extraction of phenolics from *Nigella sativa* L. seeds (Gueffai et al., 2022).

Flaxseed oil is known as a good source of α -linolenic acid. The quality of this oil was compared by examining the extracts obtained from solvent, hot pressing, cold pressing and aqueous enzymatic extraction methods. The contents of cold and hot-pressed linseed oils were found. The total cyclolinopeptide content was found to be approximately twice that of the linseed extract obtained by aqueous enzymatic and solvent extraction. Cold pressed linseed extracts were shown to have high γ -tocopherol content. The oil yield of cold pressing was lower than that of aqueous enzymatic extraction. The phytosterol content of aqueous enzymatic extraction was reported to be higher than that of pressed oils. As a result, it was reported that the importance of commercial processing of flaxseed oil extracted by different oil extraction methods was shown by this study (Zeng et al., 2022).

A volatile compound was obtained from *Tamarindus indica* (tamarind) seed by hydro-distillation using Cleverger apparatus and soxhlet extraction. Essential oil samples were extracted by hydro-distillation and soxhlet extraction, similar number of chemical compounds were found in the oil samples. The major essential oil components obtained from both extraction methods were calculated at varying concentrations. It has been reported that hydro-distillation using Cleverger apparatus is a better method than soxhlet extraction in obtaining essential oil from *Tamarindus indica* seed (Fagbemi et al., 2021).

Fenugreek seed (*Trigonella foenum graceum*) diosgenin was obtained by two green extraction methods, microwave and ultrasound-assisted. The concentration for acetone, ethanol, hexane and petroleum ether solvents was varied as 40, 60, 80 and 100% and the processing time was varied as 1.5, 3.0, 4.5 and 6.0 minutes and 30, 40, 50 and 60 minutes for microwave and

ultrasound-assisted extraction methods, respectively. In relation to better yield extract and diosgenin content, the yield and amount of fenugreek seed extract were found to be 7.83% and 35.50 mg/100 g with microwave-assisted extraction at 80% ethanol concentration in 6 and 60 minutes, respectively; and 21.48% and 40.37 mg/100 g with ultrasound-assisted extraction. In this study, it was reported that ultrasound-assisted extraction was more successful in obtaining diosgenin content from fenugreek seeds than the other method (Arya and Kumar, 2021).

Soxhlet extraction and microwave-assisted extraction and methods were compared to obtain oil from *Sapindus mukorossi* seed. The optimum condition of microwave-assisted extraction method was found as n-hexane and ethanol mixture as extraction solvent, 460 W, 8 mL/g solvent-material ratio, 72 extraction temperature and 42 minutes. All oils obtained showed similar fatty acid and triglyceride profiles and thermal behavior. However, the oil obtained by microwave-assisted extraction was found to have better quality than the oil obtained by soxhlet extraction in terms of low acid value and peroxide value. The results obtained from this study indicated that microwave-assisted extraction is an ecologically harmless method. (Hu et al., 2021).

Four extraction methods were applied to extract green coffee oil from Arabica coffee beans. The physicochemical properties, yield, and composition of green coffee oil were investigated and the extracted oils were compared. The yield of ultrasound/microwave assisted extraction was found to be $10.58 \pm 0.32\%$ and that of pressurized liquid extraction was found to be $6.34 \pm 0.65\%$. The main fatty acids in green coffee oil were shown to be linoleic acid and palmitic acid, ranging from 40.67% to 43.77% and 36.57% to 38.71%, respectively (Dong et al., 2021).

Three methods were compared for the extraction of phytochemical compounds from fennel seeds: Thermosonication, soxhlet and percolation methods. The best conditions for extraction from fennel seeds by thermosonication were reported as 300 W and 60°C. With this method, the highest phenolic substance content of fennel extract and antioxidant activities determined by DPPH and ABTS methods were found. It was reported that the thermosonication method is a superior method to obtain phytochemicals from fennel seeds compared to percolation and soxhlet extractions, with 73% and 88% less energy consumption, respectively (Urango et al., 2021).

The researchers aimed to analyze the bioactive molecules in Apiaceae seeds *Carum carvi* L., *Pimpinella anisum* L., *Coriandrum sativum* L. and *Foeniculum vulgare* Mill. var. vulgare. For seed oil yield, seeds were extracted by soxhlet, shake-assisted and pressurized liquid extraction. Coriander seed oil yield was reported as 12.30%; fatty acid content was petroselinic acid, oleic acid and lauric acid. Cumin seed oil was found to contain caproic fatty acid.

It was reported that the yield of oils obtained from soxhlet and shake-assisted extraction methods was high, while total sterol and triterpene contents were higher in seed oils obtained as a result of pressurized liquid extraction (Balbino et al., 2021).

To study Baru (*Dipteryx alata*) seed oil, extracts were obtained by two supercritical fluid extraction methods, one supported by cold pressing and one unsupported. The oil yield, extraction kinetics, baru seed oil composition and production cost were evaluated in the two compared methods. Cold pressing supported supercritical fluid extraction yield was found to be higher than supercritical fluid extraction yield. The amounts of unsaturated fatty acids and other bioactive compounds were found to be quite high in the obtained oil. It was reported that the extraction of baru seed oil by supercritical fluid extraction supported by cold pressing resulted in higher yield and lower production cost compared to supercritical fluid extraction (Chañi-Paucar et al., 2021).

Mango seed kernel oil was extracted with ethanol and n-hexane solvents using soxhlet and microwave-assisted extraction methods. Extractions were performed at microwave power levels of 120 and 240 W for 5, 10 and 15 minutes. The yields in soxhlet extraction with ethanol and n-hexane were found to be $18.00 \pm 0.25\%$ and $9.38 \pm 2.03\%$, respectively. In microwave-assisted extraction, $6.69 \pm 0.05\%$ and $4.68 \pm 0.06\%$ were obtained, respectively. In addition, microwave-assisted extraction with 120 W microwave power level was observed to be 15 minutes less compared to 8-hour Soxhlet extraction. The best solvent-feed ratio in the study was found to be 60/6 for all processes. It has been reported that better yield was obtained when ethanol was used as the solvent, and quality oil was obtained when n-hexane was used (Balacuit et al., 2021).

Soxhlet extraction and supercritical fluid methods were compared in obtaining oils from apple seeds. It was reported that both methods were rich in linoleic acid. The extract obtained from supercritical fluid extraction (63.76 ± 4.96 g/100goil) was found to contain higher linoleic acid than that obtained from soxhlet extraction (49.03 ± 3.85 g/100goil). The highest amount of phenolic compounds found in the extract was reported as phloridzin. Researchers reported that they could not analyze amygdalin, in the seed oil obtained by supercritical fluid extraction (Ferrentino et al., 2020).

Essential oils of *Lepidium sativum* L. (cress) seeds were obtained by Clevenger type apparatus, modified simple distillation, simultaneous distillation and soxhlet extraction methods. Benzaldehyde and 1-isocyano-2-methylbenzene were obtained in the highest amounts with Clevenger type apparatus. Benzyl isothiocyanate, benzaldehyde and 1-isocyano-2-methylbenzene were obtained in the highest amounts with simultaneous

distillation extraction. The highest amount of linoleic acid was obtained with modified simple distillation. Palmitic, linolenic, stearic, arachidic, linoleic, oleic, gondolaic and behenic acids were obtained by soxhlet extraction. The essential oils showed bactericidal activity against *Bacillus cereus*, *Staphylococcus aureus*, *Escherichia coli* and *Klebsiella pneumoniae* bacteria. The IC 50 value with DPPH was found as 15.69 ± 0.72 mg/mL and the IC 50 value with H_2O_2 was found as 19.18 ± 0.60 mg/mL (Getahun et al., 2020).

In the study where eight tocols (α , β , δ , γ tocopherols and α , β , δ , γ tocotrienols) were investigated in *Capparis ovata* seed, pressurized liquid extraction and soxhlet methods were used. The amounts of δ -tocopherol, γ -tocopherol and α -tocopherol calculated by the methanolic pressurized liquid extraction method are higher than those obtained by soxhlet extraction. In the present study, δ -tocotrienol was found to be 32 times higher than α -tocopherol, and γ -tocopherol was found to be 20 times higher. All tocols were analyzed in about 10 minutes. The limits of quantification values ranged from 0.29×10^{-4} to 9.60×10^{-4} mgmL⁻¹, and recoveries between 95.84% and 113.83% were reported for all eight tocols (Bakir et al., 2020).

Studies on extraction methods, optimized conditions, phenolics, antioxidant analysis used in plant seeds are shown in the table below.

Table: Comparative analysis of extraction methods and conditions, bioactive constituents and antioxidant activities of plant seeds

Plant material	Extraction conditions	Antioxidant determination methods	Analytical Methods	Functional activity	Bioactive constituents	References
Fennel seeds	soxhlet extraction: ethanol, ethyl acetate, acetone supercritical fluid extraction: CO ₂ , 172, 206, 241 bar, 60°C, 4 h	Folin-Ciocalteu FRAP ORAC ABTS	Spectrophotometer	antioxidant anti-inflammatory	anethole, fenchone, limonene and estragole	(Tanveer et al., 2024)
Fruit seeds of jujube	ultrasound-assisted extraction: 70.6% ethanol/water (v/v), 1-15 g/mL (w/v), 60 min, 35°C, ultrasonic power 100 W and frequency 40 kHz soxhlet extraction: 1:15 g/mL (w/v), 6 h, ethanol/water 50% (v/v), supercritical fluid extraction: 52.5°C, 27.1 MPa pressure, 113.4 min, 5 L/min CO ₂ and 0.44 mL/min ethanol supercritical fluid extraction: CO ₂ ; 60, 70 and 80°C; 300, 350 and 400 atm; 20, 30 and 40 min.; 7.5% and 15% ethanol soxhlet extraction: 150 mL petroleum benzene; 50-70°C; 7.5 h ultrasound-assisted extraction: 70 mL petroleum benzene; 50-70°C; 30 min.		HPLC	cancer and chronic diseases	Taxifolin, silibinin, rutin, quercetin, and apigenin	(Nuralin, 2024)
Tea seeds	supercritical fluid extraction: CO ₂ ; 60, 70 and 80°C; 300, 350 and 400 atm; 20, 30 and 40 min.; 7.5% and 15% ethanol soxhlet extraction: 150 mL petroleum benzene; 50-70°C; 7.5 h ultrasound-assisted extraction: 70 mL petroleum benzene; 50-70°C; 30 min.		GC		palmitic, linoleic, oleic, stearic and geroleic fatty acids	(Rajaei et al., 2005)
Black cumin seeds	cold pressing: with a household degreaser solvent extraction: 480 min, 55°C, 500 mL hexane supercritical fluid extraction: 90 min, 35°C, 40 g/min solvent (CO ₂ , 100%), 35 MPa	DPPH ABTS	HPLC-PDA FTIR	antioxidant and antimicrobial activity	unsaturated fatty acids, tocopherols, phytosterols, polyphenols,	(Albakry et al., 2023)
Apple seeds	ultrasound-assisted extraction: 500 mL hexane, 30 min, 70 W, 30°C, 1:15 sample-solvent, supercritical fluid extraction: 40°C, CO ₂ , 1 L/h, 26 MPa, 140 min soxhlet extraction: 3 h, 150 mL hexane	Folin-Ciocalteu DPPH	Spectrophotometer GC-FID	Antioxidant activity, total phenolic content, fatty acid composition	Phloretin, Phlorizin, Amygdalin	(Gasparini et al., 2023)
<i>Phoenix dactylifera</i> L. (Medjool) seeds	ultrasound-assisted extraction: 40 mL (70% ethanol, 70% methanol, water), amplitude of 40%, 5 min, 8000 rpm, 4°C conventional extraction: 30 mL (70% ethanol, 70% methanol, water), 16 h, 120 rpm, 10°C	Folin-Ciocalteu DPPH FRAP ABTS	LC-ESI-QTOF-MS/MS HPLC-PDA Spectrophotometer		phenolic acid, flavonoid, polyphenol	(Shi et al., 2023)

<i>Camellia oleifera</i> C. Abel seeds	<p>supercritical fluid extraction: 30 MPa, 40°C, 2.5 h.</p> <p>aqueous extraction: material-liquid, 1:4; 60 min, 85°C</p> <p>pressing extraction: with screw press</p> <p>solvent extraction: n-hexane material-liquid, 1:7, 4 h, 45°C</p>		HPLC FTIR	Tocopherol Squalene Polyphenol β-sitosterol Fatty acid	(He et al., 2023)
Pomegranate seed	<p>soxhlet extraction: n-hexane or petroleum ether, 40°C</p> <p>shaking extraction: (n-hexane or petroleum ether) 1:6 (w/v), 120 rpm 40°C, 2 h</p> <p>microwave-assisted extraction: (n-hexane or petroleum ether) 1:6 (w/v), 500 W, 40 kHz, 9 min</p> <p>ultrasound-assisted extraction: (n-hexane or petroleum ether) 1:6 (w/v), 5000 rpm, 10 min, 25°C</p> <p>subcritical extraction: 45°C, 40 min, 0.6 MPa</p> <p>pressing extraction: with cold pressing, 20 min.</p> <p>ultrasound-assisted extraction: solid/liquid (1:7) petroleum ether, 80°C, 240 W, 50 min.</p> <p>soxhlet extraction: with petroleum ether, 3h</p>		GC-FID HPLC-MS GC-MS HPLC-FLD	punisik asit, skualen, β- sitosterol, tokoferoller (α, γ, δ)	(Liu et al., 2022)
Apricot kernel	<p>pressing extraction: with cold pressing, 20 min.</p> <p>ultrasound-assisted extraction: solid/liquid (1:7) petroleum ether, 80°C, 240 W, 50 min.</p> <p>soxhlet extraction: with petroleum ether, 3h</p>		GC-MS FTIR NMR	stearic acid, palmitic acid, cis- linolenic acid, cis- oleic acid,	(Hao et al., 2022)
Kabkab date seed (<i>Phoenix dactylifera</i> L.)	<p>maceration extraction: with water, aqueous ethanol or aqueous acetone mixture for 48 h, 25±2°C</p> <p>decoction-infusion extraction: with a mixture of water, aqueous ethanol or aqueous acetone at 70°C for 120 min.</p> <p>microwave-assisted extraction: with a mixture of water, aqueous ethanol or aqueous acetone for 5 minutes at 400 W</p> <p>ultrasound-assisted extraction: with water, aqueous ethanol or aqueous acetone mixture at 40 kHz, 500 W, 25°C, 30 min.</p> <p>microwave-extraction: 90 mL n-hexane (sample-solvent 1:10), 65°C-70°C, 10-15-20-30 min.</p> <p>ultrasound-assisted extraction: 250 mL n-hexane (1:10 seed-solvent), 0.5 s, 24 kHz</p> <p>cold pressing extraction: with screw press</p>	DPPH ABTS FRAP Folin-Ciocalteu	Spectrophotometer		(Pourshoab et al., 2022)
Hemp seeds	<p>microwave-extraction: 90 mL n-hexane (sample-solvent 1:10), 65°C-70°C, 10-15-20-30 min.</p> <p>ultrasound-assisted extraction: 250 mL n-hexane (1:10 seed-solvent), 0.5 s, 24 kHz</p> <p>cold pressing extraction: with screw press</p>	DPPH	GC-MS ¹ H NMR UV-VIS spectrophotometer Electro Paramagnetic Resonance (EPR) spectrophotometer	Linoleic acid, polyunsaturated fatty acid, γ- Sitosterol, stigmasterol, rodoksantin, karoten, metil kolat, β-Karoten, γ-Tokoferol	(Mookerjee et al., 2022)

Black cumin seeds (<i>Nigella sativa</i> L.)	ultrasound-assisted extraction: 200 mL of ethanol/water (30, 60, and 90% v/v), 25, 50, 75°C, 15, 30, 45 min, 110 W, 40 kHz conventional extraction: 200 mL 50% (v/v) ethanol, 2 h, 50°C	DPPH Folin-Ciocalteu	HPLC-UV	epicatechin, rutin	(Gueffai et al., 2022)
Flax seeds (<i>Linum usitatissimum</i> L.)	solvent extraction: n-hexane (1:10 m/v), 2 h the hot pressing: 150°C, 15 min. the cold pressing: 60°C, 10 min. the aqueous enzymatic extraction: with water (1:5 m/v), 60°C alkaline protease (1.5 % w/w) pH of 9.00, 4 h, cellulose (1.5% w/w) pH of 5.00 4 h, 50°C		GC-FID HPLC-QTOF-MS	cyclolimonpeptides, γ-tocopherol, phytoosterols, squalene, phospholipid	(Zeng et al., 2022)
<i>Tamarindus indica</i> seeds	soxhlet extraction: petroleum ether (500 mL), 6 h, 30 and 60°C hydro-distillation with the Cleveenger: 800 mL distilled water, 3 h		GC-MS	cis-vaccenic acid, 2-methyltetraosane, betasitosterol, 9,12-octadecadienoic acid (Z, Z)-, and n-hexadecanoic acid	(Fagbemi et al., 2021)
Fenugreek seed (<i>Trigonella foenum-graecum</i>)	microwave-assisted extraction: 1:5 (w/v) acetone, ethanol, hexane and petroleum ether 1.5, 3.0, 4.5 and 6.0 min, 180 W ultrasound-assisted extraction: 1:5 (w/v) acetone, ethanol, hexane and petroleum ether 30, 40, 50 and 60 min, 30°C				(Arya and Kumar, 2021)
<i>Sapindus mukorossi</i> seeds	microwave-assisted extraction: 1 W-100 W, -40°C-500°C, 0–160 min, 2450 MHz soxhlet extraction: 360 min, 80°C, 200 mL n-hexane			oleic acid, eicosenoic acid, arachidic acid, limoleic acid	(Hu et al., 2021)
Arabica coffee beans (green coffee oil)	ultrasound-assisted extraction: 40 kHz, 50 W, ethanol 1:30 (g/mL), 35°C, 50 min microwave-assisted extraction: 100 mL ethanol, 60°C, 30 min, 200W ultrasound/microwave-assisted extraction: ethanol (solid:liquid ratio: 1:28 g/mL), 60°C, 10 min, 50 W	Folin-Ciocalteu DPPH ABTS FRAP	FTIR	cafestol, kahweol, α-tocopherol	(Dong et al., 2021)

Fennel (<i>Foeniculum vulgare</i>) seeds	pressurized liquid extraction: 40 mL ethanol, 100 bar, 100°C, 30 min thermosonation-assisted extraction: 100, 200, 300, and 400 W; 40, 50, and 60°C; 15 min, 20 g ethanol soxhlet extraction: 60°C, 200 rpm, 90 g ethanol, 6 h percolation: 180 g ethanol, 6 h	Folin-Ciocalteu DPPH ABTS	spectrophotometer	(Urango et al., 2021)
<i>Foeniculum vulgare</i> Mill. var. <i>vulgare</i> , <i>Pimpinella anisum</i> L., Cumin (<i>Carum carvi</i> L.) and <i>Coriandrum sativum</i> L. seeds from Apiaceae family	soxhlet extraction: 100 mL hexane, 8 h agitation assisted extraction: 40 mL hexane, 30 min, room temperature, 1000 rpm pressurized liquid extraction: 25 and 100°C; 10 min, 10.34 MPa		GC-FID	(Balbino et al., 2021)
Baru (<i>Dipteryx alata</i>) seeds	supercritical fluid extraction: 5 minutes, 150, 200, 250, 300 and 350 bar, 35 and 45°C supercritical fluid extraction assisted by cold pressing: cold pressing by applying a torque of 40 Nm		TLC GC-FID	(Chahin-Paucar et al., 2021)
Mango seed kernel	soxhlet extraction: solvent (mL)/feed (g): 75/12, 75/10 and 60/6 mL absolute ethanol and 95% n-hexane microwave-assisted extraction: solvent (mL)/feed (g): 75/12, 75/10 and 60/6 mL absolute ethanol and 95% n-hexane; 5, 10 and 15 min., 120 and 240 watts		FTIR GC-MS	(Balacuit et al., 2021)
Apple seeds	supercritical fluid extraction: 7.5 to 35 MPa, CO ₂ flow rate 1 to 8 L/h, 25 to 90°C soxhlet extraction: 150 mL n-hexane, 6 h, boiling temperature	Folin-Ciocalteu DPPH FRAP	HPLC-MS	(Ferentino et al., 2020)

3. CONCLUSION

In this section, articles examining the effectiveness of extraction methods, the amount, content and antioxidant capacity analyses of phenolic compounds in extracts obtained from plant seeds have been evaluated.

Sustainable environment and the possibility of performing cost-effective extraction methods with new technologies have directed researchers to green extraction methods. The most important reasons why researchers are turning to advanced extraction techniques are that these methods are suitable for automation, shortening extraction time, reducing organic solvent consumption, preventing pollution in analytical laboratories and reducing sample preparation costs.

Plant seeds are the most effective part of the plant from which herbal medicines are obtained. For this reason, obtaining extracts beneficial to human health has always attracted the attention of researchers. Researchers primarily prefer extraction from separation and purification methods to isolate and identify active substances from various parts of the plant, seeds. When deciding on the extraction method according to the plant sample, it is necessary to pay attention to the quality and efficiency of the bioactive substances and essential oils desired to be obtained. In order to choose the most effective extraction method, it is very important to evaluate the amounts calculated as a result of the analysis and compare them with the results of other methods to make the right decision.

In general, this section, which emphasizes that different extraction techniques (such as soxhlet extraction, hydro-distillation, pressurized liquid extraction, microwave-assisted extraction, ultrasound-assisted extraction, supercritical fluid extraction, enzyme-assisted extraction) are very important in determining the quality of extracts obtained from plant seeds, will benefit many researchers interested in this subject.

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CHAPTER 2

HABERMAS'S THEORY OF COMMUNICATIVE ACTION AND SOCIAL MEDIA: THE EFFECTS OF THE DIGITAL PUBLIC SPHERE ON DEMOCRATIZATION

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Introduction

The public sphere is defined as a space for discussion and communication, where individuals deliberate rationally on common issues, laying the groundwork for the formation of public will. Playing a central role in the functioning of modern democratic societies, the public sphere has been critically analyzed by Jürgen Habermas in *The Structural Transformation of the Public Sphere*, which examines its rise in the 18th century and its subsequent transformation. According to Habermas, the bourgeois public sphere was originally an autonomous space, where individuals convened on egalitarian grounds, free from state intervention. However, with the advance of capitalism, the public sphere became corrupted under the domination of market mechanisms and instrumental rationality, thereby largely losing its function. This process, exacerbated by the hegemony of mass media, weakened communicative rationality and transformed the public sphere into a space dominated by manipulation and passive spectatorship rather than critical deliberation.

The rise of digitalization and internet technologies in the 21st century has reopened discussions on Habermas's analysis of the public sphere, necessitating new conceptual approaches to its nature and functioning. Social media and the internet transcend the physical, spatial, and class limitations of the traditional public sphere, offering an alternative venue for social debates. This new digital public sphere holds significant democratic potential with features such as horizontal communication structures, opportunities for widespread participation, and increased visibility for marginalized groups. Social media platforms, in particular, create spaces where diverse social groups can make their voices heard, question power relations, and organize collective action.

Nevertheless, the potential of the digital public sphere is severely limited by structural and systemic issues. As expressed in Habermas's *Theory of Communicative Action*, social consensus and democratic participation are only achievable through communicative rationality. Yet, in modern societies, the system's tendency to colonize the lifeworld through instrumental reason has gained new dimensions through digital technologies and social media platforms. Digital capitalism weakens the autonomy and critical potential of the public sphere by colonizing individuals' everyday lives through data-driven algorithms and commercialized communication processes. Algorithmic manipulation, the ad- and click-based economic structures of platforms, and the commodification of individuals' attention have replaced communicative reason with instrumental rationality.

The commercialized nature and algorithmic infrastructure of social media platforms undermine the public sphere as a space for democratic debate, confining individuals to closed echo chambers and ideological filter bubbles.

This leads to deep polarization in communication between individuals and disrupts critical rational deliberation. Fake news, disinformation, and digital propaganda erode the credibility of the democratic public sphere while facilitating the manipulation of public opinion. The accessibility and speed enabled by digital technologies amplify the spread of such disinformation to large audiences, potentially impacting democratic decision-making processes.

Viewed through the dialectical tension between system and lifeworld described by Habermas, digital technologies have deepened the divide between these two domains. While the digital public sphere can be seen as an extension of the lifeworld, the increasing domination of markets and states over this space weakens autonomous public communication. The commercialized infrastructures of social media platforms, in particular, reshape individuals' participation in public debates according to market logic, thereby creating a space based on consumption and prone to manipulation, rather than a critical public sphere.

The aim of this study is to critically examine the impact of digital technologies and social media platforms on the public sphere within the framework of Habermas's *Theory of Communicative Action*. The analysis will explore both the democratic potential of the digital public sphere and the ways in which structural issues such as commercialization, algorithmic manipulation, and disinformation constrain this potential. In this context, the study will consider both the positive aspects of social media platforms—such as accessibility, horizontal communication, and the visibility of marginalized groups—and the negative dynamics, including the digital divide, data-driven exploitation, and the instrumentalization of the public sphere.

In conclusion, the transformation of the digital public sphere presents both significant opportunities and risks for the functioning of modern democracies. In light of Habermas's critical theory, it is crucial to develop mechanisms that free digital technologies from the domination of instrumental rationality and prioritize communicative rationality for the reconstruction of the democratic public sphere. Protecting the autonomy of the public sphere against the colonization processes of digital capitalism and creating alternative mechanisms that enable critical public deliberation have become imperative for the sustainability of contemporary democracies. In this framework, unlocking the democratic potential of digital technologies will be possible by constructing new forms of public communication grounded in critical rationality and social consensus.

Habermas's Theory of Communicative Action

Jürgen Habermas's *Theory of Communicative Action* (1984) marks a paradigmatic shift in the analysis of modern societies. Representing the second generation of Critical Theory, Habermas critiques Marx's production-

centered social analysis and develops a new model of social organization centered around the concepts of *communicative rationality* and *communicative action* (Habermas, 1984; Schäfer, 2015). Habermas's approach represents both a break from and a synthesis of Weber's critique of *instrumental rationality*, Parsons's systems theory, and Marx's historical materialism (Dahlberg, 2004).

At the core of Habermas's theory lies the dialectical tension between *lifeworld* and *system*. The lifeworld encompasses the systems of meaning and values with which individuals interact directly in their daily lives. Here, language, culture, and normative agreements construct individuals' social bonds. The system, on the other hand, represents the complex organizations of economic, political, and legal structures, operating through abstract media such as money, power, and law in modern societies. Habermas argues that the process of modernization leads to the colonization of the lifeworld by the system. This colonization restricts individual autonomy and the production of subjective meaning, thereby intensifying social crises (Schäfer, 2015). In this context, Weber's critique of instrumental rationality becomes significant: modern society, surrendering to bureaucratic and market-oriented logic in the process of rationalization, limits the potential of communicative rationality (Benkler, 2006; Sunstein, 2001).

Habermas categorizes social action into four types: *teleological action*, *norm-regulated action*, *dramaturgical action*, and *communicative action* (Habermas, 1984). Among these, communicative action occupies a central position as it refers to the type of action in which individuals, through the medium of language, achieve mutual understanding and agreement via rational discourse. For Habermas, rational discourse and universal communication ethics are foundational principles of communicative rationality (Papacharissi, 2002). In this sense, communicative rationality is presented as a solution to the crises of modern society, standing in opposition to instrumental rationality.

Habermas critiques Marx's production-based analysis of the social infrastructure, arguing that social transformation can occur not solely through production relations but also through normative structures established via language and communication (Schäfer, 2015; Dahlgren, 2005). Contrary to Marx's emphasis on class conflicts and economic infrastructure in historical materialism, Habermas underscores the transformative role of superstructural elements and language. However, this approach has been criticized for allegedly overlooking the complex nature of class struggle and conflicts of interest. Reducing class contradictions to the level of a *communicative community* directs Habermas's theory toward an idealist perspective.

According to Habermas, the crisis of modern societies lies in the domination of the lifeworld by the system. The path to overcoming this crisis must be sought in the empowerment of civil society through new social movements and

participatory democratic practices. Participation of individuals in consensus-based decision-making processes, grounded in communicative rationality, can limit the system's tendency to colonize the lifeworld (Papacharissi, 2002; Benkler, 2006). Within this framework, Habermas expands the boundaries of Critical Theory by addressing the transformation of modern societies from a perspective based on communication, rationality, and normative consensus.

Although Habermas's proposed rational discourse and universal communication ethics hold the potential to address modern societal crises, his marginalization of class contradictions and structural crises of the capitalist system has drawn criticism. Idealizing the role of the communicative community raises questions about whether it is a sufficient tool for transforming existing power relations (Pariser, 2011). While Habermas's work offers a significant theoretical framework for discussions on social transformation, it carries the risk of veering into normative idealism to the extent that it moves away from class-based and structural analyses.

The Importance of the Theory of Communicative Action

Jürgen Habermas's *Theory of Communicative Action* provides a critical analytical framework for understanding social change processes, the nature of communication, and the tensions that arise within these processes. Habermas's approach distinguishes between two primary categories of communication: *communicative action* and *strategic action*. This distinction enables the analysis of communication's impact on social structures, cultural transformations, and democratic participation (Habermas, 1984). While emphasizing that communication based on mutual understanding forms the foundation of social consensus and democratic participation, Habermas also reveals how instrumentalized forms of communication generate manipulation, domination, and social alienation.

Communicative action, in Habermas's normative framework, is rooted in an ideal communication model where individuals engage in an exchange of ideas under equal conditions, freely express their views, and where the most rational argument prevails. This model forms the basis of a rational deliberative process among individuals and serves as a mechanism for constructing social consensus (Habermas, 1984). While providing an important theoretical foundation for understanding the functioning of the democratic public sphere, Habermas asserts that communication cannot be reduced to a mere instrumental goal but is itself an inherent value. As also observed in Paulo Freire's (1970) works, participation and dialogue are critical elements that support individuals' agency and self-sufficiency in social transformations. Thus, participatory communication processes enable social actors to determine their own destinies through collective deliberations rather than through exclusionary impositions.

In contrast, Habermas defines *strategic action* as a communication form based on manipulation. Strategic action refers to communicative practices in which actors aim to maximize their interests, prioritizing persuasion and domination over mutual understanding. In this context, Habermas highlights that strategic communication instrumentalizes the lifeworld. His concept of *lifeworld colonization* describes how economic and political systems intervene in individuals' daily lives, cultural values, and social norms through instrumental rationality. The colonization of the lifeworld shapes social transformation processes within a top-down structure, disconnecting individuals and local cultures from their knowledge and practices. This, in turn, weakens democratic participation and deepens social alienation.

Within this context, Habermas emphasizes the importance of participatory models rooted in local knowledge and bottom-up processes. Jacobson (2003) argues that Habermas's theory of communicative action provides a strong foundation for participatory communication processes. Participatory communication advocates for a model where local actors' knowledge and experiences are centered, ensuring that social transformations are shaped through collective deliberations rather than external impositions. This model aims to preserve cultural values and promote change that occurs organically within the community.

Habermas's communication theory also integrates the concept of the *public sphere*. He conceptualizes the public sphere as a platform where democratic debates take place and social transformations are grounded. The public sphere plays a central role in the functioning of democratic societies, as it allows individuals to participate in rational deliberative processes, fostering critical reflection and consensus. However, the functionality of this sphere is undermined by the instrumentalization of communication and the dominance of market forces. Habermas argues that this process renders the public sphere susceptible to manipulation and creates a passive public culture instead of fostering critical thought.

Habermas's theory of communicative action provides a robust theoretical foundation for understanding participatory communication and the democratic functioning of the public sphere in processes of social change. Communicative action prioritizes the participation of social actors in rational deliberative processes, forming the basis for democratic resistance against the instrumental logic of strategic action. Against the colonization of the lifeworld by the system, participatory models based on local knowledge and critical forms of communication play a vital role in reconstructing democratic consensus. Habermas's theory offers a significant roadmap for addressing the structural problems faced by modern societies, demonstrating how a democratic public sphere can be constructed based on communicative rationality.

Communicative Action Theory and Democracy

Jürgen Habermas's *Theory of Communicative Action* provides a robust framework for understanding both the theoretical foundations and the practical functioning of modern democracy. According to Habermas, communicative action refers to a process of coordination based on mutual understanding, independent of egocentric success-oriented goals (Habermas, 1984). This process enables individuals to come together on the basis of communicative rationality to reach common consensus. The sustainability of democratic societies is directly linked to the prevalence of such communication practices based on mutual understanding. Habermas conceptualizes democracy not merely as a political system but as a structure grounded in interpersonal communication and societal participation.

The concept of the *public sphere*, elaborated by Habermas (1991), materializes the democratic implications of his communicative action theory. The public sphere is a platform where individuals come together under free and equal conditions to engage in critical discussions about societal issues and participate in collective decision-making processes through rational deliberation. This ideal supports the development of a participatory and deliberative democracy that transcends the limitations of representative democracy. The “ideal speech situation,” proposed by Habermas (1999), represents a communication model in which all individuals participate in a debate under equal conditions, free from coercion, and where the best argument prevails. This model emphasizes that democratic participation should not be confined to elections and representative mechanisms but strengthened through individuals' active involvement in public debates.

Habermas's understanding of communicative action is also closely related to the process of *social rationalization*. In modern societies, social rationalization refers to the coordination of individuals' actions based on communicative rationality rather than instrumental reason. This process strengthens the practices of critical deliberation and consensus that form the foundation of democratic societies. However, Habermas argues that the increasing colonization of the lifeworld by economic and bureaucratic systems poses a threat to democracy. The colonization of the lifeworld occurs through the intervention of economic and political systems into individuals' daily lives and communication spaces via instrumental rationality. Such interventions replace communicative action with strategic actions, weakening individuals' capacity for free and rational deliberation and rendering democratic processes ineffective.

In this context, Habermas emphasizes the necessity of public spheres being open, egalitarian, and free from coercion for the sustainability of democracy. The public sphere is not merely a space for communication but also a ground

where collective interests are constructed, diverse perspectives are deliberated, and democratic will is shaped. Habermas's theory of communicative action proposes replacing mechanisms that instrumentalize individuals' participation in democratic processes with a participatory and deliberative democratic culture based on social consensus. This culture, built on social norms, cultural values, and individual freedom of expression, strengthens democracy not just as a political structure but as a form of societal life (Habermas, 2009).

In Habermas's normative framework, communicative action is also a critical tool for overcoming legitimacy crises in democratic societies. The instrumental rationality of economic and political systems, which renders individuals passive and manipulates the public sphere, disrupts the formation of democratic will. In this regard, public spheres functioning on the basis of communicative rationality serve as mechanisms for the reproduction of legitimacy in democratic societies.

In conclusion, Habermas's *Theory of Communicative Action* asserts that democracy cannot be defined solely through formal institutions and procedures but must be built upon social communication and participatory practices. The sustainability of democratic processes depends on a social structure based on communicative rationality and the existence of open and free public spheres for debate. As Habermas emphasizes, the pursuit of consensus through rational deliberation among individuals is the fundamental element that strengthens democracy's functionality and legitimacy. However, this process can be weakened by the colonization of the lifeworld by instrumental reason. Therefore, a democratic society is obligated to develop mechanisms that resist instrumentalized forms of communication while safeguarding critical communication practices and participatory public spheres.

The Emergence of the Digital Public Sphere: The Rise of Social Media

The digital public sphere offers a significant conceptual framework for analyzing the evolving communication processes of modern democracies. Habermas's traditional understanding of the public sphere examined the transformation of the bourgeois public sphere in the 18th century, arguing that mass communication tools degraded the quality of communication and limited political participation. This structural transformation brought about instrumentalization and elitization in communication, weakening the ideal of public deliberation. The rise of digital technologies has laid the groundwork for the development of the digital public sphere, offering an alternative communicative space that overcomes these limitations. The digital public sphere represents a communication environment enabled by internet-based media platforms. Tools such as websites, social media networks, blogs, and microblogs provide individuals with access to public debates and create visibility for diverse actors.

The key features of the digital public sphere include openness, accessibility, diversity, and interaction. According to Benkler (2006), digital platforms theoretically enable participation for all individuals, democratize communication channels by facilitating access to information, and create visibility for marginalized groups and civil society organizations. This inclusion allows actors traditionally excluded from mainstream media to engage in public discussions. In the framework of Bennett and Segerberg's (2012) concept of *connective action*, network-based communication structures enable individuals to express collective movements in direct and interactive ways. However, the digital public sphere is examined through different theoretical perspectives. Grounded in Habermas's deliberative communication theory, one perspective argues that the digital public sphere should support a rational, civil, and consensus-driven discourse. In contrast, it is often observed that online debates fail to meet these normative criteria and exhibit irrational characteristics.

Liberal theory emphasizes the representation of social forces in digital communication and argues that communication structures should balance political power mechanisms. While digital platforms have the potential to reduce power asymmetries between individual actors and large institutions, the limitations of this potential are a subject of critical debate. Constructivist and agonistic theories contend that the digital public sphere also encompasses conflictual, emotional, and narrative-based forms of communication. The agonistic perspective asserts that democratic processes progress not through rational consensus but by making differences and conflicts visible. In this regard, the digital public sphere can serve as a tool for empowerment and visibility for marginalized groups.

The digital public sphere is often debated within the spectrum of *cyber-optimism* and *cyber-pessimism*. The cyber-optimist perspective argues that digital platforms increase political participation by providing open access to information, amplify the voices of marginalized groups, and encourage participation through horizontal, network-based communication structures (Bennett & Segerberg, 2012). Conversely, the cyber-pessimist perspective highlights issues such as the digital divide, fragmentation, commercialization, and communication quality. Inequalities in technological access and digital literacy limit the inclusivity of the digital public sphere. Algorithms and personalized content streams confine individuals within *filter bubbles* (Pariser, 2011) and *echo chambers* (Sunstein, 2001), deepening social polarization. The commercialized nature of digital platforms shapes public discussions according to market logic, while factors such as trolling, disinformation, and hate speech further degrade communication quality.

In this context, social media platforms play a central role in the transformation of the public sphere in modern societies. According to

Habermas's (1991) definition, the public sphere is a communicative space where individuals engage in discussions of common issues, highlighting rational arguments. However, as van Dijck and Poell (2015) argue, the economic and technological logic of social media platforms has transformed this space into a new structure referred to as the *platform society*. This transformation leads to the privatization of publicness, the direction of interactions by commercial algorithms, and the blurring of the public-private boundary. While social media increases individuals' social awareness, its commercialized nature and algorithmic instrumentalization colonize the public sphere according to market logic (van Dijck & Poell, 2015).

Although social media offers new opportunities for civic participation and collective action, these actions tend to be short-lived and of limited impact. As Milan (2015) explains with the concept of *cloud protesting*, social media tools allow activists to quickly reach large audiences, but the sustainability of such actions remains questionable. It is evident that social media platforms do not always fulfill Habermas's idealized practice of rational and civil public deliberation. To enhance the democratic potential of social media, it is necessary to reduce digital inequalities, limit commercialization, and design platforms that promote deliberative communication.

The digital public sphere, while increasing democratic participation and social diversity, must also contend with structural problems that exacerbate polarization and degrade communication quality. Therefore, supporting the public sphere through digital technologies requires a critical analysis and a normative framework for reevaluation.

The Digital Public Sphere and Democratization Processes

The digital public sphere has emerged as a critical paradigm for understanding modern democratization processes. Building on Habermas's *Structural Transformation of the Public Sphere*, the rise of digital technologies has transformed the public sphere, where individuals deliberate on shared concerns using rational arguments and seek consensus (Habermas, 1991). Traditional mass media, by prioritizing elite interests and offering one-way information flows, disrupted the environment for democratic discussion. In contrast, digital platforms have been presented as an alternative capable of overcoming these limitations. The digital public sphere theoretically enables individuals to access political and social issues more easily and to participate in discussions. Social media and online forums allow individuals to interact directly with policymakers, civil society actors, and other citizens. This aligns closely with Habermas's ideals of "openness" and "equal participation" and holds significant potential to democratize public deliberation. Moreover, marginalized groups gain increased visibility, allowing them to amplify their voices to broader audiences. However, the realization of this potential depends

directly on individuals' access to technology and their levels of digital literacy.

Digital platforms transcend the one-way communication model of traditional media, offering two-way and network-based communication. Horizontal organizational structures allow individuals and collective groups to produce content and directly contribute to discussions. Bennett and Segerberg's (2012) concept of *connective action* explains the organization of social movements and protests through digital networks. For instance, during the Arab Spring, social media facilitated network-based organization, enabling large-scale participation and movements. The digital public sphere increases the visibility of diverse social groups and ideological perspectives, supporting a pluralistic environment for debate. However, this diversity is often constrained by users' tendencies to interact only with like-minded individuals.

Despite its democratic potential, the digital public sphere faces structural and normative limitations. Inequalities in technological access and digital literacy hinder the inclusivity of the digital public sphere. Economic, geographic, and educational factors restrict access to digital technologies, creating new divisions in democratic participation. Additionally, the commercialization of the digital public sphere and platform capitalism shape public communication according to market logic. According to van Dijck and Poell (2015), social media algorithms analyze user behavior to curate content flows based on commercial interests, which often prioritize consumer-driven content over discussions serving the public good. The use of personal data for commercial purposes further deepens the economic instrumentalization of the public sphere.

The digital public sphere is often dominated by emotional and conflict-driven communication rather than rational and civil deliberation. According to Papacharissi (2002), phenomena such as trolling, hate speech, and disinformation degrade communication quality and make access to reliable information more difficult. The algorithmic structures of platforms reinforce users' exposure to content tailored to their interests, limiting their interactions to specific viewpoints. Pariser's (2011) concept of the *filter bubble* highlights how individuals become surrounded by repetitive, like-minded content, which threatens the pluralistic nature of democratic deliberation.

Despite these critiques, the digital public sphere can still be considered a significant space for transformation that supports democratization processes. Features such as accessibility, horizontal communication, and diversity hold the potential to enhance individuals' political participation. However, realizing this potential requires addressing structural issues such as commercialization, inequalities in access, and declining communication quality. For the digital public sphere to function as a democratic platform, a critical collaboration between civil society, the state, and individuals is necessary. Within the

framework of Habermas's notion of critical public interest, reconstructing digital technologies to align with democratic norms is vital for rebuilding the public sphere in modern societies.

Examples of the Democratic Potential of Social Media

Social media has assumed an increasingly central role worldwide in areas such as access to news, freedom of expression, and social participation, creating a new digital public sphere. This new space not only expands the grounds for individuals to discuss political and social issues but also exerts a dual impact on democratization processes. The role of social media can be analyzed through various contexts and events, from democratic regimes to authoritarian systems, to better understand its potential advantages and limitations.

In democratic regimes, social media has been effective in increasing political participation and enabling individuals to engage actively in democratic processes. For instance, during the 2008 U.S. Presidential Election, Barack Obama's campaign demonstrated the potential of social media to reach younger voters, generate political discussions, and strengthen participation. However, alongside its democratic contributions, the manipulative use of social media has created serious challenges. The 2016 U.S. Presidential Election clearly exemplified this, as the Cambridge Analytica scandal revealed how Facebook user data was used without consent to deliver micro-targeted manipulative content, which negatively impacted democratic processes (Isaak & Hanna, 2018).

In Turkey, the Gezi Park Protests showcased social media as an alternative tool for communication and organization. Platforms like Twitter and Facebook enabled citizens to organize rapidly and disseminate mass movements to broader audiences. However, issues such as disinformation and information pollution during this period limited the potential of the digital public sphere as a healthy platform for deliberation.

In authoritarian regimes, social media is often used as a tool of resistance against censorship, although state control mechanisms constrain its potential. During the Arab Spring, social media played a critical role in organizing mass protests against authoritarian regimes in countries such as Tunisia, Egypt, Libya, and Syria. Platforms like Twitter and Facebook enabled people to bypass government censorship, communicate effectively, and rapidly spread anti-government movements, attracting international attention (Howard & Hussain, 2013). Conversely, in China, the digital public sphere is under strict state control. Under the *Great Firewall* policy, platforms such as Facebook and Twitter are banned, replaced by state-controlled alternatives like WeChat and Weibo. In China, social media functions as a tool of state propaganda, and the digital space is shaped under governmental political control (King et al., 2017).

In hybrid regimes, social media has the dual potential to enhance democratic participation while simultaneously facilitating manipulation and polarization. For instance, in Russia, social media serves as both a tool for organizing opposition groups and a means for state-sponsored disinformation campaigns. During the Ukraine crisis, Russia-backed bot accounts and fake news were used to manipulate international public opinion (Bokša, 2019). Similarly, in India, fake news spread through WhatsApp has triggered violent incidents between ethnic and religious groups, exacerbating social polarization (Banaji & Bhat, 2019).

In developing countries, the *digital divide* remains a significant factor limiting the democratizing potential of social media. For example, in Sub-Saharan Africa, limited internet access hinders the effective use of social media as a tool for political and social participation. Conversely, in Brazil, Jair Bolsonaro's election campaign highlighted how social media can be used as a vehicle for spreading populist rhetoric. Manipulative content and fake news disseminated via WhatsApp groups influenced voter perceptions and undermined democratic processes (Evangelista & Bruno, 2019).

In conclusion, while social media holds significant potential to contribute to democratization processes across different regime types, it also carries risks such as manipulation, disinformation, and polarization. In democratic regimes, social media supports participation and fosters a culture of debate, whereas in authoritarian regimes, it serves as a tool to bypass censorship. In hybrid regimes, it plays a dual role, balancing between democratization and deepening social polarization. These concrete examples highlight the dynamic and contextual nature of social media's democratic potential, emphasizing the importance of technological, political, and societal factors in shaping this role.

Online Fake News and Disinformation

In the digital age, fake news and disinformation pose significant threats to democratic processes and public deliberation. Unlike traditional media's control mechanisms, the instant dissemination, automation, and targeted manipulation techniques offered by online platforms allow misinformation to rapidly reach large audiences (Morgan, 2018). This phenomenon degrades the quality of the public sphere, limits individuals' access to accurate information, and undermines democratic norms. Online disinformation is produced and spread by actors with diverse motivations using various techniques. *Political manipulation* is one such technique, wherein state-backed groups or political parties conduct disinformation campaigns to discredit opponents and alter public perceptions. For instance, during the *MacronLeaks* scandal, fake documents were inserted into Emmanuel Macron's leaked emails just 48 hours before the second round of the French elections, demonstrating a coordinated manipulation effort that transcended geographical boundaries (Morgan,

2018).

Economic motivations also play a crucial role in disinformation. Fake news generates high levels of engagement on social media platforms, providing financial profit through advertising revenues. This was evident during the 2016 U.S. presidential election, where groups created manipulative content targeting specific audiences for monetary gain. Technological tools are also integral to this process. Bots and automated accounts play a critical role in disseminating fake news. Coordinated bot activity on platforms such as Twitter aims to trend false information or reduce the visibility of legitimate news. According to the *Computational Propaganda Project* by Oxford University, combining bot activity with human-driven disinformation campaigns enhances its impact (Morgan, 2018). *Algorithmic dissemination* also accelerates the spread of disinformation, as technology companies' algorithms prioritize user-interaction-based content. Wu (2016) argues that this click-based economy has displaced traditional journalism, leading to the proliferation of unchecked, rapidly produced content.

The widespread dissemination of fake news and disinformation has profound and destructive effects on democratic systems. The first major consequence is *erosion of trust*. A decline in trust toward institutions and experts reduces the quality of public debate and makes it difficult for individuals to discern accurate information. Another significant impact is the *disruption of electoral processes*. By using micro-targeting techniques, disinformation spreads false information to voter groups, manipulating voter behavior. For example, during the 2016 U.S. elections, some Democratic voters were sent false messages about changes to election dates (Morgan, 2018). Additionally, *echo chambers* and *filter bubbles* created by social media platforms confine individuals to content that aligns with their existing beliefs, deepening societal polarization (Pariser, 2011). This undermines the healthy functioning of democratic debates. A further concern is *agenda distortion*. Amid an overwhelming volume of information, the spread of disinformation can overshadow legitimate political and social issues, pushing critical topics into the background.

Addressing fake news and disinformation in order to safeguard democratic systems requires comprehensive and multi-faceted solutions. Regulatory policies are one critical tool. For instance, Germany's *NetzDG Law* holds social media platforms accountable for removing false information within 24 hours. However, such legal measures must carefully balance regulation with freedom of expression. *Transparency and data access* can also help, as opening technology companies' algorithms and data to independent researchers could enhance efforts to monitor and mitigate the effects of disinformation. *Digital literacy* plays a crucial role in this fight. Educational programs that equip citizens to better understand the online information ecosystem and differentiate between

accurate and false information are essential. Additionally, the responsibility of platforms must be emphasized. Technology companies can implement measures such as detecting bot activity and labeling fake news to control its spread more effectively.

Online fake news and disinformation threaten democratic processes by influencing individual decisions and societal debates. The use of manipulative techniques affects not only individuals' access to information but also the broader processes of shaping public perception and opinion. Preventing these threats requires a coordinated effort between governments, civil society organizations, and technology companies. Raising informed citizens, implementing regulatory mechanisms, and holding platforms accountable are critical steps to ensure that the digital public sphere contributes positively to democracy.

Conclusion

Digitalization has redefined the public sphere, the fundamental space for discussion and communication in modern democracies. When examined through the lens of Habermas's *Theory of Communicative Action*, it becomes evident that the digital public sphere presents both significant opportunities and structural challenges. By overcoming the limitations of the traditional public sphere, the digital public sphere offers new possibilities for democratic participation through qualities such as accessibility, horizontal communication, and pluralism. Social media platforms, with their ability to amplify the voices of marginalized groups and accelerate social movements, possess a transformative potential for social visibility and participation. However, this potential is severely constrained by structural issues, such as the commercialization of social media platforms, algorithmic manipulation, and the spread of disinformation.

Habermas's analysis of the dialectical tension between the *lifeworld* and the *system* highlights how today's digital platforms, influenced by instrumental rationality, colonize the lifeworld. Instead of supporting individuals' critical participation and public deliberation, social media platforms turn individuals into consumers due to commercialized algorithms and the data-driven economy. Rational discourse is replaced by populist rhetoric, fake news, and emotional manipulation. Filter bubbles and echo chambers exacerbate social polarization, weakening the foundation for democratic consensus.

In this context, the democratization of the digital public sphere requires a multifaceted transformation. First, the development of public service media and civil society-based platforms can offer alternative democratic communication mechanisms to commercialized platforms. Ensuring the transparency of algorithmic processes and subjecting digital platforms to democratic oversight are critical steps toward reconstructing the digital public

sphere. Additionally, improving digital literacy and empowering individuals to resist disinformation will qualitatively strengthen critical public deliberations.

Moreover, a *digital commons* model, aligned with Habermas's communicative action theory, offers an alternative to the commercialization and data exploitation perpetuated by capitalist platforms. Models such as platform cooperatives, based on collective ownership and democratic governance practices, enable the removal of market pressures from the public sphere and facilitate its reconstruction in the public interest through active user participation.

In conclusion, the future of the digital public sphere depends on the reconstruction of digital technologies in alignment with democratic norms and a transformation process oriented toward the public good. This process requires critical collaboration among the state, civil society, technology companies, and individuals. Habermas's ideal of communicative action provides a strong theoretical framework for liberating the digital public sphere from the dominance of instrumental rationality and reconstructing it as a space that supports democratic participation and rational deliberation. In this regard, the democratization of the digital public sphere must be understood not merely as a technological issue but as a political, social, and cultural struggle. This struggle must recognize the potential of digital technologies to lay the foundations for a public sphere that prioritizes human dignity, critical thought, and social solidarity.

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CHAPTER 3

POE'S "THE TELL-TALE HEART:" THE ANATOMY OF MADNESS

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Introduction

Edgar Allan Poe, as the forerunner of American romanticism can be regarded as the one of first short story writers. The writer is also known as the father of crime fiction. His poetry and short stories were highly influential on French symbolists towards the end of the nineteenth century. He can be regarded as the antecedent of Symbolism and Surrealism movements. In other words, Poe “exposes the human psychology from a darker angle and brings forth the undiscovered sides of real life, thus creates a dark, romantic, yet ironically realistic atmosphere” (Baysal, 2014, pp. 7-8). Ann Radcliffe’s novels that are written in gothic style had been an inspiration to Poe’s fiction while he reflected his individual mania, paranoia and fear in his works. He instigated the writing of modern horror stories which are epitomized by his “The Tell-Tale Heart.” His works have been inspired by his turbulent life. He was always in financial crisis throughout his life because of his bad habits such as gambling and alcoholism. He lived through many unpleasant situations throughout his life and even his death was a vexing one. His “The Tell-Tale Heart” recounts the narrative about a murderous man who smothers his house mate, an elderly man who has been sharing the same house with. His story reveals the psyche of the main character who committed the murder through stream of consciousness. The story’s grotesque atmosphere and events may have been inspired by the life led by the author himself and by his harrowing experiences. The aim of this paper is to analyze Poe’s “The Tell-Tale Heart” as a short fiction exploring a man’s mental instability that results in an innocent man’s death and the confession of his murder.

Madness and Sanity

The story starts as a monologue, a first-person narrator who also happens to be one of the main characters recites the story. The narrator begins to narrate his story by repeatedly stressing that he is sane. The aim is to persuade that who has been listening to him about the fact that he has no mental disturbance. The readers can feel the psychological intensity the narrator experiences throughout the story. According to his account, the murderer is in the right mind and knows very well what he has done and said: “TRUE! – nervous – very, very dreadfully nervous I had been and am; but why will you say that I am mad?” (Poe, 2011, p. 303). While the narrator who, as we learn as the story unfolds, is accused of being the murderer of the old man strives to persuade the readers about his sanity, it gives the impression of otherwise (Robinson, 1965, p. 369). He goes on to defend his sanity by inviting the reader to hear the whole story from him to witness his calmness and the fact that he is in his right mind. He starts to narrate his story through flashbacks. He tells his listeners about the origin of his design of murdering his elderly housemate, the second main character, which just appeared in his mind. He follows a chronological order while describing the events.

The plot structure of the narrative is triangular. The old man's death is the predominant event leading the way to the mental breakdown of the narrator. His paranoia heightens after he hid the dismembered parts of the old man under the wooden panels that cover the floor. He thinks that his senses has been sharpened and imagines that he hears the dead man's heartbeat. Finally, he confesses his deed to the police officers and shows where the dead person's body is. The plot is a unified one as it works in a cause-and-effect relationship although the cause for the vicious act seems unlikely and implausible. None of the characters experience a conflict, internal or external. According to his account, the murderer of the old man has been determined to kill the old man and he has not felt any uncertainty. The same goes for keeping the murder as a secret until he gives up because of his paranoia. The closest thing to a conflict in the text is the storyteller's strife to be watchful while pursuing and observing the old man in his room.

Apparently, the narrator was not after the old man's money or possessions nor did he execute the deed out of passion. He admits the fact that he felt compassion for the elderly as he has never posed danger for him. The sole thing disturbing the narrator about his victim leading to his demise is "...his pale blue eye, with a film over it" (Poe, 2011, p. 303). The writer chose "a completely arbitrary point on which the madman's rage would be focused" (Tucker, 1981, p. 92). The old man's gaze has always made him feel uncomfortable; therefore, the narrator decided to kill him to do away with the eye once for all: "Whenever it fell upon me, my blood ran cold; and so by degrees – very gradually – I made up my mind to take the life of the old man, and thus rid myself of the eye for ever" (Poe, 2011, p. 303). The narrator, then, goes on to defend his mental health by describing his systematic planning and stealth while stalking the old man to find the right moment to kill him: "Specifically, the narrator bases his plea upon the assumption that madness is incompatible with systematic action, and as evidence of his capacity for the latter he relates how he has executed a horrible crime with rational precision" (Robinson, 1965, p. 369). He has monitored him the whole week and has treated him with compassion like he has never before done. He goes to his room every night around midnight with a lantern which is covered so that the light emanating from it should not disrupt the old man's slumber and cause him to wake up. He vigilantly cracks the old one's door open. Due to his watchfulness, sticking his head through the door takes a long time. He puts in the lantern through the opening, as well with an intention to see his victim-to-be's eye. The chain of criminal acts starting with his mania towards his victim's eye lasts for seven days, which "captures the essence of this desire" that is the desire to kill (Süt Güngör, 2023, p. 1253). Finally, on the eighth night, he decides to carry out his murderous plan. He acts much more slowly and advertently. However, his finger slips on the lantern causing the old man to wake up and scream "Who's

there?” (Poe, 2011, pp. 304). He opens the cover of the lantern a bit and directs a small ray into the old one’s eye which is now open and he gets furious. After some time of silence and waiting, he finally enters the room, drags the old man on the floor and kills him by smothering him with the heavy bed. The old one’s murder constitutes the climax of the narrative. Another instant that can be deemed a climax is the moment the narrator’s confession of his guilt. The character’s mental breakdown brings about an unexpected ending which is his confession.

The narrator, as a coldblooded criminal, mutilates his victim’s corpse: “First of all I dismembered the corpse. I cut off the head and the arms and the legs” (Poe, 2011, p. 305). He claims that he is not mad and he struggles to prove it so throughout the story; however, he also maintains that he hears the heartbeats of the dead one whom he murdered and mutilated. Biologically, there is no possibility for a heart to live and beat in a body that is dismembered. Therefore, there is no possibility for a man to hear a corpse’s heart beat however acute one’s hearing is. The only explanation for this situation is that his mind is playing tricks on him. As Arthur Robinson notes,

Since such processes of reasoning tend to convict the speaker of madness, it does not seem out of keeping that he is driven to confession by “hearing” reverberations of the still-beating heart in the corpse he has dis-membered, nor that he appears unaware of the irrationalities in his defense of rationality. (1965, p. 369)

The story has a number of characters about whom the narrator gives few clues. No detail is given about the physical appearance of the narrator. The reader only learns about his psychological depth and obsession. The narrator reveals his personality through his monologue and his actions. It is a known fact that Poe’s works are inspired by his own life and he is associated with his characters who show the symptoms of paranoia, obsession and androphomania and the main character in the text is of them: “... the identification of Poe with the murderers and madmen of his works survived and flourished in the 20th century, most prominently in the form of psychoanalytical studies such as those of Marie Bonaparte and Joseph Wood Krutch” (“Edgar Allan Poe”). Brett Zimmermann maintains that the narrator suffers from paranoid schizophrenia when his personality is analyzed through comparing him today’s psychoanalytic profiles (1992, p. 39).

A slight detail is given regarding the old man’s physical appearance, the old one’s eye that is covered with tissues with a film-like form probably because of a medical condition. The personality of the aged is revealed through the monologue of the narrator, as well. One can gather from the account of the narrator that the old one has a gentle personality. He did not commit any misdeeds against the narrator and, in fact, the narrator loves him: “I loved the

old man. He never wronged me” (Poe, 2011, p. 303). The detail about the socio-economic condition of the old man is not indicated, yet he may be hinted to be rich as the narrator says “For his gold I had no desire” (p. 303). From his remarks, it can be assumed that the old man is a wealthy person. There are three police officers who step into the story after the old man is dismembered and hidden under the floorboards. They come to the house because they have been informed by the neighbors that a shriek has come from the house. The police officers are not described in any way, as well. The only thing we know about them is that they act with gentility. They do not behave the way the reader expects from public officers. They chat with the narrator pleasantly and they smile. They do not look like sullen and serious people. The dialogue between the policemen and the narrator is not delivered; however, the reader is informed about the demeanor of the policemen and their intention through the narrator’s statements. It is debatable if the narrator is a flat character or a round character. He kills an innocent and defenseless man, yet, in the end he confesses his guilt to the officers “I admit the deed! – tear up the planks! – here, here!” (p. 306). However, his confession is not as a result of his conscience. His paranoia leads to his confession. The old man is a flat character. He shows no signs of improvement, which is also because he does not have the chance to. All the reader knows about the policemen is through the accounts of the narrator; therefore, no sign of development is observed in them. They are already described as gentle by the narrator, yet no sign of improvement is revealed. All the characters are seen through the lens of the narrator, so it is not possible to know them for truly who they are.

The setting is not described: however, one can understand that the teller of the story and his victim share the same house because the narrator enters and exists the old one’s room as he wishes. There are no details about the weather conditions as in “The Fall of the House of Usher,” another story by the author. The speaker is very specific and precise concerning the time. Although the exact date or the historical period are not given, the speaker describes the time of the day during which his criminal acts take place in detail. It is known that the narrator goes to the old one’s place “every night, about midnight” throughout seven days until he kills him on the eighth night. Furthermore, he cuts off the limbs of the old man and conceals his disjointed limbs under the floorboards. His obsession with time may be attributed to his sick fascination with the old one’s deformed eye and his determination to dispose of it. The events of the narrative transpire in the dark because the protagonist visits his victim at midnight every day. The darkness of the rooms adds to the horror created throughout the story. It also chimes in with the dark intentions of the narrator.

Mental health is the main theme of the story, and it is revealed through the actions and thoughts of the speaker. The teller of the story struggles to

persuade his listeners as well as the ones reading the story about his sanity; however, the longer he tries, the more the reader gets convinced about his madness. His attraction to the old man's eye and the details he reveals about time proves the instability of mental health. He has no discernible reason to murder the old one. As James W. Gargano claims, "... Poe deliberately establishes and enhances the mystery of his tale by having the murderer eschew all explanations for his deed" (1968, p. 378). He maintains that he is not after the old one's gold and he does not have hard feelings towards him. The teller of the story confesses to be very content to kill the elderly one "I then smiled gaily, to find the deed so far done" (Poe, 2011, p. 305). He is in such a mental state that he can smile at the thought of taking someone's life for no good reason: "Most readers would agree, not only because the murder of an old man seems motiveless, but also because the narrator's confession comes across as calculated and heartless" (Witherington, 1985, p. 471). In fact, he takes relish even when he thinks about his evil plan: "I fairly chuckled at the idea" (Poe, 2011, p. 304). Therefore, it could be claimed that "The actions of the narrator, combined with his insistence that he is not mad, lead the readers to determine that he must suffer from some psychological disorder" (Pritchard, 2010, p. 144). His poor mental state coupled with his guilty conscience forces him to confess his crime. At this point, the story acts as a cautionary tale. It warns the readers about the fact that a crime will eventually be revealed because of guilty conscience.

Conclusion

Poe's story offers the readers a panorama of a person's mental instability and its bitter fruits. The main character's being obsessed with his victim's discolored eye as well as time clearly makes manifest that he has psychotic and obsessional tendencies. The events follow a chronological order and they transpire in a cause-and-effect relationship. The story reaches the climax with the killing of the old one and the narrator's confession of his guilt to the police. The darkness of the room and the idea of the ghastly events taking place at midnight contribute to the story's macabre atmosphere. The prevailing idea throughout the story is madness and sanity. The narrator's claims of sanity through the narration of his systematical conduct is disproven by his deed and his taking delight in it while carrying it out.

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CHAPTER 4

A STRATEGIC ANALYSIS IN THE CONTEXT OF CLIMATE CHANGE AND LIMITED WATER RESOURCES IN THE MIDDLE EAST

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Introduction

The Middle East is arid in terms of climate and water resources are extremely limited. In this geography, “water”, which is vital for every living thing, is more important than water-rich countries in terms of meaning. People have lived in areas close to water resources throughout history. Water is a compulsory element not only for drinking but also for the production of agricultural products that will meet the need for nutrition. A significant portion of arable lands are irrigable lands. Irrigation only with rainfall significantly reduces the sustainability of agricultural product production. Addressing the water problem from a strategic point of view means acting rationally in inter-country co-operation and conflict resolution. While water is a humanitarian necessity, it can also turn into a weapon when necessary.

The most important water resources in the Middle East are the Euphrates and Tigris rivers, which originate in Turkey and flow through Syria and Iraq. The areas irrigated by these rivers are the source of life for millions of people. It is extremely important both in agricultural product production and energy supply. Especially global climate changes make the use of water even more important. Political tensions arising from this situation are among the important reasons that threaten peace between countries. This study has been prepared with a strategic perspective on the water problem in line with its increasing importance due to climate changes and geopolitical disputes regarding water rights.

1. STRATEGIC OVERVIEW

The word strategy is derived from two Greek words “stratos” and “agein”. Stratos means army and agein means leading and managing (Timuroğlu, 2014:6). Strategy means the way to go. In other words, it is the art of generalship. Strategic perspective is a long-term thinking system and it is the determination of how to act in order to achieve the objectives. At the end of a process that starts with strategic consciousness, it is the determination of the necessary targets to achieve the final goals, making appropriate decisions and acting to achieve these goals. Strategic perspective is a process consisting of four stages: Internal analysis, external analysis, strategy development, strategy implementation (Kaplan and Norton, 1996:56)

The idea of strategic planning, which is one of the most important elements of the strategy concept, was first put forward by George Steiner. Steiner defined the concept of strategy as “the goals to be achieved and the answer to the question of how to achieve them” (Pradhan, 2007:107). Strategic planning has evolved into a strategic management approach today in order to compete and create competitive advantage. It can be expressed as a concept that makes it compulsory to think about activity plans that will provide all kinds of competitive advantage in order to create competitive advantage (Henderson,

1989:141). In order to gain competitive advantage, there are two paradigms that should be taken as a basis in all kinds of activities. These are: “Industrial Organisation Theory” and “Resource Based Theory”. Michael Porter’s (1979) “Five Forces” model is one of the best examples of the application areas of Industrial Organisation Theory (Akgemci, 2007:13-14). The Five Forces model suggests that there are five main elements that have an impact on strategies and that strategies should be formed within these elements. These elements (Thompson, 2001:289) can be listed as substitute goods, bargaining power of customers, intensity of competition between competitors, bargaining power of suppliers, threats posed by new entrants to the market. The Resource Dependence Theory is based on the view that the resources and basic capabilities are the main important points in creating competitive advantage (Grant, 1991: 114-134). According to this theory, the resources and capabilities are the primary resources when forming a strategy and strategies should be formed accordingly (Seviçin, 2006: 109- 124).

Arnoldo Hax emphasises six dimensions of strategy. Based on these dimensions, strategy should be a unifying and integrative decision model, should be prepared in line with long-term goals, should define the competitive field, should create competitive advantage by analysing environmental opportunities and threats and internal strengths and weaknesses, should determine economic and non-economic contributions for stakeholders, and should be a logical system that differentiates managerial tasks with a situational approach (Hax, 1990: 34-40).

The strategic view is not only a necessity for organisations, but is also extremely important in inter-state relations. It shapes the foreign policy arguments and national security of states. A strategic perspective is especially necessary in relations with states in the Middle East. The frequent change of regimes, frequent terrorist practices and the presence of armed groups outside state control make it difficult to maintain balance in inter-state relations and regional security. Middle Eastern countries with rich oil and natural gas resources are the centre of attention of the whole world. The most vital issue that should not be forgotten is that water resources rights are the most important factor in terms of political conflicts and enrichment of the region (Yılmaz and Tunç, 2005:148). In particular, the correct management of a new state structuring in the region is important both economically and geopolitically.

2. CLIMATE CHANGE

“The total surface of the Earth is 510 million km² and approximately 71% of it is covered by water” (Karaman and Gökalp, 2010:60). The total amount of water in the world is 1.4 billion km³ and 97.5 % of it is in the form of salt water in oceans and seas. Only 2.5 per cent is in rivers and lakes as fresh

water. The fact that 90 per cent of this fresh water is located in the poles and underground reveals why it is difficult for people to reach the fresh water they need (Denhez, 2007:80). While 70 thousand km³ of water is lost as a result of this event, approximately 110 thousand km³ of water replaces the water lost by the continents with precipitation every year. The difference of 40.000 km³ water reaches rivers, seas and lakes. Only 9 000 km³ of this amount of water can be used economically (Koluman, 2003).

Climate changes affect the whole world. Especially due to the increase in temperatures, the oceans are warming and the seas are rising. Due to this situation, especially people living in coastal areas are in danger (Melillo et al., 2014: 112). In addition, water resources are decreasing due to extreme temperatures and drought, and agricultural production and food security are endangered. Human activities are among the main causes of climate change. Factors such as the accumulation of gases such as carbon dioxide, methane and nitrogen oxides in the atmosphere due to greenhouse emissions and preventing the sun's rays from reaching the soil, as well as the use of fossil fuels and the destruction of forests cause an increase in temperatures (Steffen et al., 2015:5). Global warming will cause water resources, which are already insufficient, to decrease even further, and many regions around the world will face the risk of desertification. In this direction, water, which is vital for living things, will turn into a precious commodity like oil.

A decrease in water resources will adversely affect agricultural production and lead to a nutritional crisis. Not only drinking water, but also food crisis will occur, as well as the risk of epidemics will arise as the use of water for hygiene purposes will decrease. Desertification and drought will cause a decrease in the diversity of crop production and erosion will increase. Depending on the lack of water, transport and energy sectors will inevitably be negatively affected by this situation. A melting of glaciers that may occur with global warming may cause the sea level to increase and settlements by the sea to be flooded (Türkeş, Sümer and Çetiner, 2000:7-24). Due to the decrease in water resources, 26 countries were adversely affected by this situation in the 90s. In 2050, water scarcity and crisis is expected to be experienced in 60 countries due to the gradual increase in population and climate changes (Küçükklavuz, 2009:134).

Combating climate change requires a joint effort covering the world. Among the various strategies used to solve this problem are ensuring the use of alternative energy sources, reducing carbon emissions and preventing deforestation (Stern, 2007:38).

3. WATER RESOURCES IN THE MIDDLE EAST

The region referred to as the Middle East is a region of great strategic and economic importance located in the west of Asia. Countries in this region: In addition to having rich underground resources, it has a great economic

importance, having hosted many different cultures throughout history. This region includes the following countries: Bahrain, United Arab Emirates, Palestine, Iraq, Iran, Israel, Qatar, Kuwait, Lebanon, Egypt, Syria, Saudi Arabia, Turkey, Oman, Jordan and Yemen. The common problem of many countries in the Middle East is access to water. Due to this problem, people living in the region have to struggle more for water (Kramer, 2017: 68).

In the Middle East, which is known as one of the driest locations in the world, water resources are extremely scarce, resulting in many negative economic, social and political consequences (Allan, 2001). In the region referred to as the Middle East, water resources are dominated by rivers, groundwater and an ecosystem based on a small amount of precipitation. The rivers in the region are Tigris River (Tigris), Euphrates River (Euphrates), Shattlarap, Jordan River, Nile River, Aras River, Karun River and Zab Rivers (Great Zab and Little Zab). Among these rivers, the Shattlarap River is formed by the merger of the Euphrates and Tigris rivers. It flows into the Persian Gulf through Iraq. The Jordan River, on the other hand, originates from Mount Hermon on the borders of Syria and Lebanon and waters Israel, Jordan and Palestine. It is also a religiously important river. The northern part of the Nile River, which originates in Africa, flows into the Mediterranean Sea through Egypt. It passes through the Middle Eastern countries of Sudan and Egypt and reaches the sea. It is of vital importance for Egypt. Aras River, which originates from the Eastern Anatolia Region of Turkey, irrigates Armenia, Azerbaijan and Iran and flows into the Caspian Sea. The Karun River originates from the Zagros Mountains in Iran and flows into the Persian Gulf. The Zab rivers originate from the borders of Turkey and Iran and flow into the Tigris River in Iraq. The most important rivers: Euphrates and Tigris rivers. These rivers, which take their source from Turkey and reach the sea by passing through Syria and Iraq, are of vital and economic importance for the Middle Eastern countries (Kibaroglu, 2002). These rivers are of great importance for agriculture, trade, drinking water and energy production in the region. They have also been the places where civilisations were born and developed throughout history. The Euphrates and Tigris rivers, which are the most important water resources of the Middle East, have a special importance.

3.1.Euphrates River

The Euphrates River, whose Greek name is Euphrates, has many meanings in different languages. In Old Persian it is Ufratu and in Akkadian Purattu, and in Arabic it comes from the word “ferahat” meaning carefree, comfort. The longest river in the west of Asia is the Euphrates. It is 1230 kilometres long in Turkey, 710 kilometres long in Syria and 1060 kilometres long in Iraq (<https://tr.wikipedia.org>)



Figure1 . Euphrates River Basin

Source: <http://www.biblestudy.org/maps/eurphrates-river-map.html>

After the 1960s, dam construction activities have gained momentum in Turkey as a source of irrigation and energy. The Euphrates and Tigris rivers flowing through high mountains and deep valleys are extremely suitable for dam construction (Yıldırım, 2006:32). There are Keban, Karakaya, Atatürk, Birecik and Karkamış dams on the Euphrates River on the borders of Turkey. On the Syrian border, Tabqa Dam is located on the Euphrates River (Hunt, 1974:8-10)

3.2. Tigris River

The known name of Tigris in the world is Tigris. It has passed from Greek to the world languages. It is known as Hiddekel in Hebrew, Diklat in Syriac and Tigris in Arabic. The Tigris, one of the longest rivers in the Middle East, is 2,800 kilometres long. Tigris and Euphrates rivers are the rivers that merge and form Mesopotamia.



Figure2 . Tigris River Basin

Source : <http://qwickstep.com/search/tigris-map.html>

The Tigris River originates in Elazığ, flows through Iraq, merges with the Euphrates River and flows into the sea from the Persian Gulf at the Shatt al-Arab (<https://tr.wikipedia.org/wiki/Dicle>). There are Ilisu, Devegeçidi, Garzan, Batman, Kralkızı and Tigris dams on the Tigris River. Although its length is shorter than the Euphrates, it has more water. Tigris provides agricultural irrigation through irrigation canals and is used for transportation from the mouth of the river to Baghdad for medium-sized ships and to Mosul for smaller ships.

The Euphrates and Tigris rivers are of vital importance for the Middle Eastern countries whose economy is based on agriculture and which are not categorised as developed countries in the country classification. Especially for Iraq, a large part of agricultural production depends on the use of the Euphrates and Tigris rivers for agricultural irrigation. These two rivers have critical importance not only in agricultural irrigation but also in the energy production of the region (Saltürk, 2006:213). Whoever controls these two rivers also has a geopolitical power tool (Yılmaz and Tunç, 2005:142).

Turkey obtains hydroelectric energy from the dams built on both Euphrates and Tigris. This energy also contributes to the development of the industry by providing the inputs required for industrial production. While these rivers meet the water needs of Turkey, Syria and Iraq, they are also vital for the agricultural sector of these countries. Especially for Iraq, the lands irrigated by the Euphrates and Tigris rivers are the most productive agricultural areas of the country. In these areas, corn, wheat, rice and all kinds of vegetables are produced (Yılmaz and Tunç, 2005, p. 142). However, deficiency and interventions to water resources create deterioration and negativities in agriculture. In particular, water degradation negatively affects irrigation systems and leads to loss of yield in agriculture

The Euphrates, Tigris and Asi rivers, which are in the category of transboundary waters, affect Turkey's national security and national interests. The countries benefiting from these waters occasionally come to the stage of war. Both Iraq and Syria approach the problem with an unsolvable approach and increase the possibility of conflict. These rivers are a source of risk both economically, politically and militarily.

4. PROBLEMS IN THE MANAGEMENT OF WATER RESOURCES

Many problems arise in the management of water resources in the Middle East due to the gradual decrease in water resources due to climate change and the fact that it is already a scarce resource, and the main problems can be expressed as follows:

- The gradual increase in population and the consequent inadequacy of production for agricultural needs make water more valuable. Fresh water, which is used for both drinking and irrigation purposes, is of vital and economic importance (UNESCO, 2020).

- Since the Euphrates and Tigris rivers, which are the main sources of water supply in the Middle East, cross the borders between countries, a boundary water problem arises. Syria's and Iraq's dependence on the water from these rivers causes serious political problems due to the dam projects that Turkey has realised or plans to realise (Akanda and Freeman, 2011).

- The increase in industrial production with the developing technology causes environmental pollution. In addition, domestic wastes and chemical pesticides used in agriculture also significantly affect the quality of water. For these and similar reasons, access to clean drinking water becomes difficult (Gleick, 1993).

4.1. Solutions and Strategies for Sustainable Water Management

In order for a country to be considered water rich, the amount of water per capita must be more than 10,000 cubic metres. Accordingly, countries other than Brazil, Canada and Russia are not water rich. Water should be considered as a scarce resource. What needs to be done for sustainable water management can be addressed under the headings of strategies, regional cooperation and water sharing agreements, utilisation of technological innovations, protection of the environment and adaptation to climate

The water issue should be solved with an agreement and co-operation between Turkey, Syria and Iraq. What is important is the sustainable use of water resources and a water sharing agreement that is accepted by all parties. In this way, conflicts that may arise due to "water", which is of vital importance, will be prevented. Since most of the water in the world is salty, more usable fresh water can be obtained by desalination of water by utilising

the developing technology. With this method, alternative water resources can be provided especially in coastal areas close to the seas (Carnegie Endowment for International Peace, 2024:44). In addition, making improvements in irrigation methods can reduce unnecessary water use in agricultural irrigation. In order to reduce the effects of climate change, especially in regions with water problems such as the Middle East, it is necessary to increase forest areas by afforestation method, to apply erosion control methods and to invest in climate change adaptation strategies. Protecting the environment we live in also helps to protect water resources and increase the resilience of ecosystems (Yılmaz and Tunç, 2005:145).

4.2. Conflicts over Transboundary Watercourses and Solutions

Water is one of the most important reasons for competition as it is indispensable for life. Water scarcity cannot be substituted and water resources are becoming more and more strategic due to population growth, the necessity of irrigation of agricultural lands, climate changes and environmental problems. In addition to being a strategic resource, water is one of the most fundamental elements for economies (Yıldız 2004:263). There are many problematic water resources in the world. These are shown in the table below. The waters used by more than one country in the world are called “transboundary waters” (Öngel, 2011:37). The European continent generally has a temperate climate and is located in the middle climate zone.

Water sharing between countries with water-rich resources is easier than sharing between countries that can be described as water-poor. It is more difficult to solve water disputes in regions such as Africa, the Middle East and Asia than to solve disputes in the American continent.

The Rio Grande river in the USA is 3034 km long and is the fourth longest river in the USA (www.britannica.com). The Rio Grande River reaches the sea through the Gulf of Mexico, forming a 1500 km natural border between the US state of Texas and four states of Mexico. The disputes arising over the Rio Grande River have made significant contributions to international law in terms of their resolution.

The construction of new facilities on the Rio Grande River by the USA for irrigation purposes in 1894-1895 significantly reduced the amount of water used in agricultural irrigation for Mexico. Upon this, Mexico warned the United States with a note. Upon this development, the United States of America's legal response to the note stated that “the right of the United States to utilise the waters of the river within its borders cannot be denied to American citizens. In other words, a response was given that led to the establishment of the principle of “the source country has the right to use the water within its borders” in international law. The view stated in this note was referred to in

the literature as the doctrine of absolute sovereignty (Hormon¹) (İnan, 1994). The European continent generally has a temperate climate and is located in the middle climate zone. Since it is not a troubled region in terms of fertile soils and water resources, changes in the quality of water due to industrial pollution or salinisation are the main source of the problem in the European continent. In Asia, 54 water basins are shared by more than one country as transboundary rivers and surface waters. The water sharing problem often brings the stakeholder countries face to face. In the African continent, there are a total of 59 basins shared by two or more countries in transboundary rivers and surface waters. The longest river in the world is the Nile River, shared by Ethiopia, Sudan and Egypt. The Asi River, which originates in the Bekaa Valley of Lebanon, is the cause of water sharing problems between Syria and Turkey; the Jordan and Litani Rivers are the cause of water sharing problems between Lebanon and Israel; and the Yarmuk River is the cause of water sharing problems between Jordan and Syria.

¹ The absolute sovereignty view (Harmon Doctrine), first applied to the Rio Grande dispute between the USA and Mexico in 1895, is a view that recognises the absolute sovereignty of the upstream state

Table1 .Problematic Water Basins

	Su Havzası	Sorunlu Ülkeler	Sorunun Nedenleri
Amerika Kıtasında	Rio Grande, Colorado	ABD, Meksika	Kimyasal Kirlenme, Su Akışının Azalması, Tuzlanma
	Plata/Parana	Arjantin, Bolivya, Brezilya, Paraguay ve Uruguay	Baraj, Su Basması
	Büyük Göller	Kanada, ABD	Su Transferi
	Lauca	Bolivya, Şili	Baraj, Tuzlanma
Avrupa Kıtasında	Ren	İsviçre Fransa, Almanya, Hollanda	Endüstriyel Kirlenme
	Elbe	Çek Cumhuriyeti, Almanya	Endüstriyel Kirlenme
	Maas, Schelde	Belçika, Hollanda	Endüstriyel Kirlenme, Tuzlanma
	Szamos	Romanya, Macaristan	Su Kullanımı
	Tuna	Avusturya, Slovakya, Macaristan	Su Akışının Değiştirilmesi, Hidroelektrik
Afrika, Orta Doğu Bölgesinde	Nil	Etiyopya, Sudan, Mısır	Siltasyon, Nehir Taşması, Su Çevrilmesi
	Fırat, Dicle	Türkiye, Suriye, Irak	Barajlar, Su Akışının Azalması, Tuzlanma, Hidroelektrik
	Asi	Suriye, Türkiye	Su Kullanımı
	Ürdün, Litani	Lübnan, İsrail	Su Akışının Değiştirilmesi ve Azalması
	Yarmuk	Ürdün, Suriye	Su Akışının Değiştirilmesi
Asya Kıtasında	İndus (Jelum, Cenab, Ravi, Beas, Sutlej)	Hindistan, Pakistan	Sulama
	Ganj, Brahmaputra	Hindistan, Bangladeş	Siltasyon, Taşıma, Su Akışının Değiştirilmesi ve Azalması
	Salween / Nu Jiang	Çin, Burma	Siltasyon, Taşma
	Mekong	Çin, Burma, Tayland, Laos, Kamboçya, Vietnam	Su Akışının Azalması, Taşma, Sulama, Hidroelektrik

Source: Allouche, 2005:43.

The neo-realist approach argues that the order in international relations has an anarchic structure. According to this approach, states have to constantly protect and safeguard their interests for the continuation of their existence. In order to protect their interests, it is a necessity for them to be superior in terms of military power. In inter-state relations, states try to gain a competitive advantage by keeping the war card alive with the military power they possess in order to protect their interests. The only power that can prevent this situation is international organisations. States may have external dependence on various issues.... For example: Various commodities such as oil, natural gas and gold may not be available in their own territory and they may need these materials. There are many alternative methods to procure these. However, a vital product such as “water” cannot be procured easily. For this reason, the security of a country dependent on foreign water resources is always under threat (Akbaş, 2015:95).

Disputes over water are not only a technical problem but also a problem with social, political, economic and security dimensions (Altınbilek 2004:32). For Turkey, it also appears as a more serious security problem when evaluated together with the terrorist problem (Bilgiç 2006:145-146). When military forces are compared, it is seen that Turkey has an indisputable superiority over both Iraq and Syria. Therefore, it should be taken into consideration that in the event of a water-based conflict, the possibility of war is undeniable. On transboundary waterways such as the Euphrates and Tigris, Turkey, Syria and Iraq have disagreements over water sharing. Turkey has built large dams on these rivers and this has affected the amount of water. Syria and Iraq have been adversely affected by this situation and disputes have emerged over water sharing.

Turkey's construction of the Keban dam in 1964 and the Karakaya dam immediately afterwards caused the water problem to erupt in these years (Dursun 2006: 141). Although the reason for the construction of these dams imperative for Turkey's economic interests, they were perceived as an important security problem for the other countries involved. Following this incident, Syria's construction of the Tabqa dam in 1974 led to a conflict with Syria due to the start of water retention in the Keban dam. The most important reason for this situation is that Syria also built the Tabqa dam in 1974 and the water level in this dam decreased as a result of the Keban Dam. Since Syria's objection to the Keban dam was that its military power was not sufficient, it complained to the international community and tried to prevent the construction of the dam. Turkey's attempt to complete the construction of the dam by using a loan from the World Bank ended when the international community stipulated that this loan could be utilised after an agreement with Syria. Because Turkey, which had to prioritise its economic interests, did not accept this international pressure and completed the dam with its own means (Dursun 2006:142).

The Tabqa Dam has dragged Syria and Iraq into a state of war. Because Iraq provides irrigation of Iraqi lands by combining the waters of the Tigris-Euphrates rivers in the Shatt-ul-Arab region through the Tatar canal. However, after the Tabqa Dam started to hold water, Iraqi lands could not be irrigated sufficiently. Since this situation became a national security issue for Iraq, Syria and Iraq came to the point of war. With the intensive efforts of the Soviet Union and Saudi Arabia, the war was prevented (Akbaş, 2015:103).

The GAP Project, one of the most important projects for Turkey, started in 1980. This project was a very important crossroads in Syria-Turkey relations. In 1990, when Ataturk Dam started to hold water, Syria reacted by supporting terrorist organisations such as PKK, ASALA and Dev Sol, which Turkey had described as terrorist organisations and fought against, and gave all kinds of support to these organisations to grow and carry out actions against Turkey. In 1996, the completion of the Birecik dam by Turkey brought Turkey-Syria-Iraq

relations into a war environment again. Iraq and Syria sent notes to Turkey (Olson 1995:169-170). Thanks to the Euphrates and Tigris rivers, Turkey has the opportunity to fight against all kinds of activities against the Kurdish state to be established in Northern Iraq (Çandar 1993: 453). The Euphrates River Distribution Agreement of 1960 between Turkey, Syria and Iraq is one of the most important water management agreements between these three countries. According to this agreement, the water of the Euphrates River is kept at a certain level by Turkey and then distributed to Syria and Iraq. Along with determining the amount of water, the agreement provides a basic framework on how the water of these three countries will be utilised. Regarding the Tigris River, an agreement was signed between Turkey, Syria and Iraq in 1987. This agreement allowed Turkey to obtain the right to use the water of the Tigris River and to realise regional irrigation projects (Saltürk, 2006).

When we look at other countries experiencing transboundary water problems in the Middle East, one of them is Israel. Israel, Jordan, Lebanon, Syria and Egypt is a country with such borders. It can be said that it has borders in the form of a long and narrow corridor. It is a country that is not rich in natural resources. Fresh water resources are not sufficient compared to the population of the country. Despite this, Israel is one of the most advanced countries in the world in irrigation technologies. With applications such as drilling technology, computer-controlled drip irrigation systems, it is one of the rare principles that manage to use scarce water in the most efficient way. supplies its water needs from three sources, namely Lake Taboriya, Coastal Aquifer and Yarkon Aquifer. In addition, it also makes use of treated sewage water. It has problems with Jordan due to the Jordan River and with Palestine in the aquifer systems (Lithwick, 2000).

CONCLUSION

Strategy is a vital system for organisations and states. In inter-state relations, strategy shapes international security and co-operation, while planning provides a roadmap to benefit in the global marketplace. For both businesses and states, thinking and strategising play a critical role for sustainable success. In the future, it is expected to become even more important in a period when global developments, economic factors and technological changes will rapidly take shape.

Water is vitally important for all living organisms. When human needs are considered, we must first meet the compulsory needs necessary for us to continue our lives. These are basic needs such as eating, drinking, sleeping and sexuality. After these needs are fulfilled, other needs, which are expressed as unlimited, are tried to be met in order of importance. Water, the most basic need, comes before all other needs. Highly valuable commodities such as oil, gold and natural gas cannot compete with water when considered strategically.

Transboundary waters allow more than one country to benefit from them. The “absolute sovereignty view”, which is expressed as the Harmon doctrine and is the view adopted by the most powerful state in the world (the USA), emphasises that a country can act in the interests of its own citizens from the water resources it owns, without considering other states as a priority. Within the absolute sovereignty view, Turkey should act primarily in the interest of its own citizens within the framework of this doctrine, especially in the Euphrates and Tigris rivers.

Countries may come to the brink of war at the point of sharing water resources. It should not be forgotten that country leaders may have friends, but countries do not have friends! Countries have national interests and allies to realise these interests. The fact that a leader considers another leader as his friend does not mean that he can put the interests of the country he leads in the second plan. Especially with the overthrow of the Assad regime in Syria, a new administration has prevailed. In the agreements that may be formed with this new administration on water, it is of great importance to protect the rights gained in previous agreements. It should not be forgotten that Turkey is not in the category of water rich countries. For this reason, all necessary measures should be taken both to prevent the destruction of forests and to protect the environment. Attempts should be made to create an awareness among the citizens of the Republic of Turkey about the importance and scarcity of water, and young generations should be made more conscious by providing education in schools on this issue. Considering that climate changes may have consequences such as overheating and drought in the future, measures should be considered and taken to protect the world we live in together with other countries.

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CHAPTER 5

TOTAL QUALITY AND MANAGEMENT SYSTEMS A GLANCE AT OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

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1: TOTAL QUALITY AND MANAGEMENT SYSTEMS

1.1. Concept of Quality

Quality can be defined as the ability of a product or service to be fit for purpose and in line with expectations. Quality is usually based on criteria such as customer satisfaction, durability, reliability, performance, and other specified characteristics. Japanese quality expert Kaoru Ishikawa defines quality as follows: “Quality in the narrow sense; It means product quality. In a broad sense, quality; “work quality, service quality, communication quality, process quality, quality of people including workers, engineers, managers and executives, system quality, company quality, quality of goals, etc.” defines it as (Ishikawa, 1995;47).

Quality experts make different definitions for quality. For example, while Joseph M. Juran defines quality as “fitness for use”, Philip B. Crosby has different approaches as “quality is conformity to desired features” (Hunt, 1993). The concept of quality is a relative concept that can be called qualitative, which can change according to the characteristics of the consumer, economic situation, and social position, can be designed according to different needs and expectations, and also changes with the development of technology. Due to these variables, a single standard definition of quality cannot be made (Doğan & Tütüncü, 2003).

The concept of quality has undergone various changes from before Christ to the present day. It has gained its current name under the leadership of a holistic quality management philosophy and will remain up to date in the future. It is predicted that it will acquire new definitions in the future (Küçük, 2004). Although the European Quality Organization supports several definitions and principles related to quality, it generally defines quality as follows: “Quality is the totality of the characteristics of products or services designed, produced and provided to meet the needs and expectations of the customer.” The European Quality Organization’s understanding of quality emphasizes a customer-oriented perspective and states that quality should be evaluated according to standards determined by customer satisfaction and needs. It also emphasizes that quality should be ensured at every stage of the processes, starting from the design of a product or service, such as production, distribution and customer services. The European Quality Organization considers quality as a comprehensive concept that is not limited only to the physical properties of a product but also includes elements such as customer experience, reliability, and durability. The International Standards Organization is an organization that develops quality-related standards. The ISO 9000 family includes general standards for quality management systems. The ISO 9001:2015 standard specifically determines the requirements for quality management systems.

The ISO 9001:2015 standard expresses the definition of quality as follows:

“Quality is the definition of a product or service designed, planned and provided by established requirements, in an organizational context focused on compliance with customer needs and relevant legislation, customer satisfaction and continuous improvement of products and services degree.” This definition bases quality on a quality management system built on the principles of customer focus, legal compliance, customer satisfaction, and continuous improvement. ISO 9001 standards provide a general framework to enable an organization to establish, maintain, and improve its quality management system. For a product to be considered high quality and preferable under competitive conditions, it must be able to meet the necessary needs with appropriate payments and be usable for a reasonable period.

Quality management is a discipline that involves an organization designing, producing, delivering, and continuously improving its products or services by certain standards, requirements, and customer expectations. This process includes a series of methods and techniques to meet quality standards and increase customer satisfaction. The main purpose of the Total Quality Management approach is to ensure the participation of everyone in the production process, continuously improving the processes that need to be acted together, prioritizing customer needs and expectations, reducing costs, and increasing quality (Akdağ, 2005). For total quality management to occur in a community; In terms of producing products that comply with the standards, all members must share similar goals, an agreement must be reached on the standards of the product or service to be produced, and the necessary encouragement and support must be provided by the management. In recent years, quality-related issues such as quality of business life, just-in-time production, and zero-defect production; regarding the community and its management, have been discussed under the headings of quality circles and total quality management (Şişman, 1997). Educational management is also evaluated under the title of total quality management and the concept of quality school is emphasized.

1.2. Historical Development of Management System Quality Perception

Quality is a concept that has been thought about in depth throughout human history, various opinions have been presented and will continue to attract great attention in the future. Management systems and quality perception is a concept that has undergone significant evolution over time and has been shaped depending on the changes in the business world, technology, and customer expectations from the industrial revolutions to the present day. Historical development provides an important perspective for understanding the evolution of quality management. This evolution has made quality management a strategic priority for many organizations.

1.2.1. Scientific management period (19th century)

In early periods, production processes often relied on skill and experience. However, towards the end of the 19th century, growth and complexity in industry revealed the need to manage business processes with a more systematic and scientific approach. The scientific management principles of Frederick Winslow Taylor, the father of modern scientific management and industrial management expert, were important during this period. Whether all workers show maximum effort is a primary problem for management (Taylor, 1997: 41). According to Taylor, the best type of management is the type of management in which the worker works most diligently and receives some special rewards from the employer in return (Taylor, 1997: 42). In scientific management, the entire problem is not left to the worker, as in the effort and reward method, and the management is responsible as much as the worker (Taylor, 1997: 45). The main emphasis here is that management and employees should unite with the same goal and work in harmony.

Taylor put this belief into practice with his experiments at Bethlehem Steel Company. He explained the principles of his understanding of management and organization in his book “Principles of Scientific Management” (Koçel, 1984: 51-52). In his work “Principles of Scientific Management”, Taylor states that individuals should make the highest effort to achieve maximum welfare. However, it states that even if most people work hard, their efforts are not productive. The ideas put forward by Taylor in the field of management have also been adopted and used by modern managers (Hodgetts, 1997: 21). Taylor tried to increase quality and productivity by recommending management methods such as improving standard work methods, increasing worker training, and measuring performance. The stages of the system proposed by Taylor are seen in Figure 1 (Griffin, 2012:35).



Figure 1: *Stages of Scientific Management*

Other important names to be examined in the same period are Frank and Lillian Gilbreth, Taylor’s contemporaries. The Gilbreth couple’s greatest contributions to management thought are the motion-time studies that were initiated by Taylor but developed by them. While Taylor focused more on time studies, Frank and Lillian Gilbreth developed motion studies. To increase workplace efficiency, the Gilbreth couple watched the motion studies using a motion picture camera and a stopwatch. Frank and Lillian Gilbreth recorded the work of the workers on film, examined the recorded images frame by

frame, and analyzed every movement of the workers. With the data they obtained, they continued their work to find a solution to carry out each step more efficiently, with less time and less effort. (Gomez-Meija & Balkin, 2011: 15).

The Gilbreth couple made great contributions to the field of management by bringing innovations to business life. They rearranged the workers' workplaces considering ergonomic conditions. For example, they optimized counter heights and improved lighting and ventilation conditions. They also took into consideration the psychological conditions of the workers and designed psychological tools such as suggestion boxes and free reading boxes to increase productivity and suggested regular rest periods (Graham, 1999, p. 641).

In particular, the studies carried out to analyze business processes and make them more efficient and effective have affected the perception of quality and management systems. Frank and Lillian Gilbreth have played a leading role in optimizing business processes and improving labor movements. These figures are important thinkers who shaped management systems and the perception of quality in the period from the late 19th century to the early 20th century. Scientific management principles have made significant contributions to improving quality and increasing productivity by making business processes more systematic and measurable.

1.2.2. Total quality control period (first half of the 20th century)

20. In the first half of the century, especially the growth and complexity in industrial production gave importance to quality control. Statistical methods have started to be used to ensure that products comply with certain standards and to control quality. The statistician and engineer Walter A is known as the father of statistical quality control. Shewhart's work includes basic principles for keeping business processes under control and constantly improving. Shewhart developed charts known as "Control Charts" that help assess whether business processes are under control. Shewhart's work has made significant contributions to the philosophy of continuous improvement. The idea of continuous monitoring and improvement of processes using statistical control charts developed by Shewhart stems from the fact that quality control is not only an audit process but also a continuous improvement process.

W, one of the pioneers of total quality control and a great contributor to the quality revolution of Japanese industry. The 14 Principles of Edwards Deming include the basic principles of quality management and focus on the continuous improvement of business processes. In Deming's studies, he did not consider the employees as a whole because variability creates poor quality. He evaluated the employees in two groups as "executive personnel" and "technical and operational personnel". He put the management staff in

charge of the system and divided the technical and operational people into two groups who carry out technical and operational operations (Sarp, 2014). Deming, who revealed that 80% of the problems are caused by the system, basically argued that quality is under the authority and responsibility of management (Dağdelen, 2017;63). Deming's understanding of analyzing and minimizing variability in the production process is the philosophy underlying the rise of Japanese industry. This approach is considered as the main goal of 6 sigma (Flying & War, 2020).

Engineer and management consultant Joseph M. Juran is a key figure in quality control and management. Juran's "Quality Control Handbook" is considered one of the classic and most important works in the field of total quality management. Juran's work on quality management aims to make quality the main priority of an organization. He emphasizes that the following principles are important to achieve the quality revolution in the organization:

- ✓ Training and seminars on quality should be given importance.
- ✓ The quality target in the company should be clearly determined.
- ✓ A Quality Council should be established by the leader of the company.
- ✓ It is not enough to just look at financial indicators; Quality should also be measured.
- ✓ Quality improvement, problem solving, creativity, and innovation should be important in the organization.
- ✓ Quality improvement should be continuous.
- ✓ Quality and performance standards should be established for customers.
- ✓ Emphasis should be placed on appreciation and reward.

The Juran Triad complements many of the issues discussed in quality management thoughts. The "Juran triad" is a cross-functional management approach consisting of three management processes and is shown in Figure 2 (Öztürk, 2009). These leaders and their work have had a significant impact on making quality control processes more scientific and directive. The use of statistical methods has helped improve quality in production and services by contributing to objective quality control and understanding of variation in processes. This period, especially II. With greater emphasis on quality control after World War II, there were significant developments in the field of quality management.



Figure 2: Juran Trio

1.2.3. Total quality management and Japanese influence (2. half of the 20th century)

Deming's initiating a revolution in quality by teaching and consulting in Japan made significant contributions to the worldwide adoption of total quality management. Juran, who attracted the attention of Japanese scientists and engineers with his "Juran's Quality Control Manual", was invited to Japan and, he contributed to the development of Japanese industry like Deming. In the 1950s, especially with the success of the Japanese industry, the concept of total quality management began to develop. Kaoru Ishikawa is one of the leaders who contribute to total quality management in Japan. In particular, he developed Root Cause Analysis, a tool used to solve problems, known as the "Ishikawa Diagram" or "Fishbone Diagram". Ishikawa argued that by developing preventive activities, errors will be prevented before they occur, and error-free production will be ensured by preventing problems in the design process (Ishikawa, 1985). Ishikawa went to America after the Second World War, met Deming and Juran, and had the opportunity to examine American business administration and modern production techniques on site. Ishikawa suggested that a new production model could be achieved by combining American and Japanese business concepts. Based on this idea, he introduced the concept of "quality circles" (Dağdelen, 2017;46).

1.2.4. ISO Standards and Global Quality Management (since the 1980s)

According to Philip B. Crosby, known for his books "Towards Zero Defects", "Quality is Free" and his work on quality, the measure for success and maintenance of a good quality level is consumer satisfaction. Crosby describes the zero-defect philosophy as a preventive measure. His philosophy focuses on systematizing the organization at all levels to guarantee efficiency and quality, rather than on technical processes that can be implemented in different departments of the company. According to Crosby, quality is free, but not a gift. Factors that create costs are nonconformities and all activities that ensure the job is done right the first time.

In the 1980s, quality management standards set by the International Standards Organization (ISO) (for example, the ISO 9000 series) became accepted worldwide. These standards guide establishing and maintaining an organization's quality management system. With the increase in globalization and competition, the perception of quality has evolved into a holistic perspective that includes all business processes rather than just production processes.

1.2.5. Technological developments and digital era (Today)

Feigenbaum, who provides quality consultancy to businesses, argued that quality in manufacturing cannot be achieved if the products are poorly designed, mismarketed, and if customers are not supported, and even if it is achieved, it will not be sufficient (Bumin & Erkutlu; 2002). Feigenbaum's idea that quality is the responsibility of all units in the organization was developed and began to be accepted as "total quality control".

Japanese management science expert Masaaki Imai's words on quality summarize the issue: "When quality is mentioned, the first thing that comes to mind is usually product quality. However, this is not true. There are three building blocks of work: Hardware, application rules (software) and humanware. Quality starts with people. "Equipment and application rules can only be discussed after the person is placed in the right place." Masaaki Imai uses a similar expression in his book: "In total quality control, human quality comes first. Total quality control is based on 'treating quality to people.' "A company that can impart quality to its employees is already halfway to quality production."

Today, technological developments such as digitalization, big data analytics, and artificial intelligence have added new dimensions to quality management processes, making them more effective, faster and flexible. Quality perception includes not only product quality but also comprehensive elements such as customer experience, process efficiency and sustainability. These developments allow organizations to gain a competitive advantage and focus more effectively on continuous improvement goals.

1.3. Quality Management Systems

Quality management system (QMS) is a system that documents the policies, processes and procedures that an organization follows when producing products or services and delivering them to customers, thus aiming to increase customer and organizational satisfaction with high product quality.

A QMS aims to have an attitude of continuous improvement and to show a tendency towards betterment. Thanks to the continuous improvement aim of the quality management system, customers know what to expect from the company and can experience the same quality in every purchase. Businesses that can offer this assurance can both protect their existing customers and

attract more customers by establishing a reputation for quality (Halis, 2020).

A QMS can also support compliance efforts. The data generated by the system identifies the organization's compliance problems, and areas where these problems may arise, and helps analyze organizational measurements. It can be particularly useful in assessing the overall data environment for data governance, internal audits, and other testing.

A QMS helps make processes compliant and consistent by organizing and centralizing quality control policies. In addition, it ensures that quality does not decrease over time by providing support for the training that employees need to receive in the future. It ensures that customers' quality expectations are met by increasing cooperation among personnel and with a customer-oriented approach (Tuna & Diker, 2021).

An important advantage of a QMS is that it provides opportunities for continuous improvement. Without tracking customer satisfaction, it is difficult to know what areas of the business are lacking and what improvements can be made in the future. By streamlining and documenting this process, it helps understand what changes are needed to ensure customer satisfaction. This minimizes customer complaints and saves both time and money in the long run.

A variety of quality management systems exist, and the right type of QMS for your company will vary depending on your industry. Different sets of standards apply to different types of organizations. ISO 9001 is one of the widely used international QMS standards that details quality management system requirements that organizations can use to create their programs. It was first published by ISO (International Organization for Standardization) in 1987 (Adıgüzel & Aydınli, 2016).

The principles of ISO 9001 focus on improving communication at all levels and stages of the supply chain to ensure customer expectations are met. This includes using customer feedback as a tool for quality assurance. ISO 9001 also sees document control as an important requirement and requires the information in your system to be tracked and protected. It also encourages a "process approach" that views the organization as a whole rather than a set of separate departments.

The ISO series is not the only standardized QMS. Nonstandardized total quality management approaches and continuous improvement processes also exist. During the decision-making process, the founder should examine each system based on the company's specific needs.

2. OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

2.1 Occupational Health and Safety Concept

The concept of occupational health and safety is to secure employees, ensure production safety and create workplace safety. It includes studies based on the principles of evaluating, preventing, and eliminating anticipated risks and dangers (Erdal, 2022).

Job security is studies that are carried out to determine, control, and implement safety rules in light of the advancements of the age and technological developments to minimize the damages that may occur due to the activities or jobs in professional life and the conditions brought by business life. Occupational health, on the other hand, is a system that aims to raise the social, physical, and spiritual conditions of those in all business lines to the maximum level and ensure their sustainability, to prevent possible damage to their physical and spiritual structures and to direct the person to professions that will adapt to their psychological and physiological structure, and thus to harmonize work with people and people with work. It is a branch of medicine (Yakut & Akbıyıklı, 2013).

Occupational health and safety encompasses efforts aimed at aligning working conditions with universal rights and ensuring that employees reach their highest potential mentally, physically and emotionally. These efforts include comprehensive measures across all work environments to prevent employee losses and regulate health conditions caused by workplace accidents and working conditions (Asan & Erdal, 2022).

Occupational health and safety is a systematic approach that ensures the safety of the working environment by protecting employees from possible accidents and occupational diseases during work in workplaces (Balkır, 2012). While occupational health and safety protects employees, it also aims to protect production efficiency and the workplace (Özkılıç, 2005). The primary purpose of occupational safety is to keep the person away from physiological and psychological effects. For this reason, the primary element in creating occupational safety is people. In addition to human safety, environmental safety, and production safety are also among the targets (Yıldız, 2021).

2.2 Management System Concept

Management is all the activities carried out to ensure that an organization or business reaches these goals by determining its goals, planning resources, creating the organizational structure, and directing and coordinating the personnel. Management includes functions such as planning, organizing, directing, and controlling. It also ensures that the organization achieves its goals by effectively using human, material, and financial resources. The management

system is a structure designed to determine the goals of an organization and to determine the policies, processes, procedures, resources, and roles necessary to achieve these goals. A management system is used to organize the operation of the organization, measure its performance, and continuously improve it. The management system is usually established and implemented within a specific standard or framework. For example, standards such as ISO 9001 (Quality Management System), ISO 14001 (Environmental Management System) or ISO 45001 (Occupational Health and Safety Management System) guide organizations in creating and implementing management systems in a specific area. These standards include specific principles and implementation requirements for organizations to ensure continuous improvement and customer satisfaction. Different standards can be established in businesses, but generally, ISO 9001 and ISO 14001 systems are primarily installed. These management systems do not include occupational health and safety issues. For this reason, the OHSAS 18001 standard was created and published by the British Standards Institute (BSI) regarding occupational health and safety. OHSAS 18001 is a milestone in determining and implementing Occupational Health and Safety Management System (OHSMS) standards. The Occupational Health and Safety Management System provides a framework for managing occupational health and safety risks in workplaces and enables businesses to adopt a systematic approach to reduce these risks.

The formation of OHSAS 18001 started with the need determination step. The increase in the number of occupational accidents and occupational diseases in industrial enterprises has highlighted the need for occupational health and safety management, and the need to establish an international standard to ensure safe working conditions in workplaces has emerged. A series of workshops and meetings were held to establish an international standard for the Occupational Health and Safety Management System. In this process, standards were determined with the participation of experts from different countries and sectors to develop standards.

OHSAS 18001 standards were developed by the British Standards Institute (BSI) to determine internationally accepted occupational health and safety management system standards. OHSAS 18001 standards were published in 1999 and are internationally accepted as occupational health and safety management system standards. OHSAS 18001 has become a comprehensive management system standard that guides businesses to improve occupational health and safety performance and minimize occupational accidents and occupational diseases. This standard was later turned into an international standard under the name ISO 45001 (Erkan, 2018).

The ISO 45001 standard can be integrated with all management systems. The basis of this standard is the PDCA cycle, as in other management systems. The PDCA cycle was put forward by W. Shewharts Deming (1939) as an option

to ensure continuous improvement by organizing the production systems of businesses (Aydemir, 2008). PDCA Cycle steps and general explanations are given in Figure 3.

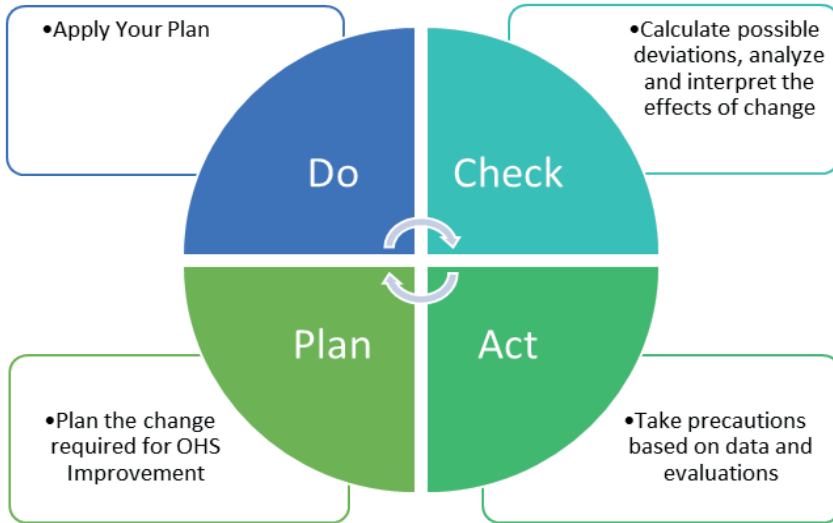


Figure 3: PDCA Cycle

2.3 TS EN ISO 45001 OHS Management System

Occupational health refers to the protection of the physical and mental well-being of employees. This includes ensuring proper nutrition and rest, managing stress, and protecting against workplace hazards. Occupational safety covers all aspects of physical, mental, and social health and safety in a workplace. It is the umbrella of the organization's efforts to prevent injuries and hazards in all work environments. Occupational safety focuses on reducing risks in workplaces. Occupational health and safety (OHS) aims to improve working conditions and environment and appears as a strict and necessary order that deals with the prevention of work-related injuries and diseases, as well as the protection and improvement of the health of employees (Demirel, 2022). Occupational Health and Safety deals with all aspects of health and safety in the workplace and has a strong focus on the primary prevention of hazards. Its purpose is to prevent accidents and harm to people resulting from work-related activities.

For decades, organizations have sought continuous improvement, expressed through increasing productivity, providing excellent service, maintaining sustainability with their environment, social responsibility, and awareness, and focusing on the physical, psychological, and social well-being of their collaborators (Kaygusuz & Kaygusuz, 2014). This has led to a commercial interest focused on the implementation of various management systems

under some standards such as ISO 9001, 45001, 14001 and 31000 (Abreu, 1996). On the other hand, the absence of an ISO standard on Occupational Health and Safety has emerged as a deficiency for companies that want to certify quality, environment and health and safety. As a result, it was decided to use an international standard for occupational health and safety. It is of great importance that prevention technicians and companies prepare for the transition, especially when the standard in question is designed in line with the remaining ISO management standards according to the new High Level Structure. ISO 45001 implements the ISO High Level Structure (HLS), which is common to all ISO standards. Some of the changes between ISO 45001 and OHSAS 18001 stem from common HLS and some are specific to occupational health and safety.

The main objectives of the ISO 45001 standard, which was created by the International Standards Organization (ISO) technical board project committee in June 2013, are to increase the volunteerism of senior management and ensure the inclusion of employees in the system. Another purpose of ISO 45001 is to include employers of purchasing companies and subcontractors, as well as employees, in the process and to provide conditions for working by paying attention to the risks in the business. In addition, consulting the information of all relevant parties according to ISO 45001 will increase the effectiveness of OHS activities in enterprises (Kurt, 1999).

ISO 45001 is the currently used and certifiable occupational health and safety standard published after the OHSAS 18001 Occupational Health and Safety Management System. The ISO 45001 standard was announced on the ILO's official website on March 12, 2018 (Gümüő, 2021).

In our country, certifications started to be made because TSE accepted the ISO 45001 standard in April 2018. The OHSAS 18001 standard was repealed in March 2021. This ISO 45001 standard provides important advances in terms of OHSAS, such as strengthening the role of "senior management" in the organization of management systems. The International Organization for Standardization (ISO) has developed this standard called ISO 45001 "Occupational Health and Safety Management Systems: Requirements" with the main goal of contributing to the prevention of occupational accidents.

By implementing ISO 45001, the company ensures continuous improvement of its OSH system and can minimize or eliminate risks to personnel and other relevant stakeholders by reducing the likelihood and recurrence of accidents and hazardous situations and improving occupational health and safety in general. ISO 45001 certification is proof that the company complies with legal requirements regarding OSH and focuses on continuous safety improvement in its operations. This gives both customers and potential new employees and partners a positive impression of the company. When

employees stay healthy, absences and turnover are reduced, limiting the decline in productivity and healthcare costs. Additionally, the standard reinforces the importance of collaboration between management and employees.

To establish a functioning and constantly improved occupational health and safety management system, it is necessary to keep the building blocks of the system, management, employees, and other relevant parties in communication. Good communication is important and a priority for the system to function. To avoid problems during the implementation of the system, all processes should be prepared so that they can be controlled and measured at regular intervals (Çakmak, 2019).

This standard aims to help organizations provide a safe and healthy workplace for employees and stakeholders. In this way, it contributes to the prevention of work-related injuries and health problems, and health and safety performance is constantly improved.

2.4 TS EN ISO 45001 Standard Clauses and Basic Elements

TS EN ISO 45001; It is our occupational health and safety management system standard. It is a whole created with the main headings of Scope, Binding References, Terms and Definitions, Context of the Organization, Leadership and Employee Participation, Leadership and Commitment, Planning, Support, Operation, Performance Evaluation and Improvement.

Scope; It determines the scope of ISO 45001. The scope of ISO 45001 includes the business activities, business processes, employees, and other interested parties of the organization that decide to implement the occupational health and safety management system. The organization is obliged to meet the requirements of ISO 45001 within the scope it determines and to continuously improve its occupational health and safety performance.

This scope may vary depending on the nature, size, and complexity of the organization's business activities. Determining the scope is done by considering the organization's occupational health and safety risks, legal requirements, customer expectations, and other relevant factors.

The areas where ISO 45001 will be applied and the areas where it will not be applied should be clearly stated. This ensures the correct implementation of standard requirements and systematic improvement of management.

Under the title of binding references, the standard refers to other documents to which it refers.

Each term in the standard must have a clear and consistent meaning for the interpretation and application of the standard. Therefore, under the heading "Terms and Definitions" it defines the terms and concepts used in the standard to provide a specific understanding of the terms.

For example, the term “Employee” has a specific meaning in ISO 45001 and is defined in this section. Additionally, terms such as “Business” or “Risk” also carry a specific meaning in the standard and are defined in the “Terms and Definitions” section.

To apply the standard, the organization must be familiar with all concepts under the heading of terms and definitions. Because a clear definition of terms and concepts ensures consistent interpretation of the standard. It also provides clarity to users of the standard on how terms and concepts are defined by the standard. In this way, it ensures the correct implementation of standard requirements and supports the effective establishment of the occupational health and safety management system.

The Context of the Organization section describes the internal and external factors that must be understood and determined by the context of the organization. The organization must identify external and internal issues that affect the achievement of its stated purpose and the intended outcomes of its OH&S management systems. When determining these external and internal considerations, the organization needs to understand the needs and expectations of employees and other interested parties. When determining the scope of the OHS management system, the organization should evaluate the external and internal issues it has determined, take into account the needs and expectations of employees and other relevant parties, and the activities planned in the processes or carried out before the system installation. Thus, it determines the limits and applicability of the OHS management system.

The standard requires the OHS management system to cover the activities, products, and services within the control and influence of the organization that may affect the organization’s OHS performance, and the scope must be in the form of documented information.

In the leadership and employee involvement section, it is stated how to determine the leadership role of the organization’s top management regarding occupational health and safety. The standard specifies the articles in which senior management should provide leadership and commitment regarding the OHS management system. In addition, the standard expects the creation, implementation, and continuity of an OHS policy that meets the items it determines by the senior management. In the same section, the requirements that must be followed in determining corporate authorities and responsibilities, obtaining employees’ opinions, and processing employee participation processes are specified.

Planning is the process of determining the steps to be taken to achieve the goals set to improve occupational health and safety performance. This process is a fundamental step to ensure the effective implementation of the occupational health and safety management system. The planning process is an important

tool for continuously improving the organization's occupational health and safety performance. In the planning section, planning can be answered to the questions of what kind of activities will be organized to determine risks and opportunities, how hazard identification and risk and opportunity evaluation studies will be carried out, how the determination and evaluation of legal and other conditions will be followed, OHS targets and what to pay attention to in planning to achieve them. The activities and planning principles are stated and explained.

The support process refers to the process of providing the resources and processes necessary for the effective implementation of the occupational health and safety management system. This process provides the infrastructure and resources needed to improve the organization's occupational health and safety performance. This ensures the effective implementation of the occupational health and safety management system and the continuous improvement of occupational health and safety performance. The standard support section expects the organization to identify and provide the resources needed to establish, implement, maintain, and continuously improve the OHS management system. It also requires it to determine the competencies of employees, to ensure the competencies of employees based on appropriate education, training, and experience, and to create and maintain appropriate documented documentation as proof of competence. In addition, it is expected that employees are aware of the following issues:

- OHS policy,
- OHS targets,
- Benefits of improved OHS performance,
- The contribution of their active participation in the OHS management system,
- The effects and consequences of not fulfilling the requirements of the OHS management system,
- Incidents and the results of related research,
- Hazards, OSH risks, and activities determined regarding them.

Communication is the process of maintaining the knowledge required to effectively live in the occupational health and safety management system. The communication process is the most basic way that can be used to ensure that employees are aware of getting their support. In the communication section, the standard specifies that the organization must determine what, when, with whom, and how it will communicate, and all the processes it must comply with and follow while doing this.

The organization's OHS management system must be documented by

the principles determined in the documented information section of the standard. In this section, the standard primarily requires that documented information have an area for identification and explanation, a determination of its format, and an area for review and approval for suitability and adequacy. In the establishment of the OHS management system, the organization must determine the writing format and start keeping documented information with this format.

The standard requires the organization to plan, implement, control, and maintain the processes needed to meet the requirements of the OSH management system through those described in the “operational planning and control” section. This section also explains how to create the most basic processes and procedures that form the backbone of the OHS management system, such as eliminating hazards and reducing OHS risks, emergency preparedness and response, change management, and purchasing.

After the OHS management system is established and started to be implemented, monitoring, measurement, analysis and performance evaluation, conformity assessment, and internal audit are required to evaluate the process. The organization must establish, implement, and maintain monitoring, measurement, analysis and performance evaluation, conformity assessment, and internal audit processes. The path that the organization should follow in carrying out these studies expected by the standard is explained in the “performance evaluation” section of the standard. The same section also includes management review principles. Management review is one of the most important steps for the OHS management system to achieve its purpose. The organization must ensure the continuity of the suitability, adequacy, and effectiveness of the OSH management system and, for this purpose, must review the OSH management system at intervals planned by senior management.

The standard expects the organization to identify opportunities for improvement and carry out the activities necessary to achieve the intended outcomes of the OH&S management system. He explained the principles on which the organization should realize these expectations in the “improvement” section. All the details that the organization must create and implement for the concepts of standard, incident, non-conformance, corrective action, and continuous improvement are given in this section.

2.5 OHS in Vocational and Technical Anatolian High Schools

Vocational and technical education is a type of education that aims to provide individuals with the skills and knowledge required in a particular profession or sector. This education, unlike traditional academic education, aims to provide practical skills in a specific profession and offers students the opportunity to specialize in that profession. Vocational and technical education programs include theoretical knowledge as well as workshops, internships,

and applied training opportunities. Thus, students have the opportunity to translate theoretical knowledge into practice and gain the necessary skills in the relevant profession.

Vocational and technical education programs can be offered in a wide range and can be targeted to a variety of sectors. These programs offer the opportunity to specialize in various fields such as industrial skills, trade skills, healthcare, tourism and hospitality, information technologies, agriculture, construction, automotive, and fashion design.

Vocational and technical education programs aim to provide students with the knowledge, skills, and competencies necessary to perform a certain profession. These programs often also offer internship or applied training opportunities, allowing students to combine theoretical knowledge with practical experience. This way, students can quickly integrate into the workforce when they graduate.

Vocational and technical education is extremely important for the economic development and social welfare of a country. It improves the quality of the workforce and offers more employment opportunities to students. A skilled workforce increases productivity, increases competitiveness, and therefore stimulates economic growth. In addition, a qualified workforce plays an important role in ensuring innovation and technological progress and is also critical for competitiveness in international markets. A well-educated workforce can reduce income inequality and increase the overall well-being of society. In addition to skills such as business management, marketing, and finance in vocational and technical education, training programs that support entrepreneurship encourage young people to start their businesses. For these reasons, vocational and technical education is a fundamental element for the development of individuals and societies and plays a critical role in the sustainable development of societies.

Occupational safety covers not only employees but all people affected by the organization's activities. This shows that occupational safety has a broad perspective and is not limited to just preventing occupational accidents. The series of precautions that must be taken to create a safe working environment constitute the basic elements of occupational safety. These measures include identifying existing risks in the workplace, making arrangements to minimize these risks, and continuous improvement processes (MEGEP, 2005).

Occupational health and safety is an important part of vocational and technical education programs. Vocational and technical education programs; To provide students with knowledge and skills on occupational health and safety; It also includes occupational health and safety laws and regulations, occupational safety culture and awareness, recognition of hazards and assessment of risks, use of personal protective equipment, methods of

preventing work accidents and occupational diseases, emergency plans and fire safety, ergonomics and occupational hygiene in the workplace.

There are 114 vocational branches under 53 fields implemented within the Vocational and Technical Anatolian High Schools of the Ministry of National Education. Every profession has its dangers and risks. While students are subjected to training that will improve their knowledge and skills in certain areas, the issue of occupational health and safety should be considered and approached as an integral whole (Yıldız & Asan, 2022). Vocational Education Law No. 3308 aims to increase the quality of the vocational acquisition process and develop the country's human resources potential by determining standards and regulations in the field of vocational education (Akillı, 2007). In Vocational and Technical Anatolian High Schools, OHS is provided by teaching and applying safety rules in workshops and laboratories, in addition to the curriculum content. While students develop their professional skills, the importance of a healthy and safe working environment is emphasized. Thus, when graduating students step into business life, they become individuals who know and apply OHS rules and are responsible in this regard.

Risk is a part of life, But accidents don't have to be a part of life. When the right precautions are taken and risks are managed effectively, accidents can be largely prevented. Therefore, being aware of the risks and managing them can prevent accidents from being a part of life. To ensure that schools are safe for employees, students, and visitors, it is necessary to eliminate accidents from being a part of life. In this sense, the concepts of "safe teaching" and "teaching safety" go hand in hand, and it should be ensured that children and education workers, who are future citizens, are aware of the risks in schools (RoSPA, 2012). OSH Law No. 6331 covers employees, employers and employer representatives, visitors, and other relevant parties in all workplaces in the public and private sectors. In this way, it is aimed to provide a safe working environment in schools by taking the necessary precautions on OHS issues (OHS Law No. 6331, 2012).

2.6 Determination of Hazard Classes

The hazard class determined according to professions is defined in the law as follows: "In terms of occupational health and safety, the hazard group determined for the workplace by taking into account the characteristics of the work performed, the substances used or produced at every stage of the work, work equipment, production methods and forms, and other issues related to the working environment and conditions." (OHS Law No. 6331, 2012).

Determination of hazard classes is a process carried out within the framework of occupational health and safety regulations. Hazard classes are used to determine the severity of potential hazards in the workplace and are part of the risk management process.

The process of determining hazard classes is an important step within the occupational health and safety management system and helps effectively manage potential risks in the workplace. This process is important to protect the health and safety of employees in the workplace.

The concepts of Hazard class and NACE code are effective in determining hazard classes and should be known.

2.6.1 Hazard Class

Hazard class is a term used to determine the degree of severity of hazards in a workplace. According to occupational health and safety regulations, hazards are generally divided into hazard classes, and these classes provide information about the severity of the hazard and the level of risk. Hazard classes are generally defined as follows:

Less Hazardous: Hazards that do not pose a risk of death or serious injury, do not cause serious health problems, and may cause minor injuries or health problems fall into this category.

Hazardous: Hazards that could cause serious health problems or serious injuries fall into this category. It may not pose a risk of death, but there is a risk of serious injury.

Very Hazardous: Hazards that pose a risk of death or serious injury fall into this category. These hazards can cause serious health problems or permanent disabilities.

This classification is used to prioritize hazards in workplaces and manage risks effectively. Hazard classes play an important role in occupational health and safety risk assessment and risk control processes. By determining the hazard class, the precautions to be taken in the workplace are determined and implemented. In this way, work accidents and occupational diseases are prevented.

2.6.2 Nace Code

NACE is a system used to statistically classify economic activities in the European Community. In Turkey, it is used by TURKSTAT (Turkish Statistical Institute). NACE codes provide the classification of economic activities and are used in economic analysis. NACE code is a system of codes used to describe economic activities. Each activity is identified and classified by a specific code. NACE codes cover many different sectors and subsectors. NACE codes classify economic activities in a standard way, enabling economic analyses and comparisons to be made at national and international levels. Therefore, it has become a common standard for classifying and analyzing economic data.

NACE code has a hierarchical structure consisting of principles and explanatory information. The creation steps are as follows: (Öztürk, 2018).

- First digit (sections) with headings identified by an alphabetical code,
- Second digit (chapters) with titles identified by a two-digit numerical code
- Third digit (groups), with headings identified by a three-digit numerical code
- Fourth tier (classes), with titles identified by a four-digit numerical code
- Fifth digit (activities) with titles identified by a six-digit numerical code.

CONCLUSION AND RECOMMENDATIONS

Management System; It is an indispensable process to create a clear culture about the system in every field, to meet the expectations of those concerned at the highest level, to fulfill legal obligations, and to ensure that all of these are sustainable, traceable and improveable. The Occupational Health and Safety Management System is an infrastructure adopted to protect the health and safety of employees and to prevent work accidents and occupational diseases. Ensuring the satisfaction of those involved in the establishment, providing quality products/services, and fulfilling legal obligations; When carried out with awareness of occupational health and safety management system, it contributes greatly to the country's economy and development.

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CHAPTER 6

PEGANUM HARMALA: A COMPREHENSIVE STUDY

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1. Introduction

Peganum harmala, commonly known as Syrian rue, is a pale green perennial flowering plant and a native of arid regions, with an extensive presence in the Mediterranean, Central Asia, Pakistan, and India. Here, it has been used as traditional folklore medicine by several tribes and cultures over the last many centuries. In Islam, it has great significance as well. The seeds of *P. harmala* have recently become an object of current scientific discourse because of their behavioral, neuropharmacological, and toxicological properties (Nedjimi2020; Gamoun, 2021; Basahi, 2023). This development was made possible with nifty and robust techniques coupled with the notable trends in psychopharmacological research (Mousavi and Moudi2020; Li et al., 2023; Abbas et al., 2021; Nadia et al.2022; El et al.2024; Niazi et al.2021; Abduraimov et al., 2023).

It is indeed an unclaimed fortune of multidimensional pharmacological activities ascribed to *P. harmala*; thus, it is becoming an exclusive area of research for scholars from various scientific domains (El et al.2024; Niazi et al.2021; Nadia et al.2022; Dhief et al. 2022). This comprehensive study thus aims to describe the botany, ethnopharmacological and religious importance, phytochemistry, mechanism of actions, toxicology, and evaluation of *P. harmala*. This, in consolidation, aspires to lay the foundation for reconsideration of *P. harmala* in the traditional and modern systems of medicine, besides the purging of controversies associated with the unintended toxicity that this species is known to cause today. *Peganum harmala* L., also known as Harmel or Syrian rue, is a well-known species belonging to the Nitrariaceae family worldwide. *Peganum* species have significant ethnomedicinal values for a variety of ailments. The most promising objective addressed is *P. harmala* L. subsp. *harmala*, which is a culinary medicine since primordial times, used by traditional healers as a cathartic and emetic and in religious activities. (Zhu et al., 2022; Arif et al.2022; Shahrajabian et al., 2021; Sharma et al.2022; Abbas et al.2021; Afzal et al.2021; Rashid et al., 2023)

1.1. Background and Significance

The plant, *Peganum harmala* L., has many folk names in different countries, such as Kure, wild rue, and Syrian rue, from Pakistan to Turkey. *P. harmala*, which falls into the order Nitrariaceae and family Peganaceae, is recognized as a subject of ethnomedicine in different cultures. The traditional use of the plant in North and West Africa, Turkey, and Iran has persisted for centuries. *Peganum harmala* is especially valued in Iran and Afghanistan, where it has been used as a psychoactive substance and for the treatment of various disorders for centuries (Abduraimov et al., 2023; Najem et al., 2020).

Numerous and contradictory reports from ancient to present times about psychoactivity, hallucination, photophobia, associated sedation and

stability, neuropharmacology, erythrocytic behavior, leather tanning, pesticide, nematocide, antibacterial, antifungal, antiprotozoal, antiviral, hypoglycemic, hypolipidemic, abortifacient, uterotonic, antihelminthic, male fertility, sedative, and neurological treatments are frequently reported. (Karamkhudoeva et al.2021; Almoneafy, 2020; Hussain et al., 2023; Benamara et al.2022)

Thus, investigations into this plant from many aspects of ethnopharmacology are of great importance, integrating the old with modern pharmacy and rational therapy. The extensive uses of *Peganum* as green and organically produced substances can increase employment and provide the opportunity to improve the socio-economic situation, creating a decreasing dependence on single valuable drugs relied upon with hard work (Sharma et al.2022). Toxicity, quality, and dosage concerns have to be addressed. In one approach, dose values have to be established by traditional practitioners, and the doses of alternative forms have to adapt to these doses. In another approach, the uptake of a toxic substance at a psychoactive dose without intoxication can be achieved only if the public is carefully taught in the correct application of hazardous organic products. The bottleneck of all of these is the standardization of plant extracts, particularly based on traditional methods. Ethnopharmacology is integrated with pharmacovigilance to recognize and develop new active remedies (Gökkaya et al.2023; Niazi et al.2021).

1.2. Research Objectives

The objectives of this comprehensive study on *Peganum harmala* are to cover the review of existing literature concerning mainly its toxic and addictive properties, as well as the existing and potential therapeutic uses. Furthermore, we aim to narrate the botanical description of *P. harmala*, list the main phytochemical compounds reported, and discuss its most relevant pharmacological properties (both for indoor administration and external use). *P. harmala* is a monoamine oxidase inhibitor, interacts with a number of targets in the central and peripheral nervous systems, and is also toxic. This study aims to give a comprehensive assessment of its normal dose, toxic levels, and proven toxicity through both a review of the most relevant literature about the molecules and the scientific evidence of harmful effects. Moreover, traditional and pharmaceutical uses will be disclosed and reported (Araba et al.2024).

The modern scientific validation of personalized uses of such substances is likely to be the future of this area of study. We expect to close the existing gap in the literature about this substance, discussing both the good and the evil of its administration. This can be crucial when considering the history of traditional use already in place in multiple cultures: its use as incense for psychoactive experience, its effectiveness as an anthelmintic, and psychoactive

properties. We have six main questions applied to *P. harmala* whole drug and all its parts, which are derived from field grey literature related to appreciating the beneficial and detrimental effects of *P. harmala* based on its chemical, pharmacological, and toxicological profile, as well as its traditional uses. These research objectives are derived based on current evidence gaps for *P. harmala* to foster future research. This gives a unique approach to appreciating the whole plant's beneficial and detrimental uses in addition to its extracts, which calls for consciousness during research (Rezzagui et al.2020).

2. Botanical Description

This herb is annual. Aerial stems ascend through 30 to 100 centimetres tall, rarely reaching up to 200 cm. The major taproot is fleshy and dark brown both outside and inside; branches are many, and primary roots are moreover branched, creating tiny fine rootlets. The roots are heavy. The aerial system can produce many lateral stems from the base; generally, the plants are found to be much branched at the base. Stems are conspicuously green and filled with a soft pith, tough but easy to break. The surface is rough, and irregular longitudinal grooves run below it. It is easy to recognize from the internal region or cross sections, as the pith is continuous without any cavity. The entire plant is smooth and glabrous, green, and characterized by the strong smell of the dried plant. This plant is sticky due to thick exudates, creating toughness with a friction sound when rubbed between the fingers (Shahrajabian et al., 2021).

The vegetative part, generally called shoots, branches emerge from the flexible to slightly hard growth tissue present within the stem. These branches usually appear with a smooth surface. The base of the stem is swollen, giving a club-shaped appearance or rooting in soil. The shoot extends out and produces many lateral, leaf-bearing leaves upon each internode. Leaves contain a short petiole and are more than 6 cm long, entire, glabrous, alternate, and recurved-pinnate, somewhat pungent, dark green above, glabrous, and light green beneath, sometimes darker with venial coloration, and smell aromatic when crushed. The leaves of the stem vary little from one another in size, style, and phyllotaxy. The arrangement of leaves in all cases is some distance apart, spacious, and regular. Leaves of the vegetative part emerge just below the inflorescence; a suprachoroidal apposition of lateral leaves of the main bracts is distinctly observed. Numerous quantities of leaves exist on the upper vegetative part, where leaves are distant, and leaves grow close on the lower portion. The Phyto form is therophyte, and its vegetation begins in early spring depending on the location. Flower buds appear from early to late May, and flowers start blooming by early June and last until early August. The seeds mature from early July to late August, depending on the climate zone (Niazi et al.2021).

2.1. Taxonomy and Nomenclature

Peganum harmala is a perennial herbaceous plant that belongs to the family Nitrariaceae. The plant family Nitrariaceae belongs to the order Sapindales, which is in the class Dicotyledoneae of the phylum or division Magnoliophyta. The botanical classification of *Peganum harmala* L. is as follows: - Kingdom: Plantae - Phylum: Magnoliophyta - Class: Magnoliopsida - Order: Sapindales - Family: Nitrariaceae - Genus: Peganum - Species: *Peganum harmala* the binomial name generally consists of the generic name first, which is followed by the specific name. The scientific name refers to the species under the genus Peganum, identifying a single species with that name. There are a few synonyms for *Peganum harmala* as well as a variety of common names. The synonyms illustrate various changes in the naming of the species over time and across different botanical traditions. The common names also reflect references to distinct cultural origins. Whether in science or in traditional knowledge, using the same name for a plant can save time and avoid confusion. Moreover, scientific names are essential for scientific communication. Biodiversity and taxonomy are important fields for understanding the history of species and evaluating the evolutionary potential of plants. The definitions of species and genus are categorical and often involve geographic regions and historical processes. Monophyletic relationships are revealed by the classification of families and are more likely to reflect the evolutionary history of the group. The study of Plantae must have a foundation in the science of taxonomy. The comprehensive study of *Peganum harmala* will have to include information about the researchers who collected the various species and any validation according to the nomenclature. Synonyms recovered for species from different sources have been published in different floras, which will be discussed below, and thus scientific value may be added to the medical knowledge (Rashid et al., 2023).

2.2. Geographical Distribution

Peganum harmala is native to North Africa, Southern Europe, and Western Asia, distributed over the belt at latitudes of 10–45°N. It mainly grows in arid and semi-arid areas, such as Pakistan, Iran, Northwest India, Spain, Greece, Syria, Tunisia, Algeria, Egypt, Iraq, Jordan, Israel, Saudi Arabia, Central Asia, and some areas of North and East China. *P. harmala* has become a new invasive plant in some regions outside this range through natural dispersal. Accordingly, *P. harmala* is mainly distributed in Western and Central Asia. *P. harmala* is distributed in extremes of temperatures and precipitation across different native environments in the world (Ahmed et al., 2021).

P. harmala is mainly distributed in the climatic types of Mediterranean, temperate, and warm, with cold and wet winters and hot and dry summers.

Under the conditions of an annual average temperature of 6–18 °C, it grows well. It is distributed mostly on well-drained alluvial, loessial, red, and brown soils with light to moderate salinity. The distribution zone of *P. harmala* grows in areas dominated by soil organic matter, soil texture, pH, and soil calcium concentration, and does not thrive in high-concentration sulfur, volatile salt, and chloride soil. The fruits and roots of *P. harmala*, in recent years, have been spread by human activities, animals, or elements, to be able to disperse and propagate, and its current distribution is not limited to the region of original distribution. The above distributions are included in the combined characteristics of dispersibility and suitable growth environments of hyperaccumulators. Understanding the specific distribution patterns of species is important in the development of plant exploitation as a research subject. It can provide a framework for the conservation management of medicinal plants and the protection of threatened or endangered plant species in the maintenance of their distribution. The results show that there are some selective pressures that have a significant impact on the adaptive process to the distribution and growth range of *P. harmala*, and some factors of selective pressure themselves change on the scale of distribution. Developing biocidal agents based on ethnic and regional distribution and irrigation of *P. harmala* will be effective. The effect of local human activities limits its natural expansion to the south. Climate change has also had an effect, which has been verified to promote its natural spread (Kharchoufa et al.2021; Zhu et al., 2022).

3. Chemical Composition

The chemical composition of *P. harmala* has been studied, and various bioactive compounds are identified in this plant. Some studies have mainly focused on alkaloids. Alkaloids are nitrogen-based compounds that act as bases in water. They are present in about 20% of plant species. Alkaloids occur in families and subfamilies of plant species and are often restricted to a single taxonomic group. Because of the alkaloids identified in *P. harmala*, the significant quantities of alkaloids are implicated in the biosynthesis, and the pharmacological properties of this plant are ascribed to the alkaloids. The first methods used to extract, identify, and/or quantify either all types of alkaloids or a specific type depended to a large extent on the method of extraction that was used during the analysis (Kharchoufa et al., 2021; Araba et al.2024). The various types of chemical constituents of *P. harmala* were elucidated by employing different techniques for extraction and analysis. The anti-inflammatory, antiulcerative, antimicrobial, antidiabetic, larvicidal, insecticidal, pesticidal, and antimolluscicidal effects of the alkaloids or other phytochemical bioactive compounds on the crude root bark and whole plant extract were investigated, and the total alkaloidal and phytochemical content present in the seeds of *P. harmala* and the medicinal plant was reported to act as nematicidal, biocidal, or bactericidal agents. Several synergistic interactions

occurred at a biological level among the alkaloids of *P. harmala*. The hepatoprotective effect of the alkaloids of *P. harmala* is due to the combination of α -pyrene and/or α -isoquinoline and β -carboline or α -carboline (Arif et al.2022). The method of storage and the type of location or environment in different regions also affect the type, quantity, and active constituents of the concerned plant. There are many bioactive chemical compounds present in the seeds of *Peganum harmala*, which are utilized for different purposes due to their wide potential pharmacological effects, but some alkaloids are reported for their toxic effects (Wang et al.2022; Kamran et al., 2021; Melloul et al., 2022; Najm and Sultan2022; Kaya & Akbas, 2023).

3.1. Alkaloids

Peganum harmala is a plant containing the psychoactive alkaloids harmine, harmaline, and tetrahydroharmine, as well as harmalol and harmalicine. The tryptophan-dependent β -carbolines, such as harmine and harmaline, and the corresponding 1-methyl substituted β -carboline harmalol are the main bioactive components. Numerous scientific investigations of the *P. harmala* plant extracts and isolated alkaloid mixtures have been conducted. The alkaloids were primarily assessed for their psychoactivity and serotonergic effects, followed by a wider evaluation of biological activities and therapeutic potential. The β -carbolines have been linked to diverse therapeutic effects, including antidepressant-like and antinociceptive effects, antioxidant, antidopaminergic, antipyretic, antimicrobial, anticancer, anti-acetylcholinesterase, antiestrogenic, antitubercular, and immunomodulatory effects, among others. There is an increasing awareness of the potential of the legal plant alkaloids in traditional medical paradigms, with the growing interest in the use of alternative and complementary medical practices. Harmine, harmaline, and tetrahydroharmine are the three main bioactive alkaloids present in the extract of the *P. harmala* seeds and various plant parts containing psychoactive properties. These compounds are widely reported to occur in the *Peganum* genus and other plant families. The biosynthesis of these alkaloids begins with the cyclization of the tryptophan derivative in the presence of prenyl-transferase. The basic β -carboline moiety consists of a double-ring structure that is fused by one benzene ring and one pyridine (Anstis et al.2023; Doskaliyev et al.2021). The large aromatic structure of these β -carbolines confers an adaptable chemical structure, which in turn leads to their interaction with diverse biomolecular targets present in the body. Although β -carbolines of various structures have unique pharmacological effects and toxicity, such as the ability to function as a receptor agonist or antagonist, their effect is typically via an allosteric attractive site. The β -carboline compounds noted for psychoactivity and minor toxicity belong to the two primary phytopharmaceutical *Peganum harmala* alkaloids, harmine and harmaline. Harmine and harmaline consist of free hydroxyl

in the activated and most stable form as the β -carboline form. These are the main bioactive compounds within the *Peganum harmala* plant and its extract (Sharma et al.2022; Sharifi-Rad et al.2021; Niazi et al.2021; Saeedeh et al.2022)

4. Traditional Uses

This section aims to shed light on the previous and current utilization of *P. harmala* in folk medicine and associated socio-cultural and spiritual practices, providing information on the ritualistic nature of *P. harmala* use among specific ethnic or religious communities. Such ethnobotanical studies have been deemed particularly potent along with a transdisciplinary examination of medicinal plants, as such ethnographic or indigenous knowledge may offer valuable information that can be utilized in scientifically valid research. Consideration of specific socio-cultural practices can also usefully highlight highly susceptible, high-risk, very remote, or geographically isolated communities that may approach medicinal treatment in non-traditional ways, particularly utilizing herbs (Fahmy et al.2021).

Peganum harmala L. is widely used in traditional healing systems throughout its range. In Afro-Asian countries, mostly in Iran, India, Turkey, and Arabia, the plant is prescribed to alleviate numerous diseases, particularly those associated with exorcism, envious light, and fire. In China, a survey suggested that a significant percentage of inhabitants use the seeds of the plant as medicine for treating various ailments. It is also commonly seen to be used as a ritual rather than a medicinal plant throughout certain communities in North Africa, Cuba, South America, Mexico, Jordan, Lebanon, India, and Pakistan (Brito-da-Costa et al.2020).

4.1. Historical and Cultural Significance

Peganum harmala has played important historical and cultural roles in different parts of the world. *Peganum harmala* is an old-world herb belonging to the family Zygophyllaceae. Its seeds and roots were identified from the ruins of ancient Persia, Mongolia, and Egypt, which had drug properties. It had both strong medicinal properties and religious significance for the ancient Brahmins. They would mix it with milk and a dash of sugar, drink it, and called it Soma. The plant was thought to be the 'progenitor' of the Avesta and the heliotrope. It was used as a desiccant and thirst quencher in the desert as well as an offering. The conquerors of the desert, the Aryan-speaking peoples, came to worship it, first as a deity and later, when the horse sacrifice became the predominant form of worship, to acknowledge that this plant made ritual experience possible. All the indices point to the conclusion that the powers of the Indian Soma and the Haoma mentioned in the Avesta came from *P. harmala*, though some other solanaceous species were also used in some areas for the same purpose (Calderoni et al.2021).

In addition to ritual uses, scattered accounts are available about some Muslim saints using it for revelatory purposes in the moving spirits. It is a matter of considerable importance to collect all the accounts, motives, and outcomes to detect some sort of consistency or uniformity in the results, and thus to define more clearly the psycho-pharmacological properties of the plant and the texts upon which they rest. Overall, *P. harmala* seems to have been a part of all mystical experiences throughout the Islamic world, particularly that which is Sufism. The traditional and serious scientific knowledge of human health and medicine is contained in folklore based on locality, customs, traditions, and religious beliefs, which people inherit from their ancestors. Indigenous knowledge of different communities is disappearing rapidly, particularly with rapid social, economic, cultural, and environmental change in both developed and developing countries. Due to the modernization and glamorization of drugs, several benefits and traditional knowledge of these plants have been lost. A few herbs still have cultural, spiritual, social, and religious importance. The detailed uses of *P. harmala* are given below (Semwal et al., 2021).

5. Pharmacological Properties

Since ancient times, humans have benefited from the therapeutic properties of natural resources. *Peganum harmala* has been widely used by humans since ancient times for the treatment of various ailments. There is a solid foundation for understanding the toxic and psychoactive effects of the biological compounds such as beta-carboline and its derivatives that *P. harmala* consists of. The harmala alkaloids in *P. harmala* have exhibited biological activities, such as ameliorating antimicrobial activities, and anti-inflammatory, antioxidant, anti-mutagenic, antibacterial, and cytotoxic activities (Sharma et al.2022; Abbas et al., 2021). The beta-carboline alkaloids that belong to this plant are psychoactive compounds. Interestingly, the bioactive effects of *P. harmala* can elucidate and support the potential applications mentioned in traditional medicine. Moreover, some of its compounds are currently known as top-priority critical compounds. On the other hand, there are two others different harmala alkaloids in *P. harmala* extract, which showed significant activity on the growth of human uterine cancer cells. Some clinical studies have been performed on the effects of the seeds of *P. harmala*. These observations clearly match with the traditional uses of *P. harmala* in cancer therapy (Sharifi-Rad et al.2021). This review represents a study on the pharmacological properties of secondary metabolites present in *P. harmala*. Besides, the possibilities for finding novel pharmaceutical agents for disease treatment based on the results that have already been obtained are addressed in the review. Overall, our short review paper classifies and answers a number of questions within the scope of *P. harmala* for interested researchers. In conclusion, more in vivo and in vitro studies with beta-carboline and harmala alkaloids against diseases are needed

to promote the use of bioactive compounds to treat diseases in humans or animals. (Zhu et al., 2022; Akhtar et al.2022; Gökkaya et al.2023; Rezzagui et al.2020; Mamadalieva et al.2022; Jalali et al.2021).

5.1. Antimicrobial Effects

5.1. Antimicrobial Effects

The potential for *Peganum harmala L.* to work against a broad spectrum of pathogens is investigated through in vitro research. Several studies have described the pharmacological effect of *P. harmala* on pathogenic and harmful microorganisms. Crude extracts, pure compounds, and ample crude extract fractions isolated from *Peganum* species have asserted productive antimicrobial activities; for bacteria, the MIC and MBC values are 8–3.46 µg/mL; for fungi, the MIC and MFC values are 0.625 µg/mL and 1.25–2.5 µg/mL, and for viruses, the TCID50 and EC50 values are 0.625 and 1.29 µg/mL, respectively (Khalid et al.2024; Hayat et al.2024; Rathore et al., 2023; Selem et al.2024). It has been demonstrated that harmine, harmaline, harmalol, and vasicine are the main active antimicrobial agents. Lately, several publications have examined compliance with standard characteristics and essential guidelines for preclinical and clinical research to treat infections and propose such a possibility in a timely manner (Choudhary et al.2021; Karakoti et al.2023; Sharma et al., 2023; García-Carrasco et al.2023; Barati and Chahardehi2023; Abdelmigid et al.2022).

P. harmala has demonstrated antimicrobial effects; it suppresses a large array of Gram-positive and Gram-negative bacteria and fungi. Researchers have suggested that the antibacterial activity is achievable by targeting DNA and protein synthesis and uncoupling the microorganism's electron chain, which dissipates energy (Filban et al.2022). Up to a certain extent, this may justify why, traditionally, *P. harmala* has been employed to treat a plethora of skin infections due to bacteria. Therefore, researchers recommend further exploration of the pharmaceutical potential of this plant. Studies based on the principles of ethnopharmacology suggest that some natural compounds, either from plants or chemically synthesized, protect against skin infections. Harmine, harmaline, harmol, harmalol, and vasicine are the main active components of biomedicines. Furthermore, the crude alcoholic extract of the seeds and other parts of the plant, harmalol, and their derivatives have broad-spectrum antimicrobial coverage against a series of both Gram-positive and Gram-negative bacteria, as well as other microorganisms; this could justify why *P. harmala* holds the therapeutic status of a parasiticide, acaricide, and insecticide. (Zhu et al., 2022; Khalid et al.2024).

5.2. Antioxidant Activity

Oxidative damage to cells and macromolecules, metabolic imbalances, or inflammatory processes contribute to the pathogenesis of many chronic and acute diseases and are involved in the natural process of aging. This deleterious process can be limited in two ways: by using natural antioxidants present in many foodstuffs and plants that can neutralize the adverse effects of free radical species or by the use of exogenous antioxidants. *Peganum harmala* contains several bioactive components that have shown potential antioxidant capacities (Mounira et al.2022; Khalid et al.2022; Kaya & Akbas, 2023). A plethora of results confirm that methanolic extracts have strong antioxidant properties, as indicated by a wide range of experimental models. These beneficial effects are closely related to the presence of bioactive components, primarily three principal indole alkaloids. Various assay methods are used to study the antioxidant activity of compounds, such as radical scavenging, ferric reducing antioxidant power, oxygen radical absorbance capacity, and lipid peroxidation assays. The basic principle of these techniques usually includes single electron transfer or hydrogen atom transfer, or a mixed mode of actions. However, a more potent set of antioxidant compounds is present due to the additive and/or synergistic interactions of phytochemicals in *Peganum harmala*. The present section reviews the studies that have explored bioactivities associated with *Peganum harmala* antioxidant capacities. The potential therapeutic range of antioxidants in relation to aging and disease prevention makes the topic truly significant (Melloul et al., 2022; Kemel et al.2024). To optimize antioxidant benefits, the proper method to prepare this plant is also discussed, as well as a comparison of *P. harmala* with other prevalent natural antioxidants. An efficacious amount of the ingestion doses is crucial in practical health applications. Each plant may develop both desirable and undesirable traits, and an evaluation of *P. harmala*'s safety profile is warranted when the medicinal dosage is recommended to consumers based on the contents of its radical-scavenging compounds. Profiles should include evidence for the losses that can harm human health, but in general, *P. harmala* is viewed as safe and is approved for use in dietary ingredients by several authoritative organizations. Besides, certain research has identified the potential capacity of alkaloids and other bioactive components in the seeds of *Peganum harmala* to protect from inflammatory liver damage. (Abbas et al., 2021; Senhaji et al.2022; Djarmouni et al.2022; Ahmed et al.2021).

6. Toxicological Aspects

It is imperative to thoroughly understand the safety of a potential herb prior to its use in traditional medicine or as a food additive. Following the administration of an active alkaloid constituent of *P. harmala*, harmine, to rats and mice, the maximum tolerated single doses were found to be 250 and 125 mg/kg b.w., respectively. Fluctuating systolic, diastolic, and mean

blood pressure, as well as convulsions, were induced at these harmful doses in an earlier study of the whole extract. It was concluded that acute three-day intravenous dosage studies had not resulted in toxicity at 0.375 mg and 30 mg/kg in mouse and dog models, respectively, but a dose of 300 mg/kg resulted in negative side effects leading to loss of consciousness within 1 minute, requiring euthanasia (Gökkaya et al.2023; Miao et al.2020; Aryan, 2022). The clinical application of *P. harmala* Qur'anic and water extracts, and their alkaloids harmine and harmaline at their concentration, are discussed in this review related to toxicity. Doses of 200 mg of harmaline/harmine on an empty stomach to consciously locate the sacred underground mushroom suggest the lethal-to-resistant ratio is harmonious with that found in animal experiments with these hallucinogens. Consumption of 10-51 unroasted *P. harmala* seeds and three cooked seeds occasioned vomiting and intoxication, which was sufficiently potent to make all twelve patients delirious (Sharifi-Rad et al.2021; Semwal et al., 2021; Drioua et al.2023).

A potential cause for adverse effects by *P. harmala* might be its approximately equimolar concentration of harmaline and harmine, especially when taken in different amounts by different individuals or when prepared with more harmaline for idiosyncratic reasons, such as hallucinations, instead of harmine for pharmaceutical purposes (Rezzagui et al.2020; Gökkaya et al.2023; Doskaliyev et al.2021). Some discrepancies exist about this relationship, however. Although no chronic toxicity of *P. harmala* could be found in an extensive search of the literature, a deficiency of clinical research could compensate for any actual chronic toxicity differences. Administering a bolus of *P. harmala* at 366.5 mg/kg/day for 14 days significantly opposed reduced serum Na⁺ and Cl⁻ target doses of *P. harmala* (183.3 and 91.7 mg/kg/day). The 91.7 mg/kg/day localized dose increased serum total protein, glucose, and liver and kidney enzymes, reduced kidney function, and diminished spleen weight. In previous work by this same team, *P. harmala*'s acute and subchronic toxic effects also included gastrointestinal problems, muscular tremors and fasciculations, behavioral abnormalities, anorexia, weight loss, strabismus, and abnormal gait. Unlike the latest research, it was noticeable that other parameters, such as hematocrit concentrations, central nervous system damage, and liver and kidney effects, showed variations with the amount of the plant (Bettihi, 2023; Drioua et al.2023; Tekşen et al.2024; Irinmwiniwa et al.2023; Otimenyin, 2022; Bernardo & Valente, 2024).

Food and Drug Administration guidelines for acceptable drug safety were met by past animal research on the acute and sub chronic toxicity of the crude alkaloid extracts of *P. harmala*. The studies classified this substance as a directly toxic agent for the kidney, lung, heart, liver, or muscles, and for the development of cancer, due to severe abnormalities in the laboratory results and behavioural irregularities that would reduce the animal's capacity to

survive everyday life (Rezzagui et al.2020; Bettihi, 2023; Elbah et al.2023). A minimum of two complementary long-term studies in quantitative-researched rodents, a general test on poultry and cattle, and a representative practical experiment for species-specific reactions are called for in the toxicity research pathway, while more animal tests and human clinical trials are still needed to prove that the plant is harmless and beneficial for the intended use. Regarding safety, the necessity for animal studies is not absolute; only if a substance is currently existing and can be compared with a small number of bases and other components does it start a preliminary individual human biological check in the early stages of natural or synthetic compound research. The value of running animal studies in current *P. harmala* toxicity studies is vital, though, because they provide data that can be compared to previous research. (Alhawiti, 2022; Irinmwinuwa et al.2023; Semwal et al., 2021).

6.1. Acute Toxicity

6.1.1. Overview Peganum harmala can be acutely toxic to humans.

A considerable amount of strong evidence shows that the ingestion of harmaline and harmine can cause violent reactions. The severity of these effects is mainly correlated with the dosage, in addition to other individual susceptibility factors. Acute human poisoning has been reported since the 19th century, and recent case studies have investigated human exposures to concentrated harmala (Rezzagui et al.2020; Nadia et al.2022). Neurological disturbances seem to be the main adverse effects in patients intoxicated with harmala. The maximum recommended dose is reported to be up to 85 mg/kg, although an analgesic effect is achieved with much lower doses (15–20 mg/kg). Clinical studies in humans have shown that lower doses of Peganum extract (2.0–2.5 mg/kg) can decrease motor activity and increase its reaction time. There are several reports of severe harmala poisoning cases in adults. In all these cases, the patients suffered neurological disturbances, including ataxia, myoclonus, dysarthria, choreoathetosis, and seizures. In a single fatal case due to *P. harmala* ingestion, the patient died from status epilepticus uncontrollable with antiepileptic drug therapy. Vomiting was also reported as a clinical effect but was reversible. There is no hard evidence concerning the adverse effects of higher single oral exposure in humans; thus, it is recommended that the high-dose mixture is not consumed in order to avoid any of the adverse medical sequelae of Peganum cocktails. (Abbas et al.2021; Gökkaya et al.2023; Shahrajabian et al., 2021; Sadaf et al.2021).

6.2. Chronic Toxicity

A series of health complaints and cases of hospitalization following the ingestion of *Peganum harmala*-containing snuffs have been reported from some of the countries surrounding the eastern Mediterranean, with indications that long-term (habitual) consumption may lead to a range of signs

and symptoms over time. There is also a likelihood that *Peganum harmala*-containing products are in use in other societies. The numerous alkaloids, collectively termed 'Harmaline,' are deemed the toxic components of the seeds. At this stage, we must be cautious about the degree of extrapolation from these findings to the Western world. Fundamental biological variations of metabolism and underlying genetically determined detoxification mechanisms clearly show considerable variability between individuals on genetic backgrounds. Clinical trials in the Middle East may also be less likely to properly adhere to the full conditions of informed consent, as health care in the region is still of the paternalistic rather than the autonomous or client-based type. Health outcomes from trials may therefore not be reliable indexes of safety. In order to adhere to this working, the expert committee for the Safety of Medicinal Products must emphasize the following: Studies of human chronic toxicity on the potential effects of habitual use of *Peganum harmala* should be urgently conducted in the countries where it is in prevailing use. (Manal et al.2021; Rachid, 2021; Semwal et al., 2021; Achour et al.2022; Elouardi et al.2022; Mamadaliyeva et al.2022; Filban et al.2022; Moaan et al., 2022; El et al.2024).

Although no data regarding long-term human clinical studies are available, the potential for harm from chronic ingestion of combination products containing multiple biologically active substances could be inferred from available studies for the alkaloids. *Peganum harmala*-containing snuff (nasal snuffs), some of which contain DMT, are used by some societies primarily for social, religious, and medicinal purposes, including treatment of many conditions. There is a school of thought by some traditional healers based upon anecdotal and empirical evidence that preceding the wastelands of lands and subsidies is of paramount importance if we are to ascertain the potential toxic effects of the woody perennial plant *Peganum harmala* and its derivative compounds that are used as abortifacients, snuff, fumigants, and pesticides, among others. If these studies are conducted, other countries importing derivative products or using non-toxic doses of the products should also be included to prove their safety. Indeed, this epidemiological information would be the first step in assessing their safety. It would also pave the way for the development of guidelines for the control of import and export of the species and their derivative products, including demand as a constituent of snuffs from *Peganum harmala* in food and feed. The potential for a full safe exposure assessment could also be performed (Ullah & Badshah, 2024; Shah et al.2023; Karous et al., 2021).

7. Clinical Applications

The increasing interest in herbals, coupled with the recent scientific attention given to the clinical use of these substances in traditional medicine, has opened new gateways for scientific breakthroughs. *P. harmala* is a

candidate among medicinal plants that offers an opportunity to develop traditional concepts of medical sciences (Sharma & Sharma., 2022; van, 2021; Duarte et al., 2022). Many researchers have convincingly endorsed its use in clinical settings. Clinical evidence shows the anti-anxiety, antidepressant, painkilling, and anti-Parkinson effects of *P. harmala* extracts. More than ten clinical trials in different countries, along with the current wealth of indigenous knowledge of Peganum, suggest that biological activities in psychiatric disorders, Parkinson's disease, or chronic hepatitis C infections may be treated with even safer, isolated, standardized therapeutic agents from Peganum. The new trend promises a bright future for Peganum. Future research in this area can focus on pharmacogenomics, determining the applicability of quality control measures for electronic prescribing software, and safety and efficacy monitoring in well-designed observational and prospective studies. Despite significant potential, efforts to promote the clinical use of plants used in traditional settings are challenged by regulatory constraints. Moreover, the disconnection between traditional concepts and modern science further hampers clinical use. Because herbal medicines are complex mixtures, when modern science is unable to study their nature, it cannot make a statement about these patients' progress. Treatment strategies and recommendations should be validated through clinical research based on clinical evidence (Narby & Pizuri, 2021; Burns & Phillipson, 2024; Alves et al., 2021).

7.1. Current Research and Clinical Trials

Current Research and Clinical Trials: A Randomized Controlled Trial is currently being conducted. The two centers involved in the maximal sample of 140 patients will be in Vienna and Vorarlberg. The aim is to investigate the safety of oral harmine administration in patients with treatment-resistant psychotic depression. This is part of a clinical project and is included in a proof-of-concept study on the mental health potential of mind-altering substances or treatment-resistant patients in general, enrolling around 30 patients (Ables et al.2024). Our aim is to identify potential indications and to further evaluate the safety of pharmacological interventions with *P. harmala* extracts or single ingredients by applying further state-of-the-art research methods. Results: The RCT is ongoing; first safety results are pending but are expected to be presented by mid-year 2023, which will be incorporated in the main paper. Inter-lab studies lead to good agreement of PET-tracer quantification, and a cognitive task-based functional imaging study showed a significant neural signature of an altered processing of salient stimuli by harmine, consistent with traditional claims. Additionally, *P. harmala* extracts might also have anti-infective properties (Meling et al.2024; Mueller, 2023; Rossi et al.2022; Rodrigues et al.2024; Tarpley et al.2021). A group of scientific researchers, together with scientists and practitioners from outside the academic spectrum, as well as representatives of regulatory agencies and the

wider interested public, has established the Safety and Metabolism of *Peganum harmala* consortium as a collaborative effort to translate the traditional uses of *P. harmala* into evidence-based medicine. The main activity of the collaborative is the undertaking of several national holistic studies to fully assess the plant and its effects. Based on the traditional use of *P. harmala*, the prospective assessment strategies aimed to capture detailed information on the circulatory and central nervous system effects, as well as the impact on mental health from acute and sub chronic poisoning with *P. harmala*. Although the data will only become available in late 2023, results received to date regarding the safety profile of *P. harmala* have inspired future research into species of the genus *Harmal*. The possibility to conduct trials with *P. harmala* as neoadjuvant drugs for metabolic or neurological diseases is being investigated, as well as preventive strategies (Aicher et al.2024; Dornbierer et al.2023; White et al.2024).

8. Regulatory Status

Peganum harmala is a sacred plant holding a significant place in the traditional practices of various cultures, ethnic communities, and societies since time immemorial (Karamkhudoeva et al., 2021; Samorini, 2021; Chaachouay and Zidane, 2022). However, the legal status of *Peganum harmala* is different in various countries. The medicinal use of *Peganum harmala* is also involved in various cultures. Some countries restrict its usage, cultivation, collection, and distribution. It is listed as a weed in some countries, and anybody can cultivate it without any legal involvement. The regulatory status of *Peganum harmala* is different in medicinal and other parts of the world, and it is the result of cultural aspects included in the laws and legislation of different countries. In traditional practices, *Peganum harmala* is safe, but safety and efficacy are still controversial in modern practices. Therefore, the countries that consider its use as a traditional use or allow its medicinal use do not apply such strict legislation on its usage. The traditional uses of various plants have also been used in the production of modern medicines (Hussain et al., 2023; DAĞDEVİREN, 2023; Hussain et al., 2023; Tanasi et al., 2023; Motyka, 2022; Saleem et al., 2024; Jafari, 2024).

Controversies on the Safety and Efficacy There is a trend in herbal medicine that has caused an urgent need for scientific evidence to support the efficacy of alternative medicines. Such alarming issues are causing countries to take necessary regulatory actions to ensure that all elements of manufacturing, importation, storage, and distribution of herbal medicines conform to the national medicine regulatory standards. Their benefits are therefore devoid of the efforts of research that would have been used to invent a drug with definite beneficial medical applications if their scientific support were known. There is therefore an issue of regulation and equipoise, apportioned to different organizations, including research sponsors, chemical companies, and

intellectual property regulators. Phase II/III are clinical studies for a single plant to decide the safety and benefits of a drug. Evaluation of the *Peganum harmala* plant may take less time than the evaluation of a single substance for its likely mixed clinical benefits and risks (Rezzagui et al.2020; Miao et al.2020; Abbas et al.2021; Saeedeh et al.2022; Khalid et al.2024; Sharma et al.2022; Asadzadeh et al.2021).

8.1. Legal Status in Different Countries

Peganum harmala used to be highly cultivated in Europe and Africa, but many countries classify this plant on the written list. Actually, harmal is still rare in many countries because the rules are getting stronger, causing new difficulties and discouragement; sometimes, cultural restrictions are a prohibition per se. Bulgaria banned it in 2014 (Ahmadianmoghadam et al., 2024). In Germany, the Federal Office for Consumer Protection and Food Safety prohibited the retail trade of this plant in November 2017. In Belgium, because of a European-level meeting concerning plants with diuretic effects that can cause doping false positives and thus cause problems for athletes, the president of an organization announced the invocation of new European regulations in order to stop the use of *P. harmala* teas by athletes. In France's DOM-TOM, it is still used. In Morocco, *P. harmala* is cited as currently traded for smoke production. In its original area, it was recently reported for smoking, but the individual who reported it stopped using it because of the bad taste (Semwal et al., 2021; Amiri and Fozouni, 2020); Jazayeri et al., 2022; Zhu et al., 2024).

However, in many countries, *P. harmala* still finds its use in traditional medicine to treat flu, stomach, or other diseases, or in ceremonies, or to induce spiritual purification for mental peace. In Tanzania, the Tuaregs use the incense to spiritualize guests and to curse them later with the same (Saleem et al., 2020). In Iran, al-Harmal was fumigated by the Zoroastrians to exorcize demons and divs, cleanse the eye, and ascribe supernatural qualities to objects used in Zoroastrian ceremonies. It is not a drug, but a plant with therapeutic use against various ailments: anti-tumor, antioxidant, anti-diabetes, etc. Thus, considering that exhaustive information cannot be summarized in a small table, the status of harmala in various countries and areas of the world based on different information, with detailed reasons, has been elaborated here (Shahrajabian et al., 2021; Afzal et al.2021; Sharma et al.2022; El-Zayat et al.2021; Abbas et al.2021).

9. Conclusion and Future Directions

P. harmala has a rich history in both social and religious practices that have been concurrent for thousands of years, particularly in the domains where this plant grows. Based on those historical references, the social and religious uses of *P. harmala* have been well documented. However, a comprehensive study on

modern pharmacological and toxicological perspectives of *P. harmala* has a rare existence in the scientific literature. Additionally, compared to the potent pharmacological properties of individual harmala alkaloids, only a limited number of experimental activities, as well as preclinical and a few clinical investigations, have been reported. Consequently, to justify the traditional belief and to exploit the hidden potential of Peganum alkaloids, especially the harmala alkaloids, large-population clinical studies are warranted. Moreover, to establish the role of adjuvant *P. harmala* use and its possible synergistic effects in anticancer, antidiabetics, and antimicrobials, the reported clinical trials need replication. It is highly accepted that further interdisciplinary research on *P. harmala*'s potential and therapeutic applications should also be promoted to explore new clinical interventions for side effect management, a more acceptable regimen, and a strong plant-kept immune memory to enhance human health care. Furthermore, further clinical trials are needed to address the potential therapeutic benefits of standardized *P. harmala* preparations. The concentration-response relationships, beginning doses, doses of anticipated medical effect, and limited tolerated doses are still not fully investigated (Khalid et al., 2024; Jalali et al., 2021). In doing so, and to minimize potential hazards when used for its benefits, standardized *P. harmala* guidelines and regulations should be prepared. Additionally, to integrate traditional knowledge into medical circumstances, well-designed experimental and toxicological investigations are also warranted. The tolerance of the long-term side effects and the different doses of pure harmala alkaloids remain unclear. Furthermore, these reports may also aid in understanding the use of other toxic plant species. In conclusion, this review indicates that *P. harmala*, with its essential harmala alkaloids, possesses a number of valuable pharmacological uses, including antioxidant, anticancer, anti-inflammatory, antidepressant, inhibiting AChE, anti-AD, improving cognition, antiviral, anti-leishmania, immunomodulatory, antimicrobial, insecticidal, wound healing properties, analgesic, antipyretic, antidiarrheal, antispasmodic, antidyslipidemic, and blood glucose-lowering properties. In contrast, since adverse effects when using *P. harmala* may occasionally be life-threatening, caution must be exercised. The use of *P. harmala* and its isolated harmala alkaloids to handle a wide range of diseases warrants further investigation. (Sharma et al., 2022; Ahmed et al., 2021; Sadaf et al., 2022; Zhang et al., 2020; Jaradat et al., 2024; Akhtar et al., 2022).

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CHAPTER 7

THE ROLE OF TECHNOLOGY IN ART PRODUCTION AFTER 1980: THE RISE OF DIGITAL PRACTICES

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Introduction

Since the mid-20th century, art has been in interaction with technology, science and design, and this interaction has paved the way for digitalization in art. On the one hand, digitalization and on the other hand, the changes seen in the field of communication and communication with the widespread use of the internet have increased the influence of mass media on art (Söylemez, 2010, p.138).

This has become especially evident in the “Pop Art” movement, which is directly associated with the popularity of advertisements and colorful posters. Pop Art incorporated mass media, including indispensable elements of our daily lives such as television, advertisements, cinema, cartoons, newspapers and magazines, into the world of art. These mass media have become a way of life as well as a tool in every aspect of our lives (Antmen, 2018, p.162).

The art practices defined as Computer Art in the 1960s changed their name to “multimedia art” towards the end of the 20th century, and in this context, audio, video and various hybrid forms were included in these art practices. Likewise, in addition to the term Digital Art, the term “New Media” has been used more frequently. Today, as a result of the development of computer, internet and mobile technologies, we can define the concept of new media as a virtual media environment in which the audience interacts interactively independent of time and space (Bulunmaz, 2011, p.25).

New Media Art is a new art form that emerges with the integration of technology, science, design and art, making the viewer a part of the work and offering an interactive experience (Whitham & Pooke, 2013, p.39). New Media Art, which includes multiple disciplines, is an approach within Digital Art. The reformatting of images produced in digital environments creates both visual and auditory structures. These narratives, which turn into hybrid forms, question the limits of art by expanding the production possibilities of artists (Tuğal, 2018, p.97). Today’s digital art practices are linked to artworks in which light and movement were used together in the past. These works, which are the first examples of Kinetic Art, offer a new perspective by pushing the traditional boundaries of art both spatially and temporally. Unlike traditional artworks in which the viewer is a passive observer, these new practices make the viewer an active participant.

With the spread of computer technology after the 1980s, artists began to make use of these technologies, and many art practices emerged under the name of New Media Art (Lynton, 1991, p.13). Artists have produced new art practices that interact with the audience under new definitions such as “Net Art”, “Virtual Reality”, “Augmented Reality” and “Software Art” (Aydoğan & Kaplanoğlu, 2020, p.85). In addition, there have also been developments in the field of software. Many software programs have been developed in order

to make painting, graphics, movie-animation, 3D design works made through computers (Balli, 2021, p.185). Thanks to NFT and Artificial Intelligence, the connection of art with technology has been carried to a higher level. Digital artworks are created from NFT applications designed with computers and can be easily exhibited. In short, with the use of technology, artists have had the opportunity to promote their artworks all over the world without the limitation of space.

Digitalization has been effective not only in the production of artworks but also in their exhibition. In addition to traditional gallery and museum spaces, the exhibition of artworks on digital platforms has enabled them to reach a wider audience. The fact that art can be exhibited in digital environments has also affected the commercial dimension of art, leading to a change in the art market. Thus, the ability to buy and sell artworks on digital platforms has made art accessible and more globalized.

The fact that digital art covers a field with different forms of art practices offers new forms suitable for today's conditions without adhering to the structures of traditional art. In an environment where technology and information are constantly updated, it is inevitable that digital art is in constant innovation. These innovations allow art to transform into different forms and new artistic approaches to emerge (Ünlü & Cerev, 2023, p.492). These changes in the digital environment have led to structural changes in biennials, exhibitions and other artistic events. Art events such as biennials, symposiums, congresses and exhibitions are now held on digital platforms and works are exhibited in virtual galleries and venues. This facilitates the accessibility of art events, while at the same time enabling new interactions and experiences between artists and audiences.

In this study, the important changes and innovations brought to art by digitalization after 1980 are put forward and the direction in which digitalization will affect art is opened to discussion. Within Contemporary Art, the important contributions and changes made by digital approaches, which are fed by postmodernism and especially manifested within the scope of Contemporary Art, on art have been revealed. In this context, the relationship between photography, video, computer, internet and NFT with art is emphasized. Visuals are given in the text and a text-visual relationship is established for a better understanding of the subject.

Digital Art Practices Brought by Technology

With the advancement of technology, significant developments have been observed in art practices. At the forefront of these developments are applications produced using technological tools such as computers, photography, video and NFT. In these practices, artists have aimed to interact with their audiences and encourage participation. In addition, by increasing the interaction of art

with the audience, artists have made the art experience more personal and participatory (Yıldırım, 2019, p.328). Artworks are no longer just passively viewed objects, but invite the viewer to interact with them and invite them to think, feel and contribute (Çokokumuş, 2012, p.52).

Artists have expanded the field of digital art by using computer-mediated coding and algorithms to express their creativity. This has led to the creation of works ranging from pixel art to interactive installations.

The process of digitalization in art has changed the art of photography in terms of both production and sharing. Thanks to the fast and easy use of digital cameras, artists have had the opportunity to edit the photographs they take instantly as they wish. Thanks to digital editing software, artists have gained the freedom to make various corrections on photographs, change colors, and even create new images by combining different photographs.

The use of video technology has enabled a new approach to time and movement in artworks. In addition, art practices such as Video Projection Mapping allow artists to use a specific structure or object to direct light projection and create visually impressive installations.

NFTs have allowed them to present digital artworks in a unique and inimitable way, while at the same time ensuring that artworks have a market value in the digital world. Artists can exhibit their works in digital galleries, share them in online museums and offer them for sale in digital art markets. The digitization of art is thus expanding and enriching the boundaries of art.

The Art of Photo Processing

With the proliferation of technology and the internet, artists who frequently use photography as a conceptual or intellectual tool in their works have also combined it with various symbols, compositions and other visual elements. However, some artists also use traditional photographic techniques in their works through photo-montage, editing and alterations. Photography is seen not only as a visual documentation tool but also as a means of expression that carries meaning and thought.

The art of photography has undergone a significant technical transformation with new media technologies such as computers, the internet and cell phones. Traditional film-based cameras are no longer widely used and are replaced by digital cameras. Photo processing, which was traditionally done in dark rooms, is now carried out with digital editing software (Sağlamtimur, 2010, p.89). This software allows photographers to digitally edit and process images. This transformation has caused significant changes in the production processes and aesthetic values of the art of photography.

Since the 1980s, digital photography has become increasingly widespread

and there have been significant changes in the field of photography. These changes have taken the form of scanning traditional negative and positive prints by converting them into digital format and recording the images with digital cameras. Images can be easily edited in the computer environment, and color adjustments, contrast adjustments, text additions and other editing processes are performed through digital editing software. In addition, photographers personalize their images in accordance with their aesthetic preferences and creativity. Another feature of digital photography is that processed images can be printed out in digital or physical media. This allows photographers to share their work in any format and size they want. Thus, digital photography increases the accessibility of the art of photography and offers photographers more creative freedom and technical control (Sağlamtimur, 2010, p.221). For example, David Hockney's (1937-) *Pearblossom Highway* is a collage of photographs made in 1986. With this work of art, Hockney aimed to depict a journey through the desert from the perspective of the person traveling in an invisible vehicle. He captured this perspective by showing the point of view of someone in the position of a car traveling in the middle of the road. Hockney created this work by taking many small individual photographs. He then stitched all the photographs together to create one large image. This technique creates a cut-out effect in the photograph, reducing the soft lines of the image and instead creating a collage of jagged edges. Hockney's use of line in this artwork allows us to recognize that the image is made up of small photographs. The cut-out feeling created by the lines in the photograph allows the artist to convey the sense that the image was created by many people, all of whom put together photographs of this highway and their own journeys.

The combination of small photographs into one large image also gives texture to the artwork and makes it more two-dimensional. The roughness of this texture connects us to the image, as if it were a collage made by a frequent traveler on the highway, slowly forming a large image from countless small photographs. The roughness of this image connects us and allows us to imagine the thoughts and stories behind it.

The light colors used in this piece do not disturb the viewer, but give a slight sense of excitement. The lightness also suggests that this image was taken in the morning, at the beginning of a journey on this road, and that there might be more excitement on this journey. The use of space means that the sky covers almost half of the image. This depicts the wide open spaces on this highway. It presents the idea that a journey can take you anywhere, there is no limit to where you can go. The fact that the sky takes up half of the image also brings balance to the frame. The colors used in the signs are highly symbolic. Our attention is drawn to the yellow sign implying that there will be a stop ahead, but the stop sign is dull and shrouded in darkness. This reflects the sense of anticipation on a journey, the stop is uncertain and always awaits the

end. The placement of the road at the very center of the image means that the actual road is the focal point and the main attraction of the image. The road symbolizes a journey, as traveling by road is the most common form of transportation and this is the main idea behind the whole artwork (URL 1).



Figure 1 David Hockney, *Pearblossom Highway*, 1986, *Photographic print and collage*, Accessed: 06.01.2024, <https://austinkleon.com/2020/06/05/hockneys-pearblossom-highway/>

With the development of technology, photography has become a part of most people's daily lives. Those who own smartphones and other digital devices can easily record every moment. By sharing their photos on their personal social media accounts, blogs or various photo-sharing platforms, photographers can share their personal memories with others and receive feedback. This process is not only limited to documenting and sharing memories, but is also recognized as a reflection of personal creativity and freedom of expression. With the evolution of technology and digital media, photography is no longer the domain of specialists, but has become an art and communication tool accessible to everyone (Özel Sağlamtimur, 2010, p.90).

For example, "Foggy Forest Creek" by Kevin Russ (1983-) is an impressive example of digital photography meeting natural beauty (Figure 2). Russ is a photographer known for the images he captured during his travels in nature, and this work was also shot during his travels. The work shows a stream bed in a forested area covered by fog. Russ's work stands out as an example that reflects the beauty of nature and the calmness of natural life. Russ's works, together with the possibilities offered by digital technology, open up issues such as photography techniques, hardware competence and artistic perspective to discussion. These works not only document travel and travel experiences, but also emphasize the power and impact of mobile photography.

Another example is Philip Lorca diCorcia's (1953-) "Heads", a digital photography work that draws attention with its unique narrative style (Figure 3). This series consists of portraits of people randomly found on the streets of

New York, taken between 2001 and 2002. In the “Heads” series, the artist took photographs of people wandering the streets and processed these photographs with digital editing techniques. The original photographs were manipulated by diCorcia with digital techniques such as lighting and color editing. Thus, the atmosphere and visual impact of the photographs were enhanced. The “Heads” series can be presented as an example of diCorcia combining the tradition of street photography with the technical possibilities of the digital age. While this work demonstrates the creative potential of digital photography, it also draws attention with its ability to capture instant and random moments of daily life. However, diCorcia’s “Heads” series is recognized as a carefully selected and digitally processed work of art that captures random human portraits.

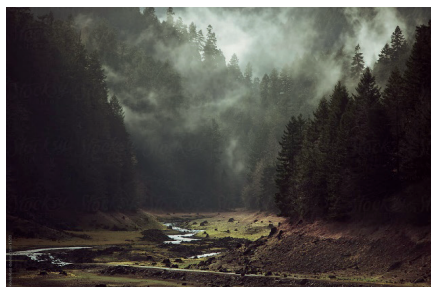


Figure 2. Kevin Russ, *Foggy Forest Creek*, Digital photography. Accessed: 15.01.2024, <https://www.stocksy.com/1650/foggy-forest-creek>



Figure 3. Philip Lorca diCorcia, *Heads*, 2002, Digital photography. Accessed: 28.01.2024, <https://americansuburbx.com/2011/09/interview-photographer-philip-lorca-dicorcia-talks-2003>.

The development of digital technology and the creativity of artists have significantly affected the artistic use of photography. Many artists have created original and impressive works using digital photography as a material. By combining traditional photography techniques with the possibilities of the digital world, these artists have presented works that make the viewer think deeply and affect them emotionally. The artistic use of digital photography has become an important component of contemporary art, further increasing the expressive power and impact of photography.

Video Art

Nam June Paik pioneered the use of video in art in the early 1960s. By the seventies, many artists used video as an art practice and made extensive experimental works (Fineberg, 2014, p.490). Since the 1980s, with the influence of the internet, computer, video and mobile technologies, the field of art has expanded and gained a new dimension. Among the art practices that emerged during this period, a new art practice defined as “Video Art” emerged. Video Art has become a dynamic art practice by utilizing the change of image and sound over time. Although this art form has gained popularity since the

late 1960s, it has become more widespread with the development of digital technologies, especially after the 1980s. Video Art is produced using digital or analog video cameras and recording equipment and plays an important role in art events such as exhibitions or performances.

The development of Video Art has led to the emergence of technology-oriented practices such as Augmented Reality (AR), Video Installation and Video Projection Mapping. These practices have allowed digital technologies to expand the boundaries of art and enrich viewers' art experiences. In addition to being an important part of contemporary art, Video Art has provided a powerful platform for exploring the impact of technology and visual media on artistic expression (Tire, 2018, p.39). While some artists prefer to convey social or political messages by using real-life images in a documentary style, others aim to take the viewer on an emotional or intellectual journey by creating abstract or experimental images.

The cameras used for video works can be used in the environment, sculptures and installations, as well as in live performances by editing video with computers. One of the most important elements of video works is light. Nam June Paik (1932-2006), a Korean-American artist who is one of the pioneers of Video Art, realized his works with artificial light and later transformed his works into video sculptures and installations. For example, Nam June Paik's 1976 work "TV Cello" is an installation created by manipulating TV signals using magnetic coils placed inside television sets (Figure 4).

In his early works, Paik often used magnets to manipulate television signals, but later he transformed the structure of video by installing installations in spaces and using monitors in different arrangements. In addition, by stacking the monitors, he brought together different disciplines and created a sculptural appearance. In these video sculptural works, he used monitors together in the form of sculpture by using the two-dimensional screen surface. Especially the placement of the monitors in different positions within the space changes the viewer's perspective and directs them to a different perspective (Merdeşe, 2017, p.39).

Another artist Quayola's (1982-) 2008 work "Strata" brings together ancient and modern architectural elements through projection technology (Figure 5). The artist digitally analyzes different architectural structures, examining their complex patterns and details, and using the data obtained from these analyses, projects dynamic and impressive visual effects on the surfaces of the structures through projection technology.

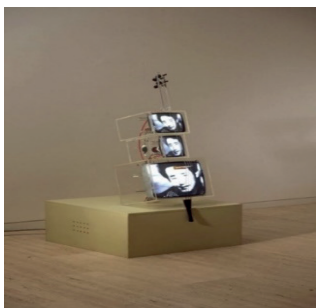


Figure 4. *Nam June Paik, Tv Cello, 1976, Video installation. Accessed: 04.02.2024, <https://www.artgallery.nsw.gov.au/collection/works/343.2011.a-c/>*

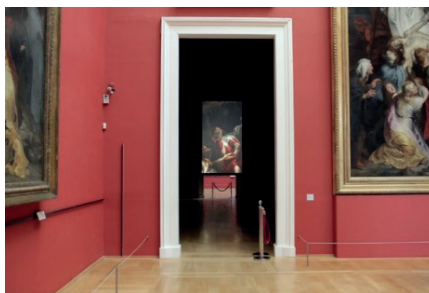


Figure 5. *Quayola, Strata, 2008, Video installation. Accessed: 11.02.2024, <https://quayola.com/strata-4/>*

Since the 1970s, video technology has been used by artists for recording purposes and is called “Performance Video”. There is a distinction between “Performance Video” and “Video Performance”. While Video Performance is a part of the video action, Performance Video is a recording and documentary of the action. In this context, video art is not only used for recording purposes, but also turns into a representational character by taking part in the event (Merdeşe, 2017, p.44).

An example of a video performance and installation work is Nil Yalter’s (1938-) “Rituels”, which she presented in 1980 (Figure 6). This work is a project in which Yalter examines the lives and experiences of immigrant women in France. This project consists of interviews with women and video recordings of their daily lives. By combining different materials, the artist created a video installation and presented the experiences of these women to the audience in a visual way. This work, which aims to explain the lives and experiences of migrant women to a wider audience, addresses issues such as migration, identity and gender through art, awakening certain thoughts in the audience and creating social awareness.

Marina Abramovic’s (1946-) “Rhythm 0” was realized in 1974 as an example of a performance video different from video performance (Figure 7). In this performance, Abramovic invited viewers to sit at a table with 72 objects to use as they wished for six hours. The objects included feathers, roses, honey, a whip, scissors, a pistol with a single bullet and even a loaded pistol. Throughout the performance, Abramovic remained passive to the audience’s requests. The video recording of the performance functions as a permanent document of the artwork. The video records the performance from the beginning to the end and visually presents the viewer with the various actions applied to Abramovic’s body, the audience’s reactions and the development of the performance. Details such as how the audience behaved during the performance, what objects they used and how Abramović reacted can be observed through the video.

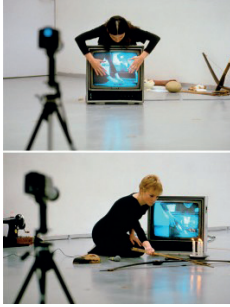


Figure 6. Nil Yalter, *Rituels*, Video performance, 1980. Accessed: 19.02.2024, <https://www.nilyalter.com/index.php?years=1980-1989>



Figure 7. Marina Abramovic, *Rhythm 0*, Performance video, 1974, Accessed: 23.02.2024, <https://www.researchgate.net/figure/Figura-5-a-Foto-durante-a-Rhythm>

Computer Art

Access to computers, which were just beginning to develop in the early 1960s, was very limited. Due to the high cost of installing computer systems, they were only available in research laboratories, some universities and government institutions. For this reason, the first studies with computers were produced by computer experts and mathematicians (Tuğal, 2018, p.123). With the development of technology, the communication between the computer and the user has also advanced. Artists started to create works using mathematical algorithms through computer programs. With this approach, artists have achieved unique and extraordinary visual results by using a combination of randomness, repetition and mathematical rules. Over time, with the development of technology, the communication between the computer and the user has also advanced; artists have used computers as an experimental platform (Tire, 2018, p.89). They have conducted various experiments to explore the limitations of the computer programming language and to understand how it can be used for artistic expression. Among them, artists such as Harold Cohen, Manfred Mohr and Frieder Nake stand out. Harold Cohen (1928-2016), one of the artists who produced original works of art using the AARON computer program he designed himself, created paintings using various algorithms in this artificial intelligence program he developed (Figure 8). The artist, who developed the computer program with the aim of producing original works of art, added visual structures in the form of plants, stones, people and the use of color to the program. The paintings produced by AARON often include complex patterns, abstract figures and vibrant colors. Cohen usually edits these images digitally and sometimes adds the finishing touches by intervening in the physical environment. James Faure Walker's (1948-) "Consort" is an abstract and experimental composition created with digital media and computer technologies (Figure 9). Faure Walker's work is

enriched with different color palettes, geometric forms and texture effects by taking advantage of the possibilities offered by digital technologies. We can say that the work emphasizes the experimental and innovative aspects of digital art. James Faure Walker's works such as "Consort" are examples that contribute to the development of digital art and emphasize the impact of digital technologies on art practice (Tuğal, 2018, p.211).



Figure 8. Harold Cohen, 1980s, Computer program, Accessed: 22.03.2024, <https://computerhistory.org/blog/harold-cohen-and-aaron-a-40-year-collaboration/>

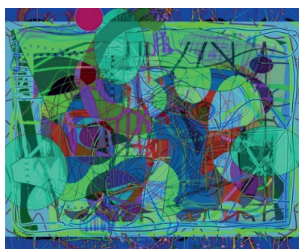


Figure 9. James Faure Walker, Consort, 2020. Accessed: 29.03.2024, inkjet print, 53x65cm, <https://instantloveland.com/wp/2020/07/17/james-faure-walker-speed-and-limits/>

Vera Molnar's (1924-2023) "Interruption" is a digital art practice produced through computer programming and algorithms (Figure 10). Molnar uses mathematical operations and coding techniques to create abstract compositions. The title of the work, "Interruption", refers to the unexpected interruption of an order or process. In this work, Molnar creates new visual effects by unexpectedly interrupting a regular pattern or process. Vera Molnar's works such as "Interruption" demonstrate how the computer can be used for artistic expression and the aesthetic potential of algorithmic art. This work is recognized as an important example of early computer art exploring the interaction between technology and art.

Kogler's (1959-) installation art is an art project that uses the physical properties of space to change the viewers' perception and transform the spatial experience (Figure 11). This project, realized at the Sigmund Freud Museum, covers the interior spaces of the museum with optical illusions, allowing visitors to find themselves in a virtual reality. The installation is based on large-scale geometric patterns that reflect Kogler's characteristic style. The walls, floor and ceiling are covered with the artist's patterns, presenting viewers with a visual labyrinth. These patterns allow the viewers to interact with the space and change their perceptions from different perspectives. We can say that this installation by Peter Kogler is an example of how the artist can transform space into a work of art. This project, which enriches the spatial experience of the audience through optical illusions and the transformation of space, shows how art can interact with the physical environment and offer impressive experiences to the audience (Avcı Tuğal, 2018, p.217).

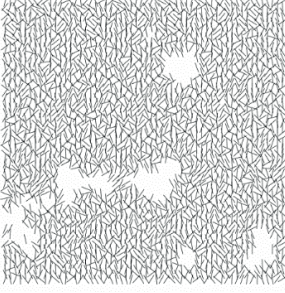


Figure 10. Vera Molnar, *Interruption*, 1968. Accessed :01.04.2024, https://ems.andrew.cmu.edu/2018_60212f/paukparl/09/07/paukparl-interruptions/



Figure 11. Peter Kogler, 2015, *installation*. Accessed:01.04.2024, <https://publicdelivery.org/peter-kogler-room-installations/>

NFT

NFT (Non-Fungible Token) is a technology used today to document ownership of digital works. NFTs are private digital documents that record the authenticity of digital works and who owns them, and are powered by blockchain technology and smart contracts. They are widely used to document ownership of digital content such as artworks, videos, photos and music. With this technology, authors can protect their copyrights and securely buy and sell their digital works. Thus, NFTs enable the secure buying and selling of digital works, as well as the recording and tracking of ownership through blockchain technology. This technology is generally used in blockchain infrastructures such as Ethereum (Yurdabak, 2013, p.145).

Blockchain technology is a system in which data is stored in interconnected blocks and these blocks are stored on multiple computers on a network connected to each other. This system is kept in a publicly accessible ledger and the exact date and history of transactions can be traced thanks to the connections between the blocks. In this way, transactions on the blockchain can be transparently monitored and audited, and any fraud or inaccuracies can be detected. The links between blocks and security measures make it difficult to change or delete past transactions.

Bitcoin is considered one of the pioneers of blockchain technology and has had a significant impact on the crypto economy. With the increasing use of blockchain, the crypto revolution has gained momentum. The integration of smart contracts into blockchain networks such as Ethereum shows that a new era has begun in the field of art and design. However, blockchain technology and smart contracts have created a change and transformation in the world of art and design. The advantages of smart contracts and Ethereum have led to the emergence of a new asset unit in the crypto economy. This new unit is

called NFT and is represented by smart contracts in the ERC-721 standard. This means that it has become possible to create and manage NFTs using Ethereum's smart contract features. NFTs represent unalterable digital assets and, thanks to these features, provide authenticity and control in the world of art and design (Oduncu, 2022, p.196).

Blockchain technology offers various advantages in the field of design and can be easily integrated with other disciplines. These advantages show that a great process of change and progress has begun in the field of art and design. The possibilities and easy integration provided by blockchain lead to a closer interaction of software technology with art. As a result of this interaction, the term "Crypto Art" has become more widely used. Crypto Art refers to an area where digital artworks using blockchain technology are produced, shared and traded (Saygın & Fındıklı, 2021, p.1457). It emphasizes the code system underlying crypto art. The code system is perceived as a kind of digital signature that certifies the authenticity and ownership of crypto artworks. These codes represent a version of the artwork stored in the blockchain and verify its authenticity.

Recently, NFT technology has received a great deal of attention, with several high-profile NFT sales and the launch of a number of new projects. NFTs, which have become widespread by providing an opportunity for artists to sell their digital works and users to build digital collections, are certificates that certify the authenticity of digital works created on blockchain technology. These works cannot be exchanged like other commodities, each NFT carries a unique property that has a material value. NFT technology facilitates the sale of digital content and opens a new era.

Mike Winkelmann's (1981-) "Everydays: The First 5000 Days" by Mike Winkelmann (1981-) is a collage of his daily works since May 1, 2017 and covers a period of 5000 days in total (Figure 12). This work was sold for a price of 69,346,250.00 dollars. This sale is an example of the worldwide interest in crypto art and how artworks can fetch high prices in the digital world.

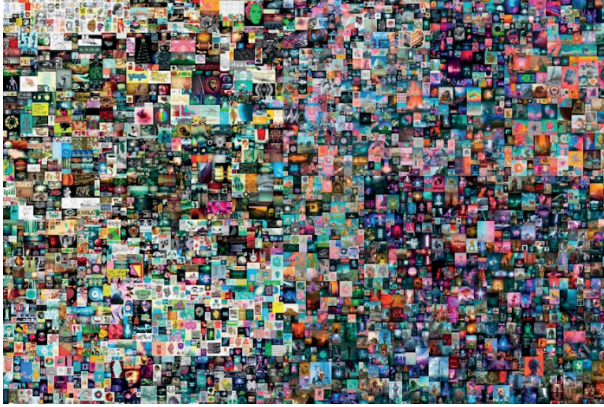


Figure 12. Mike Winkelmann, *Everydays: The First 5000 Days*, 2021, digital illustration. Accessed: 12.04.2024 <https://www.abc.net.au/news/2021-03-12/nft-digital-artwork-sells-for-nearly-us-70-million-beeple/13241076>

Conclusion

Since the mid-20th century, the use of science and technology in art has paved the way for the emergence of new art practices and the formation of the foundations of digital art. As computers have become more accessible since the 1970s, artists have gone beyond traditional materials and used technological tools in their art practices (Kutup N., 2010, p.14).

The integration of technology and science has shaped the understanding of art and led to significant changes in art practices. With the digitalization of art and the widespread use of the internet, transformations in the production, exhibition and sharing of artworks have paved the way. Artists exhibit their works not only in physical spaces but also in digital environments, thus reaching a wider audience and increasing their accessibility. Online platforms and digital collections on the Internet facilitate access to artworks and make art accessible to everyone (Selçuk, 2022, p.602).

Changes in the field of art with the use of technology have increased the impact of mass media on art, and approaches involving multiple disciplines such as New Media Art have become an important part of digital art. The processing and reformatting of images produced in digital environments has allowed visual and auditory structures to come together to form hybrid forms. This has enabled artists to expand their creativity and experiment with new forms of expression (Erlevent, 2013, p.2).

Today, New Media Art draws attention as an innovative approach at the intersection of science, technology, design and art. The combination of various disciplines such as the Internet, photography, video, computers, digital media, augmented reality and virtual reality offers artists a wide range of expression

opportunities. The interaction of these various disciplines has enabled the creation of hybrid forms by combining visual and auditory elements in digital environments and has offered interactive experiences to viewers (Erkan, 2021, p.1637). Thus, viewers can actively participate in artworks through interactive works and have the opportunity to establish a more personal and direct connection with art.

The widespread use of the Internet has paved the way for the emergence of new art practices such as “Net Art”. “Net Art” involves artists producing interactive web-based projects and digital artworks on the internet and has enabled the creation of artworks with interactive and multimedia features using the technologies offered by digital media. In addition, the internet has transformed the processes of production, distribution and consumption of art and enabled interaction between the audience and the artwork. Thus, the possibilities offered by the internet and digital technologies have played an important role in the development of art and have come to the fore as a determining factor in shaping art practices in the future (Berkman, et al., 2017, p.8).

With the development of technology, Virtual Reality (VR) technologies have enabled viewers to switch from physical reality to virtual reality, allowing them to have interactive experiences with works of art. This technological advancement has transformed the viewer from a passive observer into an active participant and allowed them to directly intervene in the artworks. Virtual Reality technologies have also been adopted by art institutions and have found a place in traditional exhibition spaces. Museums and galleries have started to exhibit VR experiences, offering art lovers the opportunity to experience the richness and diversity of art on both physical and digital platforms (Tanyel Başar, 2020, p.631).

The development of science and technology has led to a significant transformation in the art world, allowing artists to explore new and creative forms of expression. Augmented Reality (AR) applications, which emerged as a result of these developments, stand out as a technology that combines the real world and the virtual world and offers users an interactive experience. Augmented Reality (AR) offers viewers the opportunity to explore their physical surroundings and interact with the virtual world by adding digitally created content to real world images. Today, with the development of technology, artists can utilize these possibilities as part of their artworks. By making artworks interactive and personalized, Augmented Reality (AR) technology has changed the way audiences experience art and created a new ground for the diversity of art (İpek, 2020, p.1065).

The digitalization process has also significantly affected the art of photography. With the widespread use of digital cameras, artists have been

able to quickly edit and share the photographs they take instantly. At the same time, the internet and social media platforms have enabled artists to deliver their works to large audiences and increased the accessibility of art. With the widespread use of digital editing software, artists have had unlimited freedom of creativity and expression.

Video Art, which is an important part of Contemporary Art, has attracted attention as an art practice that creates works using the change of image and sound over time. New technologies such as Augmented Reality (AR), Video Installation and Video Projection Mapping, which are seen in Video Art, have enabled artists to create larger and more impressive works. In addition, artworks created using video technology have not only been exhibited on gallery walls, but streets, buildings and natural landscapes have also been used by artists. Video art also includes sub-branches such as “Performance Video” and “Video Performance”. Through these sub-branches, artists have explored different forms of expression, such as the recording and representation of video technology. This has paved the way for video art to be considered not only as a work of art, but also as a document of the artist’s performance.

With the development of technology, new digital technologies such as NFT have changed the way artworks are digitally owned, documented and traded. By registering their works as NFTs, artists have obtained a unique certificate of ownership in the digital world. This document verifies the authenticity and ownership of the work and has enabled it to be presented to viewers or collectors as a saleable digital asset. NFT technology has created a major shift and transformation in the art world, not only enabling artworks to be easily sold and bought digitally, but also increasing the accessibility of art, allowing artists to commercialize their digital works.

All these developments expand the boundaries of art and lead to the emergence of new and innovative art practices. In the future, it is expected that the impact of technology on art will further increase and the digitalization process of art will continue. In this process, the interaction and collaboration between artists and audiences will play an important role and will enable art to reach a wider audience with a universal language.

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Internet Resources

URL 1. <https://davidhockneyexhibition.weebly.com/artwork-critiques.html>

CHAPTER 8

INTERNATIONAL TRADE POLICIES AND DIETARY HEALTH ISSUES: DIETS TRANSITION

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1. Introduction

The food sector, like many other sectors, has been strongly affected by globalization. These changes are having an impact on human welfare by affecting food consumption and nutrition. Food markets have become more internationalized through foreign trade as well as the growth of foreign direct investment (FDI) and transnational corporations (TNCs).

Good nutrition is fundamental to human health and well-being, physical and cognitive development, and economic productivity. The third of the 17 development goals of the “Transforming Our World: The 2030 Agenda for Sustainable Development (SDG)” adopted at the United Nations Sustainable Development Summit in September 2015, the third of the 17 development goals is healthy individuals. The goal of the third SDG is to ensure healthy lives and promote well-being for all people of all ages. Nowadays malnutrition and obesity are emerging as intertwined health challenges, especially in developing countries. In these countries, people suffer from health problems on the other hand and incur additional costs caused by these problems on the other (Ezzati et al., 2002). This dilemma, called the “Double Burden of Malnutrition”, has increased especially in South Asian countries after the Covid-19 (Ahsan, 2023). Studies in Covid-19 have found that food insecurity is linked to lower diet quality and a higher risk of obesity, as well as chronic conditions like hypertension and type 2 diabetes (Jia et al., 2024). Most of the studies found an unhealthy diet during lockdown (Srivastava, et al., 2024).

The prediction that some of the future health problems highlighted in the report of “Diet, Nutrition and the Prevention of Chronic Diseases: a Joint” (WHO/FAO, 2003) will be determined by diet-related chronic diseases has accurately described the present. In 2015, 71% of all deaths globally were due to NCDs or chronic disease, and this is associated with nutritional risks as well as metabolic risks (Chen et al., 2019). 50 million Americans suffer from hypertension and inadequate nutrition, resulting in longer hospital stays and significantly affecting public health expenses (Ghorani, et.al., 2021).

According to a study published in *The Lancet*, 11 million people worldwide die each year from heart disease, cancer and diabetes triggered by diets high in sugar, salt and processed meat and 255 million people have attributable to dietary risk factors (Afshin et al., 2019). Globally, Noncommunicable diseases (NCDs) accounted for 60.8% of all deaths in 2000, rising to over 41 million (74%). Every year, 17 million people under the age of 70 die from non-communicable diseases, and 86% of them live in low- and middle-income countries (<https://www.who.int/news/item/02-11-2023-climate-change-and-noncommunicable-diseases-connections>). Although every member state of the United Nations has committed to reducing premature deaths from non-communicable diseases by one-third by 2030, very few countries are making

progress toward this goal. Cardiovascular diseases account for most NCD deaths (42 million), cardiovascular disease (33%), communicable maternal-perinatal and nutritional condition (18%), cancers (17%), chronic respiratory diseases (8%), and diabetes (3% including kidney disease deaths caused by diabetes) annually (<https://ncdportal.org/CountryProfile/GHE110/Global>). These diseases account for over 80% of all early NCD deaths. Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from an NCD (www.who.int/news-room/). As diets change, particularly with the increase in processed food consumption, there is a rise in obesity rates globally. The World Health Organization (2021) reported that 1.9 billion adults aged 18 and over worldwide were overweight, with 650 million of them being obese. The obesity rate is rapidly increasing, particularly in developed countries. Also, approximately 537 million adults worldwide are living with diabetes. This number is expected to rise to 643 million by 2030 and to 783 million by 2045 (Magliano, et.al., 2021).

Based on data from 195 countries, Uzbekistan is the country with the highest incidence of deaths caused by dietary habits, while Israel is the country with the lowest incidence. As part of the “Global Burden of Disease” study, researchers examined the effects of 15 different dietary factors such as salt, sugar, fat and red meat on human health in 195 countries between 1990 and 2017. The results confirm the predictions made for many years (IHME, 2018).

Social changes such as modernization, rising global income, urbanization, economic development and increasing affluence, migration, technological advances in business and food processing, and the spread of mass media have led to predictable changes called “diet transitions,” where traditional dietary patterns are replaced by a dietary pattern with higher levels of saturated fat, sugar, and processed food products (Popkin, 2006). The relationship between trade liberalization and “diet transition,” determined by factors such as foreign direct investment, supermarketization and cultural change, is discussed in the literature (Haddad, 2003; Hawkes, 2006; Baker et al., 2014; Baker et al., 2016). On the other hand, the factors determining people’s dietary choices are multi-layered and complex. At the individual level, dietary habits are influenced by personal, psychological, and cultural factors, as well as variables such as health and cooking knowledge and skills. Psychological influences on dietary habits include attitudes towards food and health, incentives, motivation, and values. Broader socio-cultural determinants of personality preferences include factors such as television viewing and sleep, family and community norms, social pressures, social class, social networks and race/ethnicity. The local environment also plays an important role in dietary choices. From a broader perspective, commercial lobbying by multinational companies, food packaging, marketing, advertising, sociocultural norms and perceptions of status and prestige also influence consumer preferences.

Each of these individual determinants is shaped by a much broader policy landscape, including the food industry and globalization, agricultural policy and production practices, national and international trade agreements, and ecosystem impacts (Mozaffarian et al., 2018).

This study approaches health problems arising from the relationship between agriculture and food trade and diet transition from a general perspective. The historical process of liberalization in agriculture and food trade, the relationship between trade, nutrition and health, and the suggestions made to combat the problems that arise with diet transition are discussed.

2. Food Trade

The food sector, the same as many other parts of the economy, has been significantly affected by globalization. Globalization is affecting societies in many areas such as consumption, production, distribution of resources and cultural elements. The new world order also plays an important role in the distribution of resources that affect people's daily living and working conditions, their health-related choices and behaviors, and ultimately their health status. On the other hand, it is also the globalization of trade has contributed to economic growth and general welfare around the world through increased opportunities for exports and investment.

Until the middle of the 20th century, ensuring that people had access to enough food was one of the most important issues for governments. To overcome this, governments tried to encourage the production and distribution of as much cheap food as possible, especially starchy (high carbohydrate) staple agricultural products and processed products with long shelf lives. At the time, a global epidemic of obesity and chronic diseases resulting from the widespread availability of cheap, unhealthy food was not a factor considered in policymaking (Mozaffarian et al., 2018). There has been increasing global pressure to liberalize agricultural trade in line with the rise of liberal economic policies since 1970. However, it is a controversial topic how trade liberalization affects food security (Clapp, 2014). These effects vary depending on the specific context of a country or region, including its economic structure, agricultural productivity, and trade dependencies. Agricultural trade liberalization has arguably been accused of being one of the main causes of undernutrition in developing countries (Stuckler and Nestle, 2012; Gayi, 2007; Matthews, 2014). Trade liberalization can adversely affect food security by displacing small-scale farmers struggling to compete with cheaper imports, leading to loss of livelihoods and reduced local food production. Over-reliance on imported food makes food cheaper, increasing vulnerability to global supply disruptions and currency fluctuations. It can also contribute to malnutrition and health problems by encouraging the consumption of unhealthy, processed foods. Moreover, export-oriented agriculture can strain natural resources,

undermining long-term food security. Blouin et al (2009) emphasize that trade liberalization is associated with greater wage inequality and more economic insecurity. Free trade opponents typically argue that most developing countries are not competitive enough to take advantage of agricultural trade liberalization, especially in a context where the existence of large farm subsidies in developed countries prevents access to export markets and potential gains for developing countries (Bureau et al., 2006; Wise, 2009; Koning and Pinstруп-Andersen, 2007; Tokarick, 2008). Most of the existing literature typically links trade to indicators of food availability or access, such as food quantities or prices, rather than food utilization. This may be misleading because while trade openness may increase the amount of food, this does not necessarily mean that those who need it the most would benefit. Nutrition gains may be restricted to urban areas or populations that are not actually at risk (Mary, 2019).

Efforts to liberalize international trade in goods have their roots in the Bretton-Woods agreements signed after World War II. In 1947-48, representatives of nearly 50 countries gathered in Havana and signed the General Agreement on Tariffs and Trade (GATT) on an ad hoc basis to liberalize international trade. The main objective of the GATT, which sets multilateral rules for international trade in goods, is to create a free and open trading system in which member states can trade with each other under fair and fully competitive conditions. The GATT is based on four principles in terms of the rules it contains. These four basic principles can be summarized as the consolidation of customs duties by reducing customs duties, most-favored nation registration, ensuring transparency in implementation, and the prohibition of discrimination at the national level. Eight multilateral trade negotiations were held under the GATT between 1947 and 1993. The Uruguay Round, the last of the negotiations within the framework of the GATT, was completed in 1993, and it was in this round that issues such as intellectual property rights and trade in services, which had previously been excluded, were included in the agreements, as well as the establishment of the World Trade Organization (WTO) (Friel et al., 2015).

Although several meetings have been held with member and observer countries in the name of liberalizing world trade, no significant progress has been made since 2001, especially in the negotiations on agricultural products. One of the important discussion areas of the WTO agenda, especially concerning agricultural and food products, is the protection policies of countries' own agricultural production. The most heated discussions of the negotiations, which aim to liberalize and pave the way for market access, take place in this area. However, agricultural protectionism is not the only area that determines the direction of international agricultural and food trade within the WTO. The Agreement on Technical Barriers to Trade (TBT) on food quality standards and labeling, the Agreement on Trade-Related Intellectual

Property Rights (TRIPS), and agreements on the implementation of Sanitary and Phytosanitary Measures (SPS) that protect human health from unsafe food have also been binding on the parties (Regmi et al., 2005).

The basic assumption of free trade advocates is that open markets benefit producers and consumers everywhere by promoting a virtuous cycle of economic growth. The main benefits advocated are increased access to food for consumers (food accounts for a relatively larger share of poor people's expenditure) and the increased relative demand for better quality products, and increased incomes for producers (agriculture is the source of income for much of the population of low-income countries). It is also argued that it will lead to more efficient global food production by encouraging specialization and focusing natural resources on the most appropriate crops, which in turn will lower food prices and make food more affordable, especially for low-income populations. It is also thought to stimulate economic growth, creating jobs and increasing incomes, further improving access to food (Van Berkum, 2022; WEF, 2022; Clapp, 2014). From this perspective, trade liberalization is "good for the poor" and "good for health" (Pritchett, and Lawrence, 1996; Dollar and Kraay, 2002). The food trade is seen as both a moral obligation and a function of sustainability. The moral obligation is irrefutable in terms of ensuring food accessibility and the continuity of production in high-risk areas (Clapp, 2014). It would also act as a stabilizing mechanism, allowing food to flow from areas of surplus to areas of deficit, reducing the impact of localized shortages caused by climate or geopolitical disruptions. Agricultural protection measures – including export taxes, export restrictions, tariffs, state-managed marketing boards, and public stockholding – are seen by agencies such as the World Bank and WTO as being highly inefficient policies. These organizations argue that these inefficiencies result in distorted price signals that can result in weaker production levels and higher food prices, both of which harm the poor and exacerbate food insecurity (Martin and Anderson, 2012; World Bank, 2012). They further point out that protection measures can also make agricultural producers in developing countries more vulnerable by denying them market opportunities (World Bank, 2007; Lamy, 2013). On the other hand, non-tariff measures are socially desirable and provide higher social well-being for consumer and also it is a catalyst for exporters, while it is higher profits for producers through a reduction in total costs (Santeramo and Lamonaca, 2019).

Despite the unprecedented increase in diet-related chronic diseases in recent years, governments continue to provide high levels of subsidies to agricultural production, which generally provides the raw materials for staple foods, and to the food industry for conventional purposes such as food security and promoting economic prosperity. It is unrealistic to expect a health focus as an effective topic in the formulation of pro-liberalization policies in the

short term. Therefore, governments have started to develop several measures to mitigate the negative effects. Recommendations on the framework of may have a mitigating effect on nutrition-related health problems, especially in developing countries.

3. International Trade Policies and Healthy Nutrition

Global trade is conducted under the influence of complex policies, procedures and agreements. International trade policies significantly impact healthy nutrition by influencing the availability, affordability, and quality of food. These policies shape global food systems, affecting what people consume and their ability to maintain a nutritious diet. Also affect households in complex ways with the potential for unpredictable effects. Furthermore, people today are witnessing a tremendous change in the pace and manner of dietary transition around the world. Consequently, as with the impact of globalization on health, tracking and assessing the precise links between trade and diet in the moment is a complex issue.

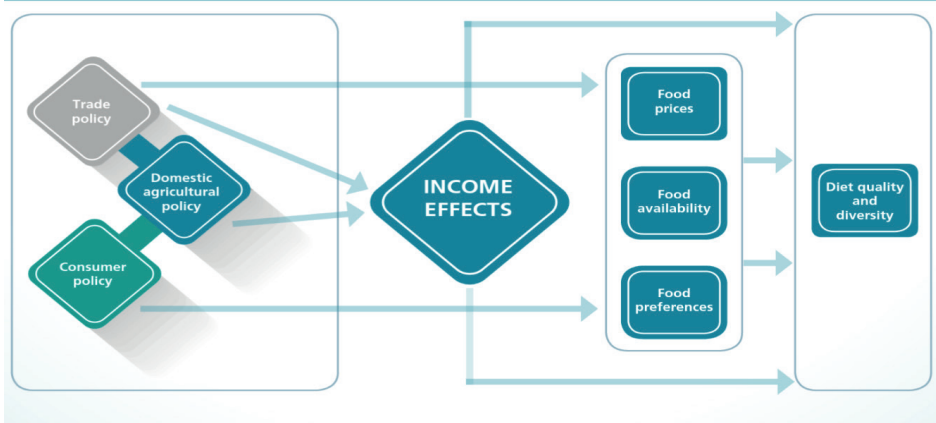
Trade agreements are a major risk for food insecurity and nutrition-related diseases (Hawkes and Murphy, 2010; Stuckler et al., 2010). Multilateral trade agreements, initiated by the WTO and then deepened by an increasing number of bilateral and regional trade agreements, have brought about three major changes in food systems: the opening of domestic markets towards international food trade and foreign direct investment (liberalization); the subsequent expansion of transnational food companies and their global markets (integration); and the increase in global food advertising. These three changes are affecting the dietary habits of the population and changing the local availability, nutritional quality, price and desirability of food, raising concerns about malnutrition, obesity and non-communicable diseases (Hawkes et al., 2009; FAO, 2008; Friel and Baker, 2009).

The international markets for key agricultural commodities, which are becoming increasingly important as a source of nutrition for vulnerable countries against climate change, will become even more critical in the future for these countries and for the world as a whole. It is anticipated that concerns will increase from a food policy perspective. Although free trade policies allow countries to leverage their comparative advantages in economic activities, increasing average per capita incomes, long-term growth rates, and a country's capacity to finance social safety nets for the poor, the rising crises have led to a preference for short-term programs (Smith & Glauber, 2020).

Shankar (2017) was mentioned on his paper that was "The impact of agricultural, trade and food policies on nutrition", outlines the conceptual linkages between policy and diet and explains the impact of 3 key policies (Figure 1).

It is also argued that when international agreements promoting trade and investment liberalization are paired with non-binding initiatives to address malnutrition, trade may create a conflict, potentially undermining efforts to combat malnutrition (Friel, et al., 2020).

Figure 1. Conceptual Framework of How Agricultural, Trade and Consumer Policies Influence Diets



Source: (Shankar, 2017).

Agricultural policies cover all policies related to inputs, production and processing, marketing, price, logistics. Agricultural R&D and technology policies, market price supports, input subsidies, rural infrastructure policies are also included in agricultural policies.

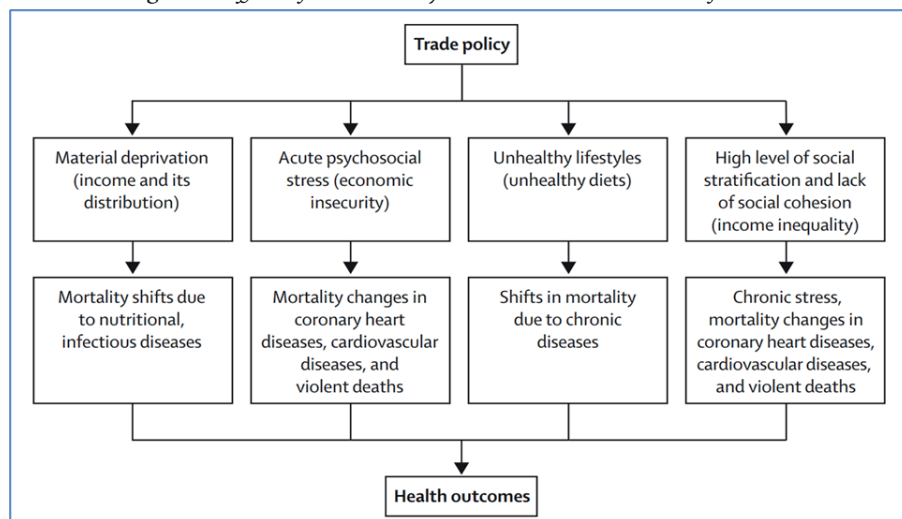
Trade policies are regulated by tariffs, non-tariff barriers and export bans during food price fluctuations. Liberalization in agricultural trade policy has focused on bringing countries closer to policies related to the WTO and regional trade agreements.

Consumer/food policies include subsidies and food aid, as well as policies at the level of direct food trade and consumption, without the motivation of healthy eating. These three main policy variables have direct and indirect impacts on the quality and diversity of people's diets.

Blouin et al. (2009) explained the impact of trade liberalization and globalization and health outcomes by focusing on four key factors: income, inequality, economic insecurity, and unhealthy diets (Figure 2). Although there is a positive relationship between a country's wealth and the health of its population, in terms of increased life expectancy or reduced child mortality, trade liberalization does not increase income for everyone, as income growth is also a proxy for socioeconomic status and development. Given the non-

linear relationship between income and health, it is important to understand the impact of trade liberalization on the income of poor households. The negative impact of income inequality on health has been emphasized due to its impact on material, and psychosocial well-being. The third factor is economic insecurity, which is associated with psychosocial stress and is said to create health problems resulting in mortality. In countries opened to foreign capital, especially the fluctuating employment of unskilled labor causes economic insecurity. Rapid urbanization and rising wages in some countries are partly responsible for the rise in food prices, which in turn change the demand for certain foods. Changes in the food supply through free trade also affect consumers' choices. Increased availability of unhealthy foods- rich in calories, low in nutrients, high in saturated fat and salt, and low in nutrients compared to healthy foods- coupled with decreases in their prices, worsening pa, increasing urbanization, and changes in lifestyles, mean that trade liberalization is likely to affect popular diets, especially the diets of poorer populations. For example, in Near East and North African countries, import dependency is increasing due to fundamental supply constraints. Affordability limits the transition to healthier and more diverse diets. Increasing imports for most products continue (OECD/FAO, 2023).

Figure 2: Effect of Trade Policy on Social Determinants of Health



Source: (Blouin et al., 2009)

In 2002, WHO and the WTO published a common report on the effects of trade on public health. The report was noted that trade agreements allow

for some national trade-restrictive measures that protect human health, taking into account certain health conditions, but only consider the least trade-restrictive measures relative to other measures. The most important finding of the report is that “there is common ground between health and trade”.

4. The Diet Transition

While globalization and associated food trade can affect food supply and demand in local food markets, it can also influence dietary habits in ways that increase overweight and obesity (Abay et al., 2022). The dietary change is a worldwide phenomenon. The “nutrition transition” refers to the significant dietary, lifestyle, and epidemiological shifts that occur as global incomes rise (Fanzo and Davis, 2021). Traditional diets with a limited number of foods are being replaced by a diet consisting mostly of animal products (meat, milk, and eggs), vegetable oils and sugar. The increase in income also affects calorie demand. There has been a large increase in calorie demand for animal products, fats, and sweeteners, moving away from starchy staple foods (Gouel and Guimbar, 2019). The impact of economic factors on the supply of higher-value food products, such as meat and dairy products, fruits, and vegetables, increases alongside the rise in income levels (Erokhin et al., 2021). Komarek et al. (2021) using scenario-based modeling, projected that if income and population growth continue along a mid-range trajectory, global average protein demand per capita for red meat (beef, sheep, goats, and pork), poultry, dairy milk, and eggs would increase by 14%, while total demand would rise by 38% between 2020 and 2050. Overweight is increasing in many countries due to decreased physical activity and increased access to processed foods high in energy, fat, free sugars, and salt. According to the World Obesity Atlas 2023 report, 38% of the global population is currently either overweight or obese. By 2035, the global prevalence of overweight and obesity is projected to reach 51%, with the South Pacific Islands leading the obesity epidemic. Obesity is expected to cost the global economy more than four trillion US dollars in potential income in 2035. In no country is obesity showing a decreasing trend and it is not projected that the prevalence of obesity across the entire population will decrease in the near future (Koliaki et. all., 2023).

Another effect of trade liberalization is to accelerate diet switching by promoting unhealthy consumption patterns. This increases the incidence of nutrition-related diseases, especially in developing countries (Thow and Hawkes, 2009). Globally, subsidy of food and agriculture averaged USD 630 billion per year between 2013 and 2018. The International Food Policy Research Institute highlights substantial inefficiencies in how governments deliver agricultural support. These inefficiencies involve market-based mechanisms like tariffs and quotas, as well as direct subsidies to farmers. Globally, of the over \$700 billion allocated to agricultural support annually, approximately \$530 billion is distributed directly to farmers. Much of this support is not only

market distorting, but also does not reach large numbers of farmers, harms the environment, and does not promote the production of nutritious food. Support for agricultural production, particularly in high- and upper-middle-income countries, is largely concentrated on staple foods, dairy products, and other protein-rich foods of animal origin. Rice, sugar, and various types of meat are the most subsidized foods worldwide, while fruits and vegetables are generally less subsidized and even penalized in some low-income countries. Trade and market interventions can undermine access to healthy foods. In many countries, financial subsidies have increased demand for staple foods and their derivatives by lowering their prices, reducing consumption of unsubsidized or less subsidized products such as fruits, vegetables, and pulses, and making them relatively more expensive. In many low- and middle-income countries, tariff rates on sugar and confectionery foods or fats and oils have been found to be associated with obesity, with a decrease in tariffs leading to an increase in overweight and obesity rates. Reducing tariff rates on unhealthy foods reduces the prices of these foods relative to traditionally consumed healthy foods and encourages the consumption of cheaper unhealthy foods (Abay et al., 2022; Benson, 2020).

The strongest evidence of the impact of trade policies on dietary transition is in Pacific Island Countries (PICs). According to WHO 2016 data, an estimated 43.0% of adults in PICs are obese and overweight, affecting all generations with different complications. It is more than three times the global average and is causing non-communicable diseases to reach crisis levels and is a growing concern among developing PICs. Physical inactivity and dietary change in particular are responsible for this dramatic increase. The determinants of overweight and obesity in PICs are complex due to the geographical location of the islands scattered in the Pacific Ocean, the fact that they are underdeveloped and developing countries with limited resources as well as different cultural backgrounds (Tong et al., 2022). Snowdon and Thow (2013) provided evidence on the relationship between trade policy and nutrition for the PICs. 75% of deaths are caused by nutrition-related diseases. In the last 20 years, a large part of the population in these islands has migrated to urban centers located on the coast and left fertile agricultural areas. PICs are dependent on imports due to difficult transportation and limited natural resources. Since they do not have comparative advantage in the international arena, their bargaining power is weak. Whichever country they conclude a free trade agreement with, the other side will be the winner of the agreement. A survey conducted in 2011 found food products from 52 countries in an ordinary supermarket. The availability of local products in the market is gradually decreasing. Diets have traditionally shifted from seafood, fruits, and local grains to snacks high in saturated fat, canned meat products and sugary foods and beverages. Local agriculture has also become an increasingly abandoned occupation due to falling demand

for local products. In response to this situation, PICs are applying innovative approaches in developing trade-related policy approaches for a less obesogenic food system. Tariffs affecting pricing are in place. Import and customs duties on sugary beverages and other high-sugar products, monosodium glutamate and palm oil have been increased, while on fruits and vegetables they have been reduced. In addition, campaigns were organized to inform the public about consumption through measures such as adding calorie and fat content to product labels. Legal regulations to reduce fat and salt content in processed products are also among these measures. Thow and Hawkes (2009) also examined the dietary change problems caused by the free trade agreements between the USA and Central American countries between 1990 and 2005. The results show that trade liberalization in Central American countries has had health implications in the region. In particular, the rapid increase in the market availability and consumption of health-compromising foods in these countries has been cited as a factor facilitating “diet transition”, leading to an increase in obesity, cardiovascular disease, and cancer.

To some extent, these studies provide an insight into the effects of international trade on diet switching and the diet-related health problems it creates. On the other hand, it is obvious that it is not a realistic expectation to add a health perspective to international negotiations and to achieve a result that all countries agree on in the short term. While the health dimension of the issue has only recently begun to be discussed, especially in developing countries, there are also studies with recommendations on what can be done in these countries.

Haddad (2003) draws a perspective for developing countries based on the experience of developed countries. It is explained with the dimensions of food supply and food demand in solving problems related to nutritional quality that the market has difficulty in solving with its own dynamics through public intervention.

Supply interventions:

- Public investment in technology to produce low-cost vegetables and fruits and low-fat animal products with high productivity, especially for low-income consumers.
- Remove incentives for high-fat food production.
- Consider a health perspective when setting policies on food trade.
- Tighten standards for the fat content of foods consumed outside the home and in schools.
- Eliminate nutrition-related newborn health problems by taking measures to prevent malnutrition in the womb.

Demand Interventions:

- Increase the relative cost of consuming unhealthy food.
- Providing clearer information on product ingredients.
- Increase awareness of the consequences of malnutrition.

Along with the measures listed above, it was emphasized that some of the factors that developing countries are still struggling to cope with should also be considered. The problem of malnutrition in developing countries is still not fully solved. Also, there are people who must consume foods with no nutritional value and the public may not have the capacity to influence people's dietary choices. On the supply side, locally produced foods that are restricted due to perceived health hazards may result in a reduction in the income of small farmers operating locally. Since small farmers do not have as much political power as farmers in industrialized countries, the economic impact in rural areas can be much larger. For many developing countries, increasing foreign direct investment is essential. Attempts to discourage foreign investors from producing less healthy foodstuffs can have consequences for employment and people's livelihoods.

5. Conclusion

Efforts to liberalize international trade will continue to increase. To minimize the negative consequences of this liberalization, the focus should be on harmonizing national measures for highly imported foods. Further research is needed so that public health policymakers can develop strategies for setting and sharing nutrition policies to reduce the risks inherent in global trade agreements. Public health and international trade organizations have an important role to play in developing the scientific basis for nutrition policy interventions.

As stated, the 2030 agenda for sustainable development of UN attention to inequalities between and within countries is critical. To achieve global targets, sustained evidence-based policy solutions must be produced and implemented to drive rapid progress in countries. The health consequences of trade policies need to be identified so that these concerns can be addressed, and appropriate complementary policies can be developed (sdgs.un.org/2030agenda).

According to FAO (2022) reusing existing public support can help increase consumer access to nutrient-dense food if done wisely and empirically, with the participation of all stakeholders, considering countries' political economies and institutional capacities as well as commitments and flexibilities under WTO rules. It can help make healthy eating more available and less expensive everywhere in the world, which is a required but not sufficient prerequisite. To prevent potential disparities, it is important to consider farmers' expertise in

producing nutrient-dense foods while using public assistance. Governments need to prioritize and expand spending on the provision of services that support food and agriculture more broadly, especially in low- and middle-income nations. There should be sufficient public funding to support this. Overproduction is a problem in high- and upper-middle-income nations.

In line with its commitments on Technical Barriers to Trade, one of the most important is to work towards international standards as a basis for the development of nutrition policies. Public interventions are needed to alleviate the negative effects of international trade liberalization, especially in developing countries, and to improve the quality of nutrition. These include additional taxes on sweeteners, more detailed labeling of product ingredients, awareness-raising campaigns, and legislative measures to reduce fat and salt content in processed food products. Although obesity rates are low, practices exist in countries such as Japan, Norway, and South Korea. Policies should be implemented to remove asymmetric information between producers and consumers. Regulation of food marketing and advertising, especially for children, and the provision of nutritional information on product labels for healthy food choices will make a significant contribution.

Trade liberalization has the potential to enhance food security by increasing availability, affordability, and diversity of food. However, without careful management, it can also exacerbate vulnerabilities, particularly for small-scale farmers and marginalized communities. Policymakers must balance the benefits of open trade with the need to protect domestic food systems and promote equitable access to nutrition.

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CHAPTER 9

PLATO'S MYTH OF THE *Magnesian Stone*. THE HERMENEUTIC VERTICAL

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Without changing his own rule of starting a literary work with an introduction¹, Plato opens the dialogue *Ion* with Socrates' greeting the rhapsode Ion² and presenting him to the invisible listeners of the dialogue. The introduction is immediately followed by an exposition – a short speech by Socrates (Plato, 1925, p. Ion 530 bc), in which Plato laconically introduces the main ideas of the dialogue. This speech³ itself represents Socrates' idea of rhapsodic art, which he divides here into two unequal components: aesthetic, that is, the appearance of the rhapsode (to “be adorned and . . . look as handsome as possible” (Plato, 1925, p. vol. 9 Ion 530b)), which Socrates does not dwell on in detail and which, as we will see later, is completely not important for him, and the hermeneutical one, for the sake of which, it seems, the philosopher begins the whole conversation. Socrates immediately explains what he means by this: for him, the art of the rhapsode is to comprehend the poet's intention (“not merely learning off his words”⁴ (Plato, 1925, p. Ion 530c)), to delve into what the poet says, and to become their interpreter for the listeners (Plato, 1925, p. Ion 530bc). That is, Socrates understands a rhapsode as a hermeneut who has a dual function: comprehending the poet's intention and interpreting it for the listeners. Already in this initial speech of Socrates, the grain of that future idea (a chain of hermeneutical elements) that will sprout at the culmination of the dialogue, namely in the myth of the Magnesian stone, is quite clearly captured. Socrates brings Ion to this point masterfully and purposefully, getting him to admit that he interprets only one poet – Homer – correctly and well: “I excel all men in speaking on Homer and have plenty to say, and everyone else says that I do it well” (Plato, 1925, p. 533c). As soon as this happens, Socrates immediately and willingly proceeds to present the myth.

1 “there must be an introduction first, at the beginning of the discourse... and the narrative must come second with the testimony after it, and third the proofs, and fourth the probabilities” (Plato, 1925, p. vol. 9 Phaedrus 266de)

2 Here it would be useful to pay attention to the fact that Ion is a guest in the dialogue: “Welcome, Ion. Where have you come from now, to pay us this visit? From your home in Ephesus?” (Plato, 1925, p. vol. 9 Ion 530a). The host here is Socrates and throughout the entire dialogue we more than once become witnesses to the intellectual dominance of Socrates in relation to Ion.

3 The structure of this speech is extremely interesting. The motive of envy (“I must say I have often envied you rhapsodes... a matter for envy... one cannot but envy all this” (Plato, 1925, p. Ion 530bc)) appears in it three times, collecting the idea of dialogue under its arches.

4 In antiquity, rhapsodic art presupposed knowledge of the epic by heart, but at the same time it was not the key to a successful interpretation (Pyramus, 3, 6): To Niceratus, boasting of knowing the *Iliad* and *Odyssey* by heart, Antisthenes objects that rhapsodists also possess this knowledge: “Well, do you know any tribe of men . . . more stupid than the rhapsodes?” (Xenophon, 1979, pp. vol 4, Symposium III 6).

The myth of the Magnesian stone

The essence of the myth about the Magnesian (Heraclian) stone comes down to the idea that the act of creativity is the result of the influence of transcendental forces, first on poet, and through him on performer and listener. Metaphorically, it is expressed as a chain attracted by a Magnesian stone (magnet), the main feature of which is not only the attraction of objects that have similar qualities to it, but also impartation: “to them a power whereby they in turn are able to do the very same thing as the stone, and attract other rings; so that sometimes there is formed quite a long chain of bits of iron and rings, suspended one from another; and they all depend for this power on that one stone” (Plato, 1925, p. Ion 533de).

One of the outstanding qualities of Plato’s ontology was hierarchical systematization, which is expressed especially clearly and interestingly in his reflections on the world and state structure. In this myth, also, quite clearly, Plato practically gives a diagram of the creative mechanism, and it is shown as a chain attracted by a magnet (deity) and consisting of three main rings⁵ (poet, performer and listener).

Deity

As we understand from the myth, the main initiator of the poetic act is a certain divine force, which is expressed by Plato in the person of God (or a Muse), whom the philosopher clearly differentiates from other elements of the process, giving it very special qualities. God is the initiator and the originator of creativity. In this sense, he is a source of creative charge. Without it, this entire structure of rings loses the tension necessary for creativity and falls apart: “they all depend for this power on that one stone” (Ion 533e), says Plato. Therefore, according to the philosopher, any true creativity is generally unthinkable without divine initiation; Plato’s God is the meaning-forming part of the entire creative act.

Plato’s God is located mentally above man, more specifically in heaven: “There are many blessed sights and many ways hither and thither within the heaven, along which the blessed gods go to and fro attending each to his own duties” (Plato, 1925, pp. vol. 9, Phaedrus 247a). Therefore, a text is sent down to the poet, that is, the creative movement (current of inspiration) is carried out from top to bottom. God moves this creative chain from a horizontal to a vertical position, suspends the entire structure, relieves it of gravity, makes it lighter and takes it upward. The element of this act that feels the greatest deliverance from the shackles of earthly gravity becomes the “winged” poet – a “light and sacred thing” (Ion 534 b).

⁵ Plato does not forget everyone else involved in rhapsodic creativity: “choric performers and masters and under-masters suspended by side-connections from the rings that hang down from the Muse” (Plato, 1925, p. Ion 536a).

Poet

The piety shown to talented poets, in antiquity (and partly in the Middle Ages) had an unusual connotation. It consisted in the fact that the poet was not at all perceived as the creator of his own poems. The poet was a divine transmitter, and it was precisely this prophetic chosenness, and not at all the skill of versification, that was the basis for such a special attitude.

The phenomenon of prophecy, whatever it may be – religious or artistic (if such a division was even possible in antiquity) – always raises the question of the conditions for the selection of the poet by God. Ancient culture understood that God's choice of man for this activity could not be accidental. Plato in *Phaedrus* determines that the person chosen by God, or a Muse must have certain qualities that distinguished him from other people: "And a third kind of possession and madness comes from the Muses. This takes hold upon a gentle and pure soul, arouses it and inspires it to songs and other poetry" (Plato, 1925, pp. *Phaedrus*, 245a). "Gentle and pure" soul makes possible a person's receptivity to divine influence, they are the qualities that, according to Plato, are necessary for God to choose a person for poetic creativity.

Having been chosen, the poet finds himself in a position dependent on God or Muse. The poet not only does not know whether and when he will be inspired, but also in what poetic form this will happen: "each is able only to compose that to which the Muse has stirred him, this man dithyrambs, another laudatory odes, another dance-songs, another epic or else iambic verse" (Plato, 1925, p. *Ion* 534c). He is dependent in his position. Almost physically we feel the state of the poet described by Plato: "One poet is suspended from one Muse, another from another: the word we use for it is "possessed", but it is much the same thing, for he is held" (Plato, 1925, p. *Ion* 536b).

The poet conveyed what the gods told him, and his whole difference from other people consisted precisely in the fact that God for his divine dictation chooses him, and not someone else. The function of the poet was to interpret the text sent to him. Therefore, there can be no talk of any independent creative will of the artist here. The will, character, and personality of the poet must be leveled. He should declare the denial of himself as a creative person. His own life, with all its vital manifestations, should be subordinated to only one goal – to feel the God. It must become a supernatural feeling. And all earthly sensations should fade away: "minstrel, whom the Muse loved above all other men, and gave him both good and evil; of his sight she deprived him, but gave him the gift of sweet song" (Homer, 1919, p. *Odyssey* VIII 63). Sacrifice of oneself and one's physical feelings (in addition to spiritual gentleness and purity) became another condition for creativity. The opposite quality to that – the artistic vanity – Plato sees in the rhapsodists and denounces it in the person of *Ion*.

Rhapsode

Ion was created at a time when a large tribe of rhapsodes had already replaced the single *aoidoi* in their field. The approach to performance itself was radically opposite for these two groups of artists. For rhapsodes, epic art became a profession; they began to receive a fixed fee for their performance: “For I have to pay the closest attention to them; since, if I set them crying, I shall laugh myself because of the money I take, but if they laugh, I myself shall cry because of the money I lose” (Plato, 1925, p. *Ion* 535e). In addition, rhapsodes began to participate in various competitions. Both of these have led to the need to develop competitive strategies, which in the performing arts usually comes down to the development and improvement of the formal aspects of performance, such as, for example, effective techniques or the appearance of the performer. Thus, the rhapsodic art of *Ion* requires that the rhapsodes look: “as handsome as possible” (Plato, 1925, p. *Ion* 530b). And, although Socrates says that he envies the rhapsodes for this, we understand that behind these words there is a desperate reproach from Plato that the external aspect of the rhapsodes obscures the internal. For the first time, the form of poetic performance on the ancient stage outweighed the content. A rhapsode emerged from under the poet’s shadow and began to introduce himself. Isn’t this what distinguishes an *aoidos* from a rhapsode and isn’t this what Plato protests against?

Epic is an impersonal paradigm. But the personality of the rhapsode grew to such proportions when he began to overlap both the creator and the work he created. A contradiction arose, which was realised by philosophy. Not only Plato but also other philosophers show the negative attitude towards the rhapsodes. Let’s remember how Antisthenes in Xenophon’s *Symposium* calls the rhapsodes “stupid” (Xenophon, 1979, p. *Symposium* III 6).

Later, Aristotle also, in his treatise *Poetics*, felt the need to defend tragedy from accusations. He says: “First of all, this is not a criticism of poetry but of acting: even in reciting a minstrel can overdo his gestures” (Aristotle, 1944, p. *Poetics* 1462a). Ancient philosophy protects the epic creation from the performer. Socrates talks about what seems to him much more important than the appearance of the rhapsode. This is the actual performance. But he does not talk about the beauty of the sound of his voice or about the performance techniques. Plato’s rhapsode has the more important functions: “rhapsode ought to make himself an interpreter of the poet’s thought to his audience” (Plato, 1925, p. *Ion* 530c). Thus, the activity of the rhapsode according to Plato has a hermeneutical basis and is bidirectional. Socrates’ rhapsode is like Janus, looking in two different sides. Firstly, rhapsode performs the act of comprehending poet’s intention, and secondly, he becomes the interpreter of this idea for the listeners. The activity of the rhapsode is directed towards the listener; it does not exist on its own. By reciting, the rhapsode performs a

hermeneutic act for the listener and his influence, according to Plato, is not only aesthetic.

Listener

The much-desired contact between performer and listener is sometimes called “current” in our time⁶. It is obvious that Plato means precisely this “current” in the myth, calling it “power”: “spectator is the last of the rings which I spoke of as receiving from each other the power transmitted from the Heracleian lodestone” (Plato, 1925, p. Ion 535e). The influence of this power, according to Plato, has such a character that it changes the mental state of all elements in this chain. Rhapsodes themselves behave on stage as if they are deprived of reason and have the same effect on the audience (Plato, 1925, p. Ion 535d). Moreover, this “loss of reason” is precisely the indispensable condition for the listener to join the creative process, in other words, for co-creation and mutual influence.

It is interesting that Socrates, who speaks about this in the dialogue *Ion*, himself had a similar influence on the listeners of his philosophical speeches. One of them says: “when I hear him I am worse than any wild fanatic; I find my heart leaping and my tears gushing forth at the sound of his speech, and I see great numbers of other people having the same experience. When I listened to Pericles and other skilled orators I thought them eloquent, but I never felt anything like this; my spirit was not left in a tumult and had not to complain of my being in the condition of a common slave: whereas the influence of our Marsyas here has often thrown me into such a state that I thought my life not worth living on these terms” (Plato, 1925, pp. Sim. 215de-216). This evidence is very valuable as an example of inspired and inspiring philosophizing, which in Plato is ontologically almost no different from religious and artistic (poetic) prophecy, when the elements of the chain are held by the power of inspiration and have the ability to both be inspired by the previous link and to inspire the subsequent ones.

Inspiration

Inspiration was an attractive theme for Greek philosophy and Plato is one of those philosophers who opened up for us the ancient understanding of this phenomenon⁷. For Plato, identifying the essence of this concept did not present any difficulty. He understood the nature of inspiration quite in the ancient spirit and systematized its types in detail. To define this state, Plato

6 Soviet pianist Ginzburg said: “When I play on the stage, it may be difficult for me at first – I have not yet played out, and most importantly, I still do not know how the listener treats me. But from the moment the current between me and the listener is established, it becomes easy for me to play... I know quite clearly that if this current has begun, everything will be fine” (Ginzburg, 1984, p. 231).

7 In addition to *Ion*, poetic creativity as a result of inspiration is spoken of in: *Apol.* 22c, *Phaedr.* 245a, *Men.* 99d, *R.P.X* 598d-602e, *Legg.* IV 719c.

usually uses the word *μανία*⁸, which is traditionally translated as madness, and points to its four types⁹: the first type of inspiration is “prophecy”, which is inspired by Apollo; the second type, Dionysus’ “mystic madness”; the third type is the “poetic madness” from the Muses; and the fourth type is “madness of love” inspired by Aphrodite and Eros (Plato, 1925, p. Phaedrus 265ab). From this and some other texts it is clear that Plato understands inspiration only as a divine influence. He says: “the greatest of blessings come to us through madness, when it is sent as a gift of the gods” (Plato, 1925, p. Phaedrus 244a). The idea of the poet’s madness runs like a dotted line throughout Plato’s entire work. The main manifesto of this idea were the words of Socrates in *Phaedrus*: “he who without the divine madness comes to the doors of the Muses, confident that he will be a good poet by art, meets with no success, and the poetry of the sane man vanishes into nothingness before that of the inspired madmen” (Plato, 1925, p. Phaedrus 245a).

Obsession

In Plato, inspiration is equal to the madness that is “sent down” by the Muses and which is understood as obsession: “the word we use for it is “possessed,” but it is much the same thing, for he is held” (Plato, 1925, p. 536b). A Muse holds the poet, who, in turn, also acquires the magnetic ability to hold: “And from these first rings – the poets – are suspended various others, which are thus inspired, some by Orpheus and others by Musaeus; but the majority are possessed and held by Homer. Of whom you, Ion, are one, and are possessed by Homer” (ibid.). Obsession is a feature not only of the good poet, but also of all other participants in creativity, since, according to Plato, metaphorically, the magnetic properties are transmitted to all rings in the chain.

It is interesting that neither the performer nor the listener can be directly possessed by the Divine (in any case, Plato does not say anything about this); between them stands the poet, the author of the work. And God here, in Plato’s language, is a creative magnet that attracts and holds the entire chain (ibid.), which is possible only under the condition, firstly, of the poet’s madness, and secondly, of the madness of the others involved in this creative act. Plato calls this “loss of mind,” and he understands the mind as a gift that can be taken away. Poet: “is unable ever to indite until he has been inspired and put out of his senses, and his mind is no longer in him” (Plato, 1925, p. Ion 534b), “it is not they who utter these words of great price, when they are out of their wits, but that it is God himself who speaks and addresses us through them” (Plato, 1925, p. Ion 534d).

8 Along with the word *mania*, Plato often uses the concept of *enthusiasm*, which is also usually often translated as inspiration: (*Phaedr.* 249e, *Tim.* 71e, *Phaedr.* 263d, *Tim.* 71e).

9 Plato distinguishes madness as a disease from inspired madness: “there are two kinds of madness, one arising from human diseases, and the other from a divine release from the customary habits” (Plato, 1925, p. Phaedrus 265a).

Plato clearly points out the opposition between the concepts of inspiration and mind. In *Ion* we see a contrast between two phenomena that is not entirely traditional for this philosopher, because in Plato the opposition often means a dialectically more or less balanced coexistence of concepts. Here he advocates absolutely removing from the performer even the very thought of the possibility of rational interpretation. Surprisingly, a philosopher like Plato puts even the wisdom below the inspiration. This can only be explained by the fact that Plato here reaches such heights of idealism that even for him were not achievable at every stage of his work.

The concept of “obsession” is associated with the hermeneutically determined concept of “grasping” and in hermeneutic language means instantly and intuitively penetrating the meaning of what is perceived. Therefore, to be a ring in the Platonic chain presupposes being able to grasp and hold the meaning that is revealed through inspiration.

Hermeneutics of creativity

The ancient shift of the function of the creator of poetry from the poet to God, that is, one step higher in the Platonic vertical, also implies endowing the poet with the function of an interpreter. Because the poet must interpret what God tells him and intuitively put it into the best possible poetic form. But the main goal remains the correct interpretation of the content. And this is the same thing that Plato expects from the rhapsode. The rhapsode must also be a good interpreter. It turns out that both the poet and the rhapsode carry the same functions in this chain: “And so you act as interpreters of interpreters?” – asks Socrates. “Precisely”, Ion answers (Plato, 1925, p. Ion 535a).

But it is especially in this dialogue that the hermeneutic burden of the rhapsode seems heavier than that of the poet because he needs to interpret what has already been interpreted (by the poet), which is always more difficult. On the other hand, Plato imposes a more serious hermeneutical responsibility on the rhapsode, removing it almost completely from the listener. A text correctly interpreted by the rhapsode does not require additional decoding by the listener. The main act of interpretation according to Plato takes place on the stage, and not in the hall. The listener can only accept this interpretation in its finished form and receive aesthetic pleasure and ethical benefit. Therefore, we can say that the main and most intense interpretive work in this chain is performed by the rhapsode. The success of this activity depends on whether the rhapsode is obsessed with the author and on the degree of this obsession, which is equal in the Platonic equation to the degree of inspiration. Thanks to this obsession, a hermeneutic movement takes place in the chain – a hermeneutic current, which Socrates testifies to in *Ion*.

Conclusion

Ion is a dialogue in which Plato persistently and purposefully pursues one single thought. This is one of the features of this dialogue in comparison with others, in which some thoughts replace others and ideas are often confused and blurred due to a lack of certainty and consistency. *Ion* is not like that at all. In this dialogue, Socrates simply bombards the rhapsode with his persistent determination to convey to him the truth about the nature of his rhapsodic creativity. Ion does not resist these attempts at all, he is passive and in general it seems that this figure is present in the dialogue only so that this work, even to the slightest extent, remains a dialogue and does not turn into a monologue of Socrates, who of course feels confident in this aesthetic-philosophical field, but still needs some, not very significant, dotted and thinning out the entire work of support on Ion's professional opinion.

Powerful and “conjuring” the audience on stage, Ion appears in this dialogue as a wingman, without realizing it. He does not quite understand what Socrates wants from him and where his reasoning will ultimately lead. In this sense, each question of Socrates, coupled with Ion's answer and Socrates' conclusion (the ternary form), constitutes a certain part of the whole that is known to Socrates and which he strives to complete, but which is hidden from Ion. Moreover, the rhapsode does not feel either the whole (the main idea of the dialogue), or the part (a reflection of the idea in question and answer), or even that the whole itself already implies and contains this part. In this sense, Ion, at first glance, seems to be an element that can be removed from the dialogue almost painlessly for the meaning. And therefore, this dialogue is perceived more like a monologue. And the existence of Ion in this work is justified by his misunderstanding not only of the very process of Socrates' inquiry into his creative existence, but also by his complete ignorance of the very act and mechanism of creativity. Socrates, in contrast, understands this and shows this value, and in the end, in the coda of the work, he reduces the entire focus of the previous genetics of the intense thought process to this very “divine” ignorance. Therefore, the fact that Ion is so helpless in the technique of thinking, in sophistry and dialectics is a necessary condition for his existence in this dialogue. And moreover, this helplessness in “skill”, even in the highest one – philosophical, seems to be the most necessary condition for the creativity in general. This selflessness (along with madness, tenderness and purity of soul) is one of the main grounds for inclusion in the hermeneutic chain of creativity.

Plato's views on the nature of the poetic creativity, set out by him in various works, are collected into a fairly complete theory, which he presented in the dialogue *Ion* in the form of a myth about the Magnesian (Heraclian) stone. The very fact that Plato put these ideas into the form of myth speaks of their great significance for this philosopher and the fact that he wanted to make them interpretively brighter and more accessible to understanding. It must be said

that he completely succeeded in this, and the myth became on a par with such of his masterpieces as the Myth of the cave and the Myth of the ring of Gyges.

In essence, this myth is a poetic translation of Plato's idea of divine inspiration as the main reason for creativity. According to Plato, true creativity is divinely initiated, and it is always sent down as a kind of revelation. This inspiration has a tremendous power of attraction, which has the character of obsession. This obsession or mania, as Plato calls it, is a necessary condition for creativity at all its levels, from creation to perception, from poet to listener. This entire chain is suspended from top to bottom by magnetic attraction and can therefore be considered vertical.

Another idea that Plato emphasizes repeatedly throughout the dialogue is the idea of creativity as an act of interpretation. This thought of Plato logically follows from the main idea of the myth of divine revelation. Indeed, if we accept poetic creativity as a revelation, then it needs to be understood and interpreted. Therefore, at all levels of this Magnesian creative chain there must be a hermeneutic intention and therefore the entire creative process can be called a hermeneutic process.

So, what is the creative act for Plato? It is a process of divine revelation that requires hermeneutic interpretation. Therefore, the creative chain that Plato describes in the myth of the Magnesian stone can be called a hermeneutic vertical.

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CHAPTER 10

THE IMPACT OF SOCIO-DEMOGRAPHIC FACTORS ON TRUST IN PUBLIC INSTITUTIONS: THE CASE OF TURKEY¹

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1 This study is an extended version of the abstract paper presented at the “Tokat 2nd International Conference on Scientific Researches,” held in Tokat from September 1 to 3, 2023.

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INTRODUCTION

Trust, which holds a significant place in the foundation of individual and social relationships, also plays a critical role in the relationship between the state and society. Thinkers who ground the state's legitimacy in social contracts argue that individuals transfer their rights to an entity called the state willingly and consensually to create an environment of trust. If citizens' trust in the state weakens, the social contract may be damaged, undermining democratic functioning and societal stability.

Trust in the state fundamentally encompasses trust in public administration, i.e., public institutions (governments, political authorities, public organizations). Numerous factors—individual, social, and institutional—affect trust in public institutions (Putnam, 2000; Newton, 2001; Bouckaert & Van de Walle, 2003; Hetherington, 2005; Rothstein & Teorell, 2008; Grönlund & Setälä, 2012).

This study aims to analyze how trust in public institutions among Turkish citizens varies according to different socio-demographic factors, using data from the seventh wave of the World Values Survey. The study examines the relationship between independent variables such as gender, marital status, age, educational level, the importance placed on religion, and social trust, and trust in public institutions. The dependent variable comprises various indicators of trust in public institutions in Turkey (trust in parliament, trust in the judiciary, trust in the police, trust in politicians, and trust in political parties).

The objective of the research is to determine how individuals' demographic characteristics shape their perceptions of trust in public institutions. In line with general trends observed in previous research, the study tests whether Turkish citizens' trust in public institutions is influenced by various socio-demographic factors. By highlighting this trust relationship through the lens of diverse demographic elements, the study underscores the importance of fostering social trust. Strengthening the bond of trust between public institutions and citizens is expected to contribute to a healthier functioning of society on a broader level.

METHOD

The study utilizes data from the seventh wave of the World Values Survey conducted in Turkey between 2017 and 2022. The primary reason for employing the World Values Survey is its inclusion of a wide range of questions on diverse topics. Within the scope of the study, gender, age, marital status, education level, the importance placed on religion, and social trust have been identified as independent variables. The dependent variable is participants' trust in public institutions. To measure trust in public institutions, variables such as trust in parliament, trust in the judiciary, trust in political parties, trust in the police, and trust in politicians have been included in the analysis.

Analysis and Findings

The data obtained from the seventh wave of the World Values Survey have been analyzed using the SPSS statistical package. It has been determined that the data did not follow a normal distribution. Non-parametric tests have been applied to address the research questions. The Mann-Whitney U test has been used for binary variables, while the Kruskal-Wallis H test has been applied to variables with more than two categories.

To determine whether trust in public institutions significantly differs based on the gender variable, the Mann-Whitney U test has been conducted, and the results are presented in Table 1.

Table 1. Results of the Mann-Whitney U Test for Trust in Public Institutions Based on the Gender Variable

	Gender	n	Mean Rank	U	z	p
Trust in Public Institutions	Woman	1205	1204,32	724594,000	-,048	0,962
	Man	1204	1205,68			

Upon examining Table 1, it has been determined that trust in public institutions does not significantly differ based on gender ($U = 724,594.000$; $p < 0.962$).

To test whether participants' trust in public institutions significantly varies according to marital status, a Kruskal-Wallis test has been conducted. The results of this analysis are presented in Table 2.

Table 2. Results of the Kruskal-Wallis Test for Trust in Public Institutions Based on the Marital Status Variable

Marital Status	n	Mean Rank	X (Chi-Square)	p	Significant Difference
(1) Married	1495	1236,39	19,614	0,001	1-3; 1-6; 3-5; 4-5; 5-6
(2) Living together as married	6	845,17			
(3) Divorced	61	1052,39			
(4) Married but living separately from spouse	4	755,75			
(5) Widowed	60	1386,00			
(6) Single	780	1143,29			

Upon examining Table 2, the analysis results indicate that citizens' marital status significantly affects their trust scores in public institutions ($X^2 = 15.818$; $p < 0.05$). To identify the source of this significant difference, a Mann-Whitney U test has been conducted.

The test results have revealed a significant difference ($p < 0.001$) in trust in public institutions between married and single individuals. Married individuals (1168.09) have been found to have higher trust levels compared to single individuals (1080.33). Similarly, married individuals (783.11) have demonstrated higher trust in public institutions compared to divorced individuals (665.61). Additionally, widowed individuals have been found to have greater trust in public institutions compared to divorced individuals, those living separately from their spouses, and single individuals.

To test whether trust in public institutions significantly differs based on the age variable, a Kruskal-Wallis test has been conducted. The results of this analysis are presented in Table 3.

Table 3. Results of the Kruskal-Wallis Test for Trust in Public Institutions Based on the Age Variable

Age	n	Mean Rank	X (Chi-Square)	p	Significant Difference
(1) 16-24	(1) 368	1194,69	12,093	0,034	2-3; 2-4; 2-5
(2) 25-34	(2) 582	1127,70			
(3) 35-44	(3) 551	1235,77			
(4) 45-54	(4)410	1252,14			
(5) 55-64	(5)467	1236,58			
(6) 65 and above	(6) 30	1090,03			

Upon examining Table 3, the analysis results indicate that citizens’ age significantly affects their trust scores in public institutions ($X^2 = 12.093$; $p < 0.034$). To identify the source of this significant difference, a Mann-Whitney U test has been conducted.

The test results have revealed significant differences in trust in public institutions between age groups **(2) and (3)**, **(2) and (4)**, and **(2) and (5)** ($p < 0.010$; $p < 0.005$; $p < 0.001$). In all cases, older citizens have been found to have higher trust levels compared to younger citizens. Specifically:

- Between age group **(2)** (younger citizens) and **(3)**, trust scores were **542.74** versus **592.63**.
- Between age group **(2)** and **(4)**, trust scores were **475.24** versus **526.68**.
- Between age group **(2)** and **(5)**, trust scores were **503.81** versus **551.41**.

These findings suggest that older citizens have higher trust in public institutions compared to younger age groups.

To test whether trust scores significantly differ based on the education variable, a Kruskal-Wallis test has been conducted. The results of this analysis are presented in Table 4.

Table 4. Results of the Kruskal-Wallis Test for Trust in Public Institutions Based on the Education Variable

Education	n	Mean Rank	X (Chi-Square)	p	Significant Difference
(0) No formal education	276	1265,26	11,333	0,023	0-3; 0-6; 1-3; 1-6
(1) Primary School	875	1243,36			
(2) Middle School	256	1178,89			
(3) High School	584	1146,25			
(4) Post-secondary non-tertiary education	-	-			
(5) Short scyle tertiary education	-	-			
(6) Bachelor's degree holders	409	1156,09			

Upon examining Table 4, the analysis results indicate that citizens' education level significantly affects their trust scores in public institutions ($X^2 = 11.333$; $p < 0.023$). To identify the source of this significant difference, a Mann-Whitney U test has been conducted. As shown in Table 4.1, it has been found that individuals with no formal education and those with only a primary school education have higher trust scores in public institutions compared to high school and bachelor's degree graduates.

Table 4.1. Results of the Mann-Whitney U Test for Trust in Public Institutions Based on the Education Variable

Education	n	Mean rank	U	z	p
0	276	458,57	72844,500	-2,285	0,022
3	584	417,23			
0	276	360,39	51645,500	-1,895	0,058
6	409	331,26			
1	875	753,89	234594,000	-2,660	0,008
3	584	694,20			
1	875	657,26	166024,500	-2,092	0,036
6	409	610,93			

To test whether citizens' trust in public institutions significantly differs according to their social trust, a Mann-Whitney U test has been conducted.

Table 5. Results of the Kruskal-Wallis Test for Trust in Public Institutions Based on the Social Trust Variable

Social Trust	n	Mean rank	U	z	p
Those who trust	388	1248,75	320341,000	-1,918	0,055
Those who don't trust	2027	1172,01			

Upon examining Table 5, the analysis results indicate that citizens' levels of social trust significantly affect their trust scores in public institutions ($U = 320,341$; $p < 0.055$). It has been found that individuals who trust (1248.75) have higher trust in public institutions compared to those who do not trust (1172.01).

To test whether citizens' trust in public institutions significantly differs according to the importance they place on religion, a Kruskal-Wallis test has been conducted. The results of this analysis are presented in Table 6.

Table 6. Results of the Kruskal-Wallis Test for Trust in Public Institutions Based on the Importance Given to Religion

Religion	N	Mean rank	X (Chi-Square)	P	Significant Difference
(1) very important	(1) 1445	1306,24	126,918	0,000	1-2; 1-3; 1-4; 2-3; 2-4; 3-4
(2) somewhat important	(2) 685	1136,59			
(3) not very important	(3) 250	848,03			
(4) not important at all	(4) 24	530,27			

Upon examining Table 6, a Kruskal-Wallis test has been applied to determine whether citizens' trust in public institutions significantly differs based on the importance they place on religion. The analysis results indicate that the level of importance given to religion significantly affects trust scores in public institutions ($X^2 = 126.918$; $p < 0.000$).

To identify the source of this significant difference, a Mann-Whitney U test has been conducted. The test results have revealed that individuals who place high or moderate importance on religion have higher trust scores in public institutions compared to those who place little or no importance on religion.

Table 6.1. *Results of the Mann-Whitney U Test for Trust in Public Institutions Based on the Importance Given to Religion*

Religion	n	Mean rank	U	z	p
1	1445	1113,92	424948,000	-5,294	0,000
2	685	963,36			
1	1445	895,66	111753,500	-9,668	0,000
3	250	572,51			
1	1445	742,66	6276,000	-5,386	0,000
4	24	274,00			
2	685	498,09	65014,500	-5,658	0,000
3	250	385,56			
2	685	361,14	4015,000	-4,277	0,000
4	24	179,79			
3	250	140,96	2135,500	-2,348	0,019
4	24	101,48			

CONCLUSION

This study investigates whether citizens' trust in public institutions varies according to demographic variables such as gender, marital status, age, education level, religion, and social trust.

Gender and Trust in Public Institutions: The study has found no significant difference in trust toward public institutions based on gender. This finding is consistent with Uzar-Kurtaran's (2019) research, which concluded no significant gender-based differences in trust toward institutions and political leaders. Other studies suggest that men tend to trust public institutions more than women (OECD, 2024; Şahin & Kara, 2016). However, the OECD (2024) emphasizes that this difference is generally small.

Marital Status and Trust in Public Institutions: It has been found that married individuals have more trust in public institutions compared to single and divorced individuals. This result aligns with Li, Sun, and Shao's (2024) findings, which identified marital status and family size as moderators of trust perceptions.

Age and Trust in Public Institutions: Similar to other studies, older individuals have been found to have more trust in public institutions compared to younger individuals (Zhao & Hu, 2015; Christensen & Læg Reid, 2005). The OECD (2024) also mentions that younger generations trust national governments less than older generations.

Education Level and Trust in Public Institutions: Education level significantly influences trust in public institutions. Higher education levels often lead to increased critical thinking and a more questioning perspective (Croke et al., 2016). In this study, individuals with lower education levels (pre-

primary and primary school) tended to have higher trust in public institutions. This suggests that as education levels rise, individuals may become more inclined to question public institutions. According to the OECD, university graduates tend to trust governments more than those with lower education levels, although this varies by country.

Social Trust and Trust in Public Institutions: Social trust, which reflects the degree to which individuals trust others, significantly impacts institutional trust (Andreasson, 2017). Trusting individuals are more likely to engage in cooperative behaviors, contributing to societal benefits (Sønderskov & Dinesen, 2016). Research by Mingo & Faggiano (2020) indicates that social trust positively influences trust in institutions. However, some studies suggest that the impact of social trust on institutional trust is limited (Mishler & Rose, 2001; Sønderskov & Dinesen, 2016).

Importance of Religion and Trust in Public Institutions: The study has found that individuals who place a high or moderate importance on religion have higher trust in public institutions compared to those who place little or no importance on religion. Şahin and Kara (2012) similarly found that the importance placed on religion was strongly associated with trust in public institutions. In Turkey, a medium-level positive relationship was observed between religiosity and institutional trust among Generation Z (Örselli, Bayrakçı & Küçüktığı, 2024). However, Newton and Norris (2000) highlighted that the relationship between religious participation and trust is stronger for religious institutions like churches than for other public institutions such as parliament or the police.

Implications and Policy Recommendations: These findings suggest that trust in public institutions is influenced by individuals' demographic characteristics and the social context. While some socio-demographic factors (such as age, education, and marital status) have a significant impact on institutional trust, the strength of this relationship is shaped by societal context and personal experiences. Factors like the importance placed on religion and social trust also play a significant role in shaping the social foundations of institutional trust.

These results imply that policies and public institutions should adopt a more targeted and careful approach to building trust. Specifically, measures aimed at increasing trust among younger individuals and those with lower social trust levels may contribute to fostering a culture of trust in society.

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CHAPTER 11

THE EFFECT OF WORK STRESS ON THE SUSTAINABILITY OF THE MARITIME LABOUR FORCE

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1. INTRODUCTION

It is vital to acknowledge the pivotal function of maritime transport in ensuring the sustainability of international trade. Ensuring the sustainability of maritime transport is of paramount importance (Arıcan and Ünal, 2023), as it serves as a critical conduit for the uninterrupted flow of the transportation and commercial activities of essential goods, including products of a basic nature, medical products, semi-finished product and raw materials. It is estimated that 80% of world trade is carried by sea (UNCTAD, 2020). All this information makes ship management, one of the building blocks of maritime transport, important. The fleets owned by ship operators must be operated safely and efficiently in accordance with the conditions of the day. Here, seafarers involved in the dispatch and management of ships come to the fore. Especially during the Covid-19 pandemic period, the International Maritime Organisation (IMO), in cooperation with maritime transport associations, has made numerous calls to identify seafarers as 'key workers' (IMO, 2020; ILO, 2021). The BIMCO/ICS (2021) report also emphasises the seafarer shortage until 2026, and it is asserted that shipping companies can maintain their existence with a sustainable maritime workforce. However, an examination of the literature and reports from the maritime sector reveals a consistent emphasis on the lack of seafarers, particularly in the officer class. In consideration of the challenges associated with maritime employment, including the demanding nature of the sea, extended periods of separation from familial and social obligations, and the psychological strain of professional demands, it has been observed that seafarers tend to opt for alternative career paths after the initial five-year period of service (Arslan, et al., 2021). This is further compounded by the high rate of labour turnover, which hinders the ability of shipping companies to maintain a consistent labour force with qualified personnel. When considering the challenges posed by working conditions and the inherent difficulties of seafaring, it becomes evident that seafarers require greater support to fulfil their professional duties. Consequently, the preservation of the human factor, which is central to sustainability, has emerged as a critical concern for the maritime sector.

Maritime is one of the most demanding professions with heavy working conditions that involve many risks. Working at sea is recognised as one of the professions that is difficult to do both physically and psychologically due to its conditions. The key names of this challenging profession are seafarers. In many studies, it has been determined that factors such as long working hours, low sleep quality, stressful working environment, oscillation and vibration of the ship cause stress and fatigue in seafarers. Although it is seen in the literature that studies have been carried out on the effects of stress factors that are highly effective on seafarers, the differentiation of stress factors affecting employees in the recent period maintains the popularity of the subject.

In this study, the stress factors experienced by seafarers, who are one of the main factors of maritime transport and responsible for the management and administration of ships, and the reflections of this situation on business life are emphasised. The theoretical frame of reference adopted for stress, work stress and the stress experienced by seafarers is based on the literature review on stress in work life.

2. STRESS

Stress is defined as a reaction to an event experienced. It is an integral component of the adaptive process that occurs in response to environmental challenges. This process involves the manifestation of behavioural responses that are adapted to the specific demands of the environment (Carotenuto et al., 2012). Although stress has existed since the existence of human beings, it has become a universal focus of interest today. The reasons for this interest are due to the negative effects of stress on human health and performance in business life. Stress is a word of Latin and French origin. Stress means pressure, strain (Baltaş & Baltaş, 1987). Stress has been proven to trigger the human body's stress response, which in turn causes the production of cortisol and adrenaline. These hormones initiate a chain of events at molecular, physiological and whole-body levels (Shishavan et al., 2023). A range of factors have been identified as the primary stress factors, including their marital status, the age of the individual, health status and working hours. Stress, a condition that has come to be regarded as a disease of modern society, is, in fact, an inevitable part of daily life. Stress can be conceptualised as the response to adverse external events that challenge an individual's limits. The prolonged exposure to physical, social, or environmental stressors can impede an individual's ability to effectively cope with them (Carotenuto et al., 2012). While certain stress definitions accentuate the significance of external stimuli, others underscore internal reactions, along with physiological, psychological, and behavioural defences. In the field of stress research, various definitions have been proposed, with some emphasising individual characteristics in the interaction of stimulus and response. These definitions highlight the individual's coping mechanisms. Each of these definitions provides important information about the formation of stress. The concept of stress encompasses not only the initial stimulus and subsequent response, but also the dynamic interplay between these two elements (Balaban, 2000; Taşdelen et al., 2016). Stress is defined as a situation arising from the relationship between an organism and its environment. It is theorised that, under appropriate conditions, stress can be beneficial, as it can stimulate the body and mind. However, if the stress is excessive, it can deplete an individual's biological and psychological resources (Balaban, 2000; Taşdelen, et al., 2016).

Stress can be categorised into two distinct groups: stress arising from the organisational environment and stress arising from the individual employee.

In the event of an absence of fair behaviour within the organisational structure, or of uncertainty amongst the authorities, stress disseminates throughout the workplace. The quality of the relationship between employees has been demonstrated to have a significant impact on the stress levels experienced within the organisational context (Algür and Aktaş, 2009). The stress arising from the organisation can be categorised into various sub-headings, including role at work, personal development, interpersonal relations, and problems in the work itself. Of these, organisational stress arising from role is the most prominent. Employees in the organisation find it difficult to cope with the demands. These factors generally have the potential to mentally strain the employee. Stress arising from the role affects the staff in the workplace (Michie, 2002). On the other hand, personal needs may cause personal stress. A person's perspective on events, family problems and experiences create personalised stress (Gümüştekin and Öztemiz, 2005).

2.1. Work Stress

The prevailing assumption is that stress, defined as an individual's psychological and physiological response to a perceived threat or event, can be triggered by events experienced in the workplace. These factors may encompass aspects such as workload, interpersonal conflict and a perceived lack of control (Mustafa et al., 2015; Hasan et al., 2023). In the workplace, employees have been observed to respond to the risks they encounter. This response is often characterised as job stress. Work stress is observed to arise when employees are unable to fulfil their assigned responsibilities adequately or in a timely manner. The repercussions of job stress are far-reaching, extending beyond the individual to impact their familial relationships and professional environment. Work stress has been shown to engender tensions during work hours, thereby impeding individuals from performing their duties in accordance with their preferences. In addition, the employee may feel pressure due to the work environment, and the incompatibility between this pressure and the employee's capacity causes the employee to experience work stress. Work requirements and working conditions and the capacity of the person are not static but have variable characteristics. Therefore, work stress has a variable structure. (Lazarus, 1991; Taşdelen et al., 2016). In addition, when the literature is examined, it is seen that work stress is handled with similar concepts. One of them is occupational stress. Occupational stress is defined as a state of cascading biological activation, initiated by internal or external factors that impair an individual's capacity to adapt (Shishavan et al., 2023). The classification of sources of occupational stress is typically divided into two primary categories: chronic and acute (Shishavan et al., 2023). Chronic stressors encompass extended and irregular working hours, shift work, and persistent psychosocial tension impacting sleep patterns. Conversely, acute stressors encompass events such as workplace violence.

Repeated exposure to stressors has been demonstrated to engender a state of vulnerability in employees, which can give rise to a range of adverse outcomes, including suicide, depression, obesity, hypertension, morbidity and premature death. Job stress is theorised to result from both the interpersonal challenges experienced with colleagues and the demands of the job itself (Cohen, 1993). Moreover, the relationship between subordinates and superiors within the organisational structure, in conjunction with the incapacity to engage in decision-making processes, constitute the primary sources of job stress (Fogarty et al., 1999). In the context of organisational dynamics, the advent of novel technological advancements has the potential to render the competencies of employees obsolete, thereby impeding their ability to meet the demands of their roles. This inability to adapt is defined as job stress (Tutar, 2000). The working environment, including aspects such as employee harmony, mutual expectations, and the organisation's policies, can exert a detrimental influence on work stress. The temporal constraints imposed by the demands of contemporary employment, coupled with the protracted nature of working hours, have been identified as significant contributors to the exacerbation of occupational stress (Cooper and Marshall, 1978). The experience of work-family conflict, as posited by Aydın (2002), has the potential to evolve into work stress. The pressure exerted by managerial figures has been shown to have a detrimental effect on employee morale, with studies indicating that it can lead to a reluctance to assume responsibility. In the event of an employee being engaged in a role which offers limited scope for career progression, that employee may experience a diminished sense of professional fulfilment. This, in turn, has the potential to result in an escalation of work-related stress (Schuler, 1982). The adequate temperature of the work environment and the brightness level of the light in the working room have been demonstrated to affect the work stress of employees (Sutton & Rafaeli, 1987). The impact of occupational stress on mental health has been well-documented, with studies indicating a correlation between work-related stress and depression. It has been demonstrated that work stress can have detrimental consequences on an individual's physical well-being. The impact of work stress on employee well-being is multifaceted, with the extent of its detrimental or beneficial effects on stress levels varying from individual to individual.

3. SUSTAINABILITY AND SEAFARERS

The idea of sustainability was included in the report 'Our Common Future' by the UN World Commission on Environment and Development in 1987, and this was welcomed. With the Brundtland report, the concept has become a popular concept today. The Brundtland Report explains sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). The term "sustainability" is derived from the Latin "sustinere",

signifying “to maintain”, “to sustain”, “to support”, “to endure” and “to restrain” (Katunian, 2019; Pal & Hazra, 2015). The term ‘sustainability’ was initially employed within the domain of forestry, denoting the practice of harvesting only that which the forest can yield in terms of new growth (Wiersum, 1995). In this report, ‘sustainability’ means being able to support the three most important parts of a human system over time. These three parts are economic growth, protecting the environment and including everyone in society (Roca-Puig, 2019). To ensure sustainability in all disciplines, it is first necessary to ensure the social dimension of sustainability. The human factor, recognised as the most significant element in the pursuit of sustainability, plays a pivotal role in the realisation of environmental and economic sustainability factors. Consequently, there has been an increased focus on the concept of social sustainability within various academic disciplines. The concept of social sustainability encompasses the examination of social relationships, interactions, and the fulfilment of human needs, which in turn impact sustainable development. Consequently, it is imperative for business administrations to enhance the quality of life, foster social integration, and uphold employee and human rights (Kesen, 2016). It is imperative for shipping companies to ensure the well-being of their seafarers to ensure their own survival. This is of particular significance in the case of well-educated, qualified and experienced seafarers, who require the capability to work on ships for protracted periods. It is an irrefutable fact that seafaring vessels require a certain amount of manpower to undertake their various activities. The term “seafarer” is used to denote individuals employed on board a vessel, who, whether directly or indirectly, contribute to its operation and management. According to the MLC (2006), the definition of a seafarer is as follows: any person employed on board a ship on which the convention applies (ILO, 2012). The fundamental elements of maritime transportation are the vessel and the crew. Irrespective of the simplicity or complexity of the physical sea assets, the true assets of the company are the crew, who bear responsibility for the operation and navigation of the ship. In the absence of these elements, the company faces a considerable threat to its commercial survival (Leggate et al., 2005). Given the pivotal role of the seafarer in the realm of maritime transportation, the expertise and experience of the crew aboard vessels is of paramount importance to the competitiveness and sustainability of shipping companies.

The training, certification and professional promotion of seafarers is conducted in accordance with the provisions of the international maritime convention STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers). To be employed on board, seafarers are required to have received the training defined in STCW-78 and be equipped with the necessary certificates.

The maritime profession is both a vocation and a way of life. It is evident that the nature of work on a ship differs significantly from that undertaken on land. Despite the potentially generous remuneration offered to seafarers, who are separated from their usual environment, it is challenging for them to sustain their livelihoods in a healthy and peaceful manner over an extended period unless adequate natural living conditions are established on board. In addition to fundamental seafaring activities, such as daily maintenance and repair work, vessel manoeuvres, seafarers are constantly faced with safety risks (Fei & Lu, 2015). The maritime industry is distinguished by its stringent safety standards, which are characterised by a zero-tolerance policy for errors and accidents, resulting in injury or fatality (AMSA, 2010). It is important to note that, in addition to situations concerning the entire vessel, such as collision, settlement and fire, occupational accidents that occur within the ship also serve to illustrate why the maritime industry is considered to be one of the most dangerous professions. The maritime profession is characterised by a hierarchical structure, which is a fundamental aspect of the industry. This unique working environment is distinguished by distinct lifestyle characteristics that differ from those of onshore professions. These differences can be attributed to the nature of the work, the level of responsibility entrusted to employees, and the overall pace of the profession (Guo et al., 2006). In addition, ship owners are obliged to equip their ships with enough seafarers to be able to use them safely in maritime trade according to Safe Manning. Seafarers are exposed to heavy work programmes as they start to work on larger and larger ships with smaller and smaller crews. In the light of all this information, seafarers are worn out, tired, weakened and stressed. This situation keeps seafarers away from sustainability.

4. SEAFARERS AND WORK STRESS

Maritime is a distinct work activity characterised by specific attributes and undertaken within contexts, both physical and psychosocial. It is recognised that the physical and mental load is high in the maritime profession. It is evident that both the working environment and the nature of the work can potentially induce stress factors for human beings. Work-related stress affecting seafarers often has different characteristics from the stress that can be appreciated in other work activities. These include many potential hazards in the form of accidents, injuries and illnesses. The potential for maritime risks is contingent upon the nature of the activity or work undertaken on board the vessel. It is imperative to acknowledge the considerable number of factors intrinsic and extrinsic to the vessel that render this activity as strenuous (Carotenuto et al., 2012). The stress experienced by seafarers in the context of their professional duties exhibits distinctive characteristics that diverge from those observed in other occupational settings. These include many possible hazards in the form of accidents, injuries and illnesses (Elo, 1985). The potential for maritime risks

is contingent upon the nature of the activity or work undertaken on board the vessel. For example, the manoeuvring of the ship has many mentally stressful phases for all officers and crew. It has been demonstrated that the work of the crew is predominantly physically arduous, while that of the officers is chiefly mentally taxing. Despite the transition towards automation, which has been shown to result in a redistribution of workload towards mental stress, the physical demands of seafarer duties can remain substantial. Noise and vibration have been identified as the most significant challenges affecting seafarers' working conditions. In addition, sailing in heavy stormy weather may adversely affect seafarers both functionally and in terms of health. Port State and Flag State inspections should not be forgotten. These inspections, which are extremely important for the safe navigation of the ships, cause stress on all personnel, especially the officers. It is also conceivable that the stress experienced by seafarers may be attributable to a pervasive atmosphere of tension, engendered by the apprehension of piracy (Abila and Acejo, 2021). According to Russo et al. (2020), the stress factors to which seafarers are exposed are: long periods at sea, irregular and poor-quality sleep, adverse weather conditions, separation from family, noise and vibrations, extreme temperature changes, conflicts between crew members, long working hours, often poor-quality food, frequent crew changes. While the regions and climates in which the ship sails and the climates change during the days, the change in temperature conditions on the ship is also effective for the employees. There is a hierarchical structure in ships with a subordinate-superior relationship. Seafarers are separated from their families, friends and relatives for long periods of time upon their appointment to the ships. Life on board is limited in terms of both leisure activities and social contacts. In these restricted environments, it is not possible to escape from a conflict that seafarers will experience with their colleagues, managers and subordinates (Elo, 1985). Seafaring, which is generally a difficult profession, has had an increasing effect on the stress of seafarers, especially during the Covid-19 outbreak. Seafarers working in an isolated environment had to work under much more stress with the restrictions brought by the pandemic. Seafarers whose contract ended could not leave the ship due to these restrictions, and those waiting for work on land could not go to the ship. The gradual increase in the difficulties experienced during the Covid-19 pandemic has further distanced the maritime labour force from being a sustainable profession.

Maritime work is characterised by subjective and objective stressors (Shultz and Shultz, 2002; Carotenuto et al., 2012). Subjective factors are predicated on an individual's evaluation of their own circumstances and the extent to which they are satisfied in their occupation. The assessment of subjective factors that play a role in the causes of accidents on board ship is a complex undertaking. It is estimated that they are responsible for more

than 50 per cent of accidents (Kahn and Byosiere, 1992). Objective factors are based on the conditions in which the work is carried out, such as noise and temperature, and lead to many structural risks. Further factors that must be considered include monotony, an excessive workload, an absence of expectations, a paucity of sleep, and a prolonged absence from family and home. Carotenuto et al. (2012) identified loneliness, long separation from family, limited recreation activity, sleep disorders, fatigue and multicultural difficulties as stress factors. It is evident that these factors have the capacity to exert a detrimental effect on the psychological and physical efficiency of the seafarers (Kahn and Byosiere, 1992).

5. CONSEQUENCES OF WORK STRESS IN SEAFARERS AND SOLUTION SUGGESTIONS

Human beings are characterised by their physiological and psychological needs. The satisfaction of physiological needs is a prerequisite for the maintenance of human vitality. While psychological needs may not be considered as vital as physiological needs, they can nevertheless have significant consequences, including stress and fatigue, when not met or supported adequately. Furthermore, the failure to meet physiological needs can precipitate stress, which, in turn, can engender an escalation in psychological problems. Vibration and noise created by the ship's engine can be cited as exemplifications of physical problems. This situation may result in sensory loss, particularly among machine personnel in later ages. It is noteworthy that stress can be a contributing factor to fatal accidents in the maritime sector (Jaremin et al., 1996). It has been repeatedly stated that seafarers, who are at the centre of maritime transport, are exposed to high levels of psycho-physical stress during the time they spend on ships and have been the subject of many studies. The seafarers' being away from their families for months, heavy and irregular working conditions, exposure to vibration caused by the ship, etc. working in many bad conditions do not meet the needs of the seafarers and cause psycho-physical collapses. The symptoms and disorders experienced as a result of these collapses can be listed as follows (McCafferty and Baker, 2002); loss of short-term memory, decreased manual skills, delay or complete neglect of the task, difficulty in remembering information and making decisions, decreased awareness, fluctuation and change of personal mood, feeling tired, increased risk-taking behaviour, anxiety in unusual situations, perceptual weakness, slurred speech, frequency of sleepiness. Furthermore, the consequences of stress in seafarers can manifest primarily as significant complications, with the most severe cases giving rise to substance abuse and suicide attempts (Nittari et al., 2024). However, it should be noted that the impact of seafarers' stress can also extend to their spouses and families, albeit to a lesser extent. As Szymańska et al. (2006) observe, the phenomenon of suicidal tendencies at sea is understood because of extreme

stress that overrides adaptive mechanisms. This situation poses a real threat to personal integrity and leads to the disappearance of the instinct of self-protection (Nittari et al., 2024). All these situations are the biggest reasons why the maritime profession, which is already a difficult profession, cannot be done for a long time.

It is a necessity that ship people, who play a key role in the transportation of goods subject to world trade, should be supported and their living conditions should be improved in order to be able to do their profession for a long time. Solution proposals and measures regarding the problems related to the working environment of seafarers should be analysed and adapted to the conditions of the day. In their study, Arslan et al. (2023) emphasised the following solution suggestions:

- Work-Life Balance: The objective is to achieve a harmonious work-life balance, enabling seafarers to dedicate sufficient time to their families and fulfil their responsibilities towards them.

- Establishment of a Crew Welfare Department: The establishment of a Crew Welfare Department, in conjunction with a compatible Maritime Labour Convention (MLC) inspector, is intended to facilitate the implementation of adequate standards in accordance with the MLC on the company's vessels, while simultaneously fostering a positive work environment. The objective of this department is to oversee and assess the adherence of the company's ships to the MLC. Furthermore, it is envisaged that collaboration with other pertinent departments will enhance awareness of the reporting procedures, grievances, and redress mechanisms available to seafarers, thereby contributing to the overall process.

- Medical Coverage and Medical Benefits: Medical care and health benefits are provided to seafarers while they are on a ship and during their holiday in their country of residence. In the open sea, it is always possible that any seafarer may require immediate medical attention.

- Internet access: The provision of internet access for personal use by seafarers who are separated from their families and social environment for extended periods represents a significant topic for the crew.

- Set up a Land-Sea-Land Career Management System: In addition to the inherent challenges of working at sea, such as the physical demands, extended periods away from home, and the stressors associated with a maritime career, many seafarers cite the desire to spend more time with their families and engage in a more traditional social life as reasons for considering a transition to a land-based occupation. Those engaged in maritime work for a designated period and who have demonstrated the requisite professional proficiency are reassigned to departments onshore within the company, thus ensuring that they do not become isolated from the wider social fabric.

- Set up a Psychological Support Unit: The establishment of a psychological support unit aims to mitigate psycho-social risks in the workplace, enhance work processes and procedures, and improve the quality of life for employees. The unit's principal areas of focus are the work environment, employee guidance and social climate. The unit is available 24/7 by telephone or online and is a confidential space for workers to speak with a designated individual. Preventative programmes have been established to measure, analyse and monitor psycho-social risks. In collaboration with the occupational psychologist, emphasis has been placed on training managers on identifying risk factors in the workplace, emotional and relational intelligence, and supporting employees with difficulties.

- Recreational Activity: It is evident that recreational activities play a pivotal role in facilitating social interaction among seafarers, enhancing their physical performance and overall well-being, and ultimately reducing the incidence of accidents at sea.

- Short Deployment: The social isolation and limited social interaction experienced by seafarers, in combination with the feelings of longing and loneliness that accompany separation from their families, can have a detrimental effect on their health. Consequently, it is imperative that measures are implemented to ensure the well-being of seafarers, including the introduction of short deployment and flexible working hours around their designated special days.

- Quality and Quantity of Food: A further significant concern for seafarers while at sea is the provision of nutritionally adequate and high-quality sustenance. It can be argued that this is one of the most enjoyable aspects of the experience for the crew members. The ability of seafarers from diverse national, cultural and religious backgrounds to work together is an essential element in the production of food that is appropriate to their cultural preferences. It is therefore crucial to develop a menu that reflects the diverse cultural backgrounds of the crew.

When other studies in the literature are examined, it is seen that similar issues are focussed on. Some of these include the provision of professional counselling through tele-medicine, giving remote advice and support to solve the psychological difficulties of seafarers on ships (Bailo et.al., 2022; Nittari et al., 2019), recreational facilities on board (Oldenburg and Jensen, 2019), free internet access and organisation of working hours (Szafran-Dobrowolska at al., 2023), prevention and control of alcohol abuse, establishing sleep patterns, improving diet and menu structure (Slišković and Juranko 2019; Jegaden et al., 2019). In addition, Szafran-Dobrowolska at al. (2023) emphasised the following issues about seafarers' coping with stress in their study: Providing psychological or religious assistance to the crew by the shipowner after a

sudden death or serious accident on board, depending on the needs and beliefs of the crew, providing training to the crew on coping with stress, providing training on interpersonal communication to reduce stress levels.

6. CONCLUSION

The study provides a theoretical framework for work stress related to working on board ship by examining the causes, consequences and solutions of work stress on seafarers. Considering that the human factor is at the heart of sustainability, it is a necessity for the sustainability of the maritime labour force that seafarers are recognised and acknowledged as “key workers” for the continuity of global trade. Despite the evident reduction in workload for seafarers due to technological innovations, the issue of mental fatigue remains unresolved. The stress experienced by seafarers, who work away from their families and social life but are an important element of global trade, makes this profession far from long-lasting. For this reason, the concept of stress was the main motivation source of the study and the causes of stress experienced by seafarers were determined as a result of literature research. According to the research conducted, it has been observed that many factors such as the inability of seafarers to establish a work-life balance, social isolation, excessive working hours, long periods of working on board, inability to get enough sleep, limited communication opportunities, inadequate and quality nutrition, cultural and language differences, limited or no recreational activities, seafarers working on ships with poor safety, not feeling safe due to the risk of piracy, severe weather conditions, vibration, noise, inspections and ambient temperature cause stress on seafarers. All these factors cause physical and mental health problems for seafarers and even lead to serious consequences such as alcohol and substance abuse and suicide.

It is possible to reduce the effect of these stress factors on seafarers by improving the working and living conditions of seafarers. It is very important for seafarers to go to the ship with relatively short-term deployment in order not to be separated from social life and their families for a long time and to establish a good work-life balance. The establishment of psychological support units for physically and mentally exhausted seafarers will help them overcome the difficulties they are in. The widespread use of internet applications on the ships allows seafarers to communicate with their families at all times and relaxes them mentally. In addition, healthy and adequate nutrition of seafarers is another situation that affects the stress factor. Especially multicultural and diet menu options have a positive effect on seafarers. Another effective way to cope with stress is socialising. Meeting in common areas such as officers’ and staff lounges, organising various games, watching movies together, exercising are simple but effective steps of socialising in a small isolated environment. The solutions to this issue are not uniform in their complexity; some are straightforward, others may require significant investment and effective

organisation. The implementation of these recommendations has the potential to alleviate work stress among seafarers, thereby ensuring that the maritime profession does not become a short-term career option offering high salaries. Consequently, these measures will contribute to an increase in the demand for the profession.

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CHAPTER 12

THIS IS A WOMAN'S WORLD! FEMALE PRESENCE IN OUTDOOR RECREATION

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Imagination is a gift for humanity. So, let's imagine! Imagine a land surrounded by mountains so high that on the top of them nothing grows. And let's imagine a person who wants to climb up one of these mountains. We can call this person "X" for the sake of the story. The foothills of these mountains contain forests so dense that X needs an axe to get through. The season is winter, so X needs a proper preparation to climb up that mountain. I hope, so far you have been able to follow the story because it is getting darker. First, X goes into a dense forest where X must meet the challenges of weather which is cold and the landscape which is rough. X builds the fire when it is time to rest, finds places to camp when it is time to have a rest. X gradually climbs up and up. Facing near death experiences, X manages to survive. After a long and challenging walk, X is on the top of the mountain and feels the glory. Now, who is X in your imagination? Be honest! Did you imagine a man or a woman when X's story was told. There is biased opinion in the world of adventure recreation because gender roles of the societies around the world directly assume that what can be done in adventure-wise can be mostly done by man.

Well, it is not like what James Brown says anymore; this is not necessarily only a man's world. Women are out here in the extreme part of the scale, and this time, women are the protagonists of this story. Blaine & Akhurst (2023) stated that the number of female presences is increasing in the outdoor recreation education, and that the differences between male and female performances in the outdoors does not stem from gender but individual differences. Sisco (2024) deeply investigated the historical perspective on female mountaineers and found out that in the early and mid-1900s the female presence in the outdoor was marginalized. To be more specific, the women who attended the mountaineering adventures were first accepted as weak and soft and just there to support their spouses. As they began to participate more in the upcoming years, the women who do mountaineering were attributed more masculine features. They were praised because they had the strength and will of a man to climb a mountain. In the later years, the women were more accepted in the mountaineering, and instead of referring them as weak gender, they were praised for what they achieved.

It would be fair to refer to the female presence in outdoors through historical files, cultural myths and stories to have a better understanding about the perception of women in the outdoor recreation activities today. To begin with, the Turkic myths of females can be reviewed. In the minds of Turkish people, women were mothers, educators, warriors, and the supporters of the families (Heşimova, 2023). In the ancient Turks, there was a balance between man and woman in the society where women also went hunting, battled against enemies, did trainings with swords, bows and arrows, and became leaders of their clans (Bolat, Yılmaz & Sirer, 2023; Bahadır, 2024)

because the Turkic people of that era were nomads. Also, the Turkish women participated in sports events such as javelin throwing and wrestling of the time both with their female counterparts and with their male opponents (Türkmen, 1998). The evidence of female participation in wars and battles in the ancient Turkish societies can be seen in the tombs of these female leaders. Swords, bows, arrows, spears and armors which were believed to serve the deceased in Uçmag (the heaven-like place) were found in the tombs of Turkish female leaders (Acar, 2019).

However, everything changed for women when people adopted a settled life which was the issue in almost all around the world. Patriarchal effects of the settled life meant a domesticated life for women in general. That is why there are sections in the academic studies title “empowerment”, “female presence” and etc.

What is gender?

It is hard to decide if gender is distinct or fluid in general. However, Fausto-Sterling (2012) claims that “everyone is everything, nothing and exclusively male/female simultaneously”. Therefore, labeling someone as a woman or a man is a social decision. When considered in a broad sense, this decision seems to attract billions of people all around the world. Ridgeway & Smith-Lovin (1999) believe that gender is a system. It is like a need for the society to have sufficiently different features for man and woman. In the literature, an associative network approach was presented to explain the self and its relations to multiple constructs in terms of gender.

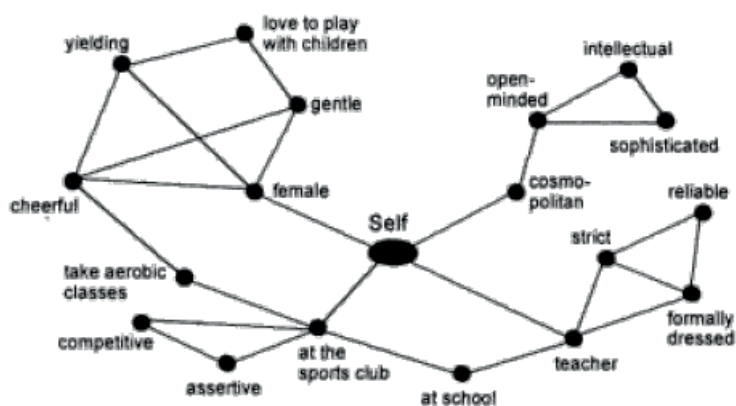


Fig. 1. Associative network approach of self

As it can be seen in the figure above, the self is never alone in the process of thinking, decision-making, and/or living. Society in itself is a web; therefore,

what affects the individual as a self can change from culture to culture. Gender roles are defined by the expectations of individuals in a society based on sex (Blackstone, 2003). In a biological sense, being born a girl or a boy is about the chromosomes. However, in the sense of culture and society, this brings roles and responsibilities. Being born a boy, society usually encourages risky/courageous behaviors, or at the very least, understands why a boy does something when he does it. Being born a girl has also have its privileges. Society thinks you are naïve, kind and gentle. Nevertheless, everything changes when a boy or a girl doesn't want to abide by the rules/norms of a society. Interests and likes of an individual can be judged by society very easily if doesn't fit the norms. Since the beliefs related to the gender roles deals with the gender-related tasks and power distribution, individuals in many cultures live under this perception. In short, what's been expected from a person can be a matter of gender roles formed by the culture.

What is being a woman in the outdoors?

Over the last years, the experiences of women in the outdoors have been studied. The study carried out by Little & Wilson (2005) revealed that for women, adventure means the activities that are outside the everyday life which contributes to their knowledge and experience through unusual events. Although in some cases, they felt that they are not confident enough, or that the environment was not safe for a woman, there are also situations where women are not welcomed or accepted by the male-dominant environments. Also, there is stigma related to being a woman in the outdoor adventure activities since the women in the outdoors are accepted as weird or worse (Carter & Colyer, 1999). In the literature, it was found that participating in outdoor adventure activities can promote self-belief, confidence, perseverance, dealing with the discomfort of outdoors, social support, managing stress, learning decision-making and risk management, and the sense of freedom (Pearson & Inman, 2023). Sisco (2024) in his study mentioned that “women struggle against gender barriers in alpinism, facing sexism, skepticism about their abilities and paternalistic attitudes that deny their very presence in the Andes”. Prejudice! The word means an opinion that has conceived previously about something or someone which is not necessarily based on reality, reason or experience. The struggle mentioned by Sisco (2024) can be stemmed from the prejudicial disposition of the society.

Why so serious?

In the literature, outdoor is traditionally depicted as a hegemonic masculine world (Blaine & Akhurst, 2023). However, the number of women participating in the outdoor activities is statistically increasing as we speak. Women experience adventures brought by outdoor activities, accept it as theirs and know that it can bring new challenges along with opportunities (Little

& Wilson, 2005). These opportunities can be physical, psychological and/or social. First of all, outdoor recreation activities are a great way to keep fit. There are many different activities that can help improve physical health for individuals. Also, there are psychological benefits of participating in outdoor activities. Individuals can feel the positive aspects of participation in outdoor recreation activities. Lastly, the social aspects of outdoor recreation are really important. Individuals can do outdoor recreation activities with friends and family which can improve their bonds. Also, they can be a part of different groups and meet new people. Also, the challenge involved in most outdoor activities can be a good way to improve teamwork. Pearson and Inman (2023) carried out a study on young female participants of outdoor recreation and revealed the following themes about their feelings towards these activities:

- Self-belief and confidence
- Perseverance and coping with discomfort
- Support and community
- Managing stress
- Decision-making and risk management
- Physical and mental space from the environment

As can be seen from the themes revealed, outdoor recreation activities help young female participants to believe more in themselves and feel more confident about what they do in their leisure. Also, they become more ambitious. Outdoor activities include factors that are very discomforting. One can hear a person saying, “why would I sleep on the ground?” for a camping experience. However, outdoor recreation helps individuals leave their comfort zone as well. When considered in terms of female experience, this can help break the barriers created by the perception of the society. This also creates an escape from the daily life and roles of the society.

Motivations for women to be in the outdoors

The multifaceted reasons that drive women to engage in outdoor pursuits reflect both their individual aspirations and broader societal influences. Over the past decades, an increasing number of women have embraced outdoor activities as avenues for physical well-being, mental resilience, personal empowerment, and community engagement. This analysis critically examines these motivations, situating them within contemporary discourses on gender, leisure, and environmental interaction.

Enhancing Physical Fitness

A prominent motivator for women’s participation in outdoor activities lies in their potential for physical health optimization. Activities such as hiking,

cycling, and climbing not only offer dynamic and varied physical engagement but also leverage natural environments to sustain interest and motivation. Unlike regimented indoor exercise, outdoor activities integrate physical exertion with sensory enrichment provided by changing landscapes and fresh air. Research underscores the efficacy of outdoor exercise in improving cardiovascular health, enhancing musculoskeletal strength, and promoting overall vitality. The holistic nature of such activities positions them as critical interventions in addressing sedentary lifestyles.

Mental Resilience and Psychological Well-being

The psychological benefits of nature exposure are well-documented, with outdoor engagement serving as a potent mechanism for stress alleviation and emotional regulation. The natural world's restorative qualities facilitate cognitive recovery from urban-induced fatigue and mitigate symptoms of anxiety and depression. Moreover, women navigating outdoor challenges—from scaling technical ascents to completing endurance trails—report heightened self-efficacy and psychological resilience. Such engagements are instrumental in fostering emotional fortitude, especially within contexts demanding adaptability and perseverance.

Personal Empowerment and Leadership

Outdoor pursuits function as transformative arenas for personal empowerment, challenging traditional gendered constraints. Activities demanding physical rigor and strategic decision-making enable women to redefine their self-concept, demonstrating competencies traditionally marginalized in patriarchal frameworks. For instance, solo expeditions or leadership roles in outdoor group settings cultivate autonomy, decision-making acumen, and leadership skills. These experiences resonate with feminist paradigms, underscoring the role of embodied practices in deconstructing systemic inequities.

Social Networks and Collective Identity

The social dimension of outdoor activities is another compelling driver for women's participation. Outdoor recreation spaces often serve as platforms for community building, fostering connections through shared endeavors and collective experiences. Structured organizations and informal networks alike provide inclusive spaces for women to exchange expertise, forge alliances, and nurture mutual support. Such dynamics are particularly salient in initiatives emphasizing gender equity in outdoor spaces, which challenge traditional exclusions and create empowering environments.

Environmental Ethics and Advocacy

Women's engagement in outdoor activities increasingly intersects with environmental stewardship and advocacy. Immersion in natural landscapes cultivates a profound ecological consciousness, inspiring active participation in conservation efforts and sustainable practices. Through outdoor experiences, women often transition from passive consumers of natural beauty to proactive agents of environmental preservation. This alignment of personal enrichment with ecological responsibility underscores the duality of outdoor pursuits as both individual and collective acts of care.

The outdoor environment provides a unique space for physical, psychological, and social enrichment, with women reaping a variety of benefits that extend beyond traditional health metrics. As societal structures evolve to recognize the importance of inclusivity in outdoor spaces, the multi-dimensional advantages of outdoor activities for women have gained scholarly and cultural attention. This essay examines the physical health benefits, mental well-being, personal empowerment, social connectivity, and environmental advocacy opportunities afforded to women through outdoor engagement.

Physical Health Benefits

One of the most tangible benefits of outdoor activities is the improvement of physical health. Activities such as hiking, running, climbing, and kayaking serve as dynamic modes of exercise that combine cardiovascular endurance, muscle strengthening, and coordination. Unlike indoor exercise routines, which often rely on controlled environments, outdoor activities integrate movement with exposure to natural stimuli, such as varied terrain and weather conditions. This dynamic interaction has been shown to improve overall physical fitness and contribute to long-term health maintenance (Thompson Coon et al., 2011). For women, particularly those balancing multiple roles in work and family, outdoor activities offer an effective way to manage their physical well-being in settings that are simultaneously engaging and restorative.

Enhancing Psychological Resilience

The psychological advantages of being in nature are profound and well-documented. For women, outdoor experiences often serve as a critical buffer against the stressors of daily life. The restorative effects of natural environments can reduce anxiety, alleviate symptoms of depression, and foster cognitive clarity (Barton & Pretty, 2010). In particular, outdoor challenges such as hiking rugged trails or completing long-distance runs can cultivate a sense of achievement and self-efficacy. For women navigating societal pressures or personal challenges, these experiences can provide a vital sense of control and resilience. Additionally, the practice of mindfulness often associated

with outdoor activities further enhances mental well-being, as it encourages presence and focus.

Empowerment Through Outdoor Engagement

The outdoors serves as a powerful platform for women's empowerment. By engaging in physically and mentally demanding activities, women often transcend traditional gender roles and challenge societal stereotypes. Solo hiking, technical climbing, and leadership roles in outdoor groups are examples of activities that foster autonomy, confidence, and leadership skills. These experiences not only redefine individual capabilities but also resonate with broader feminist paradigms by illustrating women's capacity to succeed in environments historically dominated by men (Warren, 2016). Moreover, the sense of accomplishment derived from overcoming outdoor challenges bolsters self-esteem and provides transferable skills applicable in personal and professional domains.

Building Social Connections and Communities

Outdoor activities also foster social bonds and collective identity among women. Participating in group-based outdoor pursuits—such as team hiking, women's climbing groups, or nature retreats—creates opportunities for shared experiences and mutual support. These interactions often lead to the development of meaningful relationships and a sense of belonging. Furthermore, women-specific initiatives, such as REI's "Force of Nature" campaign, have highlighted the importance of creating inclusive spaces that empower women to embrace outdoor activities without fear of judgment or exclusion. Such networks not only provide encouragement and inspiration but also serve as platforms for advocacy and mentorship.

Environmental Advocacy and Awareness

Engagement in outdoor activities frequently fosters a deeper connection with nature, prompting women to become advocates for environmental conservation. Immersion in natural landscapes heightens ecological awareness and often inspires active participation in sustainability efforts. Women involved in outdoor pursuits are increasingly contributing to conservation movements, whether through grassroots activism, environmental education, or participation in policy advocacy. This dual role as participants and protectors of natural spaces highlights the interconnectedness of personal fulfillment and collective responsibility, positioning women as crucial agents in the global sustainability dialogue.

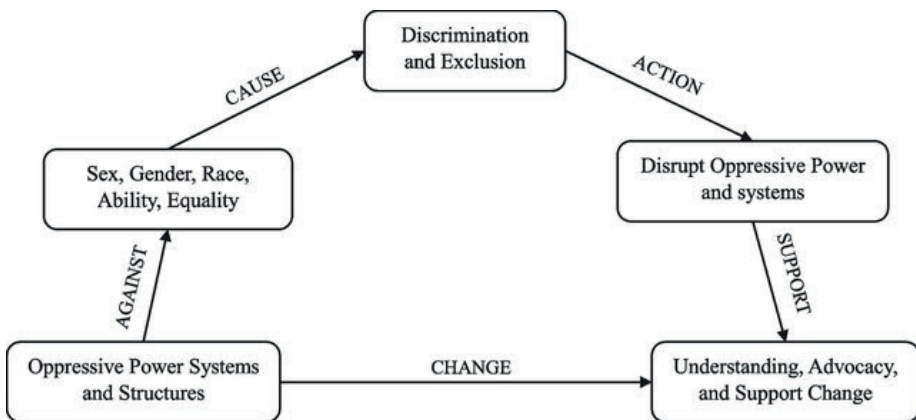
Theories Related to Women in the Outdoors

Outdoor recreation provides a dynamic platform for exploring gendered experiences and roles, particularly as they pertain to women. Over the years, numerous theoretical frameworks have been developed to understand women's participation, challenges, and benefits in outdoor activities. These theories

span fields such as feminist theory, social role theory, self-determination theory, and ecofeminism, among others. This essay examines key theories related to women in outdoor recreation, drawing on their implications for practice, policy, and future research.

Feminist Theory

Feminist theory brings us a different perspective where gendered nature of outdoor recreation is analyzed. Aforementioned, outdoor spaces were perceived as male-dominated domains, with limited access or opportunities for women. Feminist theory critiques these systemic barriers and highlights the need for equitable access. It underscores how cultural norms, and patriarchal structures have influenced women's roles and participation in outdoor settings (Henderson, 1996). Although historically feminist theory had various different approaches within itself, the main aim of the theory and the movement remains the same... equality, equity and equal access to everything. Every movement has a cause to raise. Feminist theory and movement came within the society where women were under an oppressive power system and/or structure. To explain this, Msambwa et.al. (2024) adapted the feminist theory model of Hill & Allen (2021) in their study. Below, the model indicates that an oppressive power system can be against sex, gender, race, any abilities and equality. This leads to discrimination and exclusion, eventually. All these lead to the action against the oppressive power. Thus, hopefully this ends in understanding, advocacy and support change. As can be seen, women might struggle with such oppressive behaviors, yet emerge with resilience in outdoors.



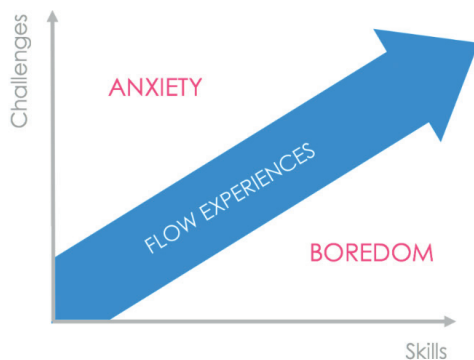
Adventure and Flow Theory

Flow theory, frequently studied in the literature in relation to adventure, forms the basis of many approaches and theories. The concept was introduced by Csikszentmihalyi (1975). Flow refers to a state of mind where individuals operate in a heightened state of cognitive awareness and are highly motivated.

According to Csikszentmihalyi (1997), every individual has the ability to reach a state of effortless concentration and enjoyment called flow. Furthermore, from this perspective, if an activity is properly structured and the individual's skills align with the challenges posed by the activity, any activity can be inherently rewarding for the individual. The happiness that follows the state of flow is self-generated and leads to complexity and development in this heightened state of consciousness (Csikszentmihalyi, 1997).

Flow tends to emerge in situations where clear goals meet appropriate responses. Similar clear goals can be found in activities such as performing a religious ritual, playing a piece of music, weaving a carpet, writing a computer program, climbing a mountain, or performing surgery. While explaining optimal experience, Csikszentmihalyi (1990) gave examples like making music, rock climbing, dancing, sailing, and playing chess. He explained the permeability of flow in these activities through their design, which facilitates achieving optimal experience. In other words, during these activities, individuals lose track of time and space and immerse themselves fully in the activity. The main dimensions of flow, as defined by Csikszentmihalyi (1997), are as follows:

- Balance between challenge and skill
- Merging of action and awareness (becoming one with the activity)
- Clear goals
- Unambiguous feedback (feedback obtained while performing the activity)
- Complete concentration on the activity
- A sense of control
- Loss of self-consciousness
- Time transcendence (acceleration/slowdown; relativity)
- An intrinsically rewarding experience (feeling of fun and reward in the activity).



When examining the figure, it can be seen that four regions are identified within the diagram. Region A1 represents a situation where participants' skills and the difficulty of the activities they engage in are both low. However, due to the balance between skill and difficulty, flow can still be achieved. This process is short-lived, though, as participants will improve their skills as they continue engaging in the activities. At this point, participants move to Region A2. In this region, participants may decide not to continue the activity due to feelings of boredom. If participants can increase the difficulty level of the activity as their skill levels grow, they will move to Region A4, where all the characteristics of flow mentioned above are experienced. However, if participants are not aware of their low skill levels and allow the difficulty level of the activity to exceed their skills significantly, they will move to Region A3, characterized by anxiety.

Boudreau, Mackenzie, and Hodge (2020) outline the outcomes encountered after achieving flow as follows: optimal performance, well-being (euphoria, happiness, intrinsic satisfaction, emotional pleasure, and well-being), progress (advancement and skill development), negative outcomes (addiction, increased risk), motivation (intrinsic motivation, unique purpose), and spirituality (transcendence). Considering all these outcomes, it can be concluded that achieving flow may influence individuals' search for adventure behavior. The adventure experience paradigm, which is connected to flow, can help explain the underlying reasons for seeking adventurous behavior. When the flow is considered in a gendered sense, it is seen that the skill is not about the gender. Women can participate in the outdoor activities if they have the urge to do so.

Conclusion

Female presence in the outdoor have been a rollercoaster. Women around the world throughout the history had different perceptions of outdoor. The perspective of men about women in the outdoor changed for years. However, today women are more in zone of outdoor when compared to the past.

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CHAPTER 13

LIMITATIONS AND SHORTCOMINGS OF ARMED NON-STATE ACTORS' TERRITORIAL CONTROL

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1. Introduction

The term “territory” is often used interchangeably with the words land or space, yet it carries a more precise meaning. Territory refers to land or space that has been altered in some way- it has been affected by human actions. More particularly, territory is land that has been identified, claimed, and controlled by a person or group. Territory, therefore, is not just a spatial expression of power, but it is a spatial expression of power deeply tied to the construction of power relations. These relations are often contested not only because it is the most prominent site for regulating membership within a group but also because of claims of territorial extension and resistance to such claims. Hence, the territory represents an area that requires defense and protection—operating to claim a unique type of sovereignty—against intrusions by those deemed outsiders. From this perspective, territoriality can be understood as the “attempt by an individual or collective can influence, shape, or dominate others, events, and relations through a definition of, and assertion of power over, a particular region of the Earth’s surface” (Muir, 1997, p. 12).

The shift from discussing **territory** to **territoriality** refines our understanding of these concepts and reveals deeper social and political relationships. **Territoriality** is more than just a physical strategy for the control of space. It is a broader concept that encompasses the ways in which human societies—cultures, communities, and institutions—organize themselves in relation to space. It is the ways in which individual humans, as physical bodies, orient themselves about their social and material surroundings. More than that, territoriality is much more than a strategy for the control of space. It is better understood as involving and being involved in modes of thought, behavior, and existence within the world—modes of world-making that are conditioned by beliefs, desires, and knowledge systems that are culturally and historically specific. territoriality has both material and metaphysical dimensions. Territoriality refers mainly to the relation between separate territories and other social phenomena. In this light, territoriality primarily refers to the relationship between distinct territories and other social phenomena, emphasizing the territorial aspects of various political and social conditions.

Territorial control is a fundamental aspect of international relations, referring to the ability of a state or group to exercise authority over a well-defined geographic area. It is essential in forming state identity (Uribe & van Baalen, 2024) and authority and its implications for international law (Krieger, 2018) and conflict resolution mechanisms (Thakur & Venugopal, 2019). The concept of territorial control is instrumental in forming geopolitical dynamics, as most territorial disputes are based on historical grievances (Kobusingye, Van Leeuwen, & Van Dijk, 2017; Ware & Laoutides, 2019), colonial histories (Badarin, 2021), and rival national identities (Balcells & Steele, 2016).

Complexities related to territorial control have been one of the significant factors for various conflicts, which in turn affect state sovereignty, governance, and overall stability. Significantly, the increasing use of asymmetric warfare, whereby fringe groups utilize unconventional tactics and strategies against a stronger, more dominant opponent, continues to challenge conventional notions regarding territorial sovereignty and the goal of conflict resolution.

Be that as it may, the expression “to territorialize” means the action of employing territory in a given circumstance by relating some phenomenon or thing to a crucial bounded space. While territoriality produces power relations, it is understood that territorialization is a strategy and process of control and power. Territorialization is used to spatialize (political) claims and to inscribe power relations into nature (Peluso & Lund, 2011). The critical form of territorialization throughout the last several centuries has been the nation-state, which developed into the fundamental unit by which much of the world was organized by the twentieth century. It became a given that the institution of state sovereignty was protected and justified through international law and treaties. In contrast, shifting from noun (territoriality) to verb forms (to territorialize) related to territory provides greater clarity when considering social practices and processes. Over the past couple of decades, many writers have discussed globalization in terms of the de-territorialization or the re-territorialization of state power.

1.1. Territorialization

There is a significant number of different underlying understandings of territory and territoriality, widely discussed in human geography. **Territorialization** refers to the process through which individuals, groups, or states establish control over a particular space. This often involves marking, defining, or asserting dominance over a territory, transforming it into a space that reflects specific political, cultural, or social claims. (Havercroft, 2012; Jaramillo, 2014). It means that territorialization does not only involve the physical occupation of land; rather, it is also characterized by the symbolic and social processes through which space is controlled. The creation of borders between countries is in itself a form of territorialization in that states demarcate where their authority begins and ends. In our own example, private property is an instance of territorialization in the sense that one claiming ownership over any piece of land exercises their rules within that space, hence territorializing it.

Two concepts come into play. The first one is Deterritorialization, which is the process whereby a perceived coherent nation-state loses its ability to exercise despotic and infrastructural powers. Such entities are usually referred to as “failed states” and are typically characterized as a potential security threat. Failed states have, for the most part, lost the ability to exercise their

authority over their whole territorial domain (Beehner, 2018). Moreover, failed states mainly cannot provide essential services, especially in education and health care, and are ill-equipped to maintain order or security for their people. Secondly, reterritorialization occurs as a counterpoint to de-territorialization. It involves the reconfiguration of a location or area that has undergone the process of de-territorialization. Accordingly, one could certainly argue that the power transition from the Baath regime to Rebel forces calls into question the re-establishment of the central government and its ability to rule the area effectively and provide essential services or security to its people again.

Historically, the backdrop for territorial governance is rooted essentially in the legacies of colonialism and the arbitrary borders bequeathed by imperial authorities, often in complete disregard for the socio-ethnic contexts of the regions concerned. The inheritance of this legacy has perpetuated ongoing conflicts (i.e., HTS and PYD in Syria) and tensions in areas such as Africa, the Middle East, and parts of Asia, where land and resources are contested and continue to fuel conflict and instability. This was exacerbated during the 20th century, as the dissolution of empires (Ottoman Empire in the M.E.) created newly sovereign states whose borders did not match up with their ethnic composition or historical claims, thus raising the number of territorial disputes and related conflicts such as taking place in Western Sahara and Nagorno-Karabakh.

In the contemporary era, the forces of economic, territorial, and political globalization have intensified existing territorial challenges, which have reoriented the relationships among states and added complexities to territorial conflicts. This is evident in the South China Sea, where competing claims by China, Vietnam, the Philippines, and others are motivated by the region's lucrative trade routes and abundant natural resources. Economic competition, regulatory obstacles, and conceptions of national identity now intertwine with claims to territory, influence how states assert their sovereignty and navigate international diplomacy. As globalization progresses, the ramifications for territorial control are significant, prompting inquiries into the efficacy of conventional state authority and the prospects for international governance within an increasingly interconnected global landscape (Strandsbjerg, 2010).

Considering territorial control's vital role in influencing domestic stability and international relations, it is imperative to comprehend its limitations. Losing territorial authority usually leads to weakened governance, eroded legitimacy, and the growth of alternative power centers, creating power vacuums and contributing to regional instability, as widely seen in the Middle East and Africa (Lamont, 2016; Risse, 2011; Stollenwerk, 2023). This, in turn, underlines the interlinkage between territoriality, governance, and conflict and the urgent need for strong international mechanisms to regulate territorial disputes and pursue peaceful settlements, as unresolved conflicts could spiral

into broader geopolitical conflicts with far-reaching consequences for global security.

Concerning the importance of territorial control, the present article has adopted a descriptive-analytical methodology. Data has been collected using the library research method. After demonstrating what territoriality really is for the state, the study analyzed the barriers to NSAGs' shortcomings or limitations on territorial control.

The academic debate on the relationship between states and their territories goes beyond geographical boundary-making, having a deep connection with political authority, security capabilities, and conflict dynamics. A critical aspect of the territory's governance is the state's infrastructural power, understood as the ability of the state to exercise authority and maintain order within its territory.

Existing literature identifies land as a significant area of conflict between nations. Bell (2017) emphasizes that shifts in the balance of power between states can lead to increased conflict over territory, particularly if one state feels its bargaining position is weakening relative to another. This is supported by Fravel (2008), who notes that states on the losing end of a shift in the balance of power may resort to coercive behavior to defend their territorial claims. Conflicts of this type are often fuelled by historical disputes and the strategic value of disputed lands, as is evident from territorial disputes in dyads (Petersen, 2010). The next part is about the shortcomings of the state's territorial control.

2. Shortcomings of State's Territorial Control

The challenges to state territorial control are multi-dimensional and strongly linked with various socio-political and economic dynamics. Among the most important factors for territorial governance is the ability of the state, as it directly influences the administering and maintaining of control over the territory. The fundamental functions that a modern state is expected to fulfill today can be summarized as follows: ensuring the security of its people, representing them, and improving their welfare (Milliken & Krause, 2002, p. 756). Based on these three core areas, various functions of the state can be identified. However, the number of states that successfully fulfill these three fundamental functions is very limited and many states with low governance capacity, particularly post-Cold War, struggle to establish authority, leading to crises such as those seen in Rwanda, Haiti, Liberia, Congo, Sierra Leone, and Afghanistan (Newman, 2007).

Ineffective governance often leads to power vacuums, particularly when states lose their monopoly on violence. In Afghanistan, this weakness has allowed the drug economy to flourish, with the country remaining the world's

leading opium producer. This illicit trade further undermines state authority and deepens corruption (ICG, 2024, pp. 8–12).

This often results from factors such as armed conflict, as seen in Syria, Yemen, and Libya following the Arab Spring, rampant corruption, and a lack of resources. Weak governance triggers a feedback loop, where diminished state capacity leads to economic instability and a breakdown of critical administrative functions, such as tax collection. This effect is evident in territories like Somalia and Afghanistan, where chronic conflict hinders economic governance and resource management (Chouvy, 2019, pp. 10–11). In the same part, he notes that the interplay of these factors erodes the capacity of the state to enforce legal systems, maintain social order, and provide public services. For instance, the Democratic Republic of Congo faces persistent challenges in governing its resource-rich eastern provinces, where armed groups profit from minerals like coltan, while the central government struggles to project authority (Matthysen & Gobbers, 2022, pp. 28–29).

In addition to these factors, the economic dimensions of territorial control cannot be overlooked. Territories beset by weak governance or security will probably suffer a breakdown in administrative functions, including taxation. Chronic conflict and insurgencies—such as parts of Afghanistan or Somalia—often leave governments at all levels of governance unable to impose the state's tax policies and enforce their collection (Behuria, 2016; Menkhau, 2006). Economic challenge for the state of the management of natural resources represents another scenario. Absent local governance, revenues generated through extraction are potentially available to be captured by organized criminal groups, armed organizations, or outside interests. Such situations can result in unsustainable practices, including overexploiting or destroying critical natural resources. In zones of conflict, such as the Democratic Republic of Congo, rebel groups and local militias frequently seize mines and pull out resources with little consideration for long-term environmental impacts or the economic well-being of the greater community.

Moreover, the historical context of the emergence of territorial authority is equally critical in shaping contemporary issues. One of the lasting issues of it is colonialism, which has had a profound and lasting impact on the world, shaping the political, economic, and social structures of many countries. The historical context of colonialism, which created artificial borders that often ignore ethnic, cultural, or religious divisions, has left a legacy of marginalization, resentment, and conflict (Howland, 2020).

Events such as ethnic cleansing, genocide, or mass expulsions—often involving the dehumanization of targeted groups—have left deep scars in affected communities (Egbert et al., 2016; Lorman, 2023) and led to demands for justice and sometimes autonomy. For example, the conflict in the Balkans

in the 1990s was fuelled by historical grievances and ethnic tensions dating back to the Ottoman Empire and the Second World War (Ukshini, 2021). In addition, the unequal distribution of resources and wealth mostly led to resentment and a sense of neglect among marginalized groups. Economic grievances in regions like Catalonia (Spain) illustrate how perceived inequities in resource distribution can erode state legitimacy and territorial cohesion (Wagner et al., 2019).

Some colonial borders ignored existing ethnic (resulting in racial order), cultural (tribes vs. tribes), or religious divisions (Muslim vs. Indian or Christian, but primarily involved in sectarian understanding). This established feelings of marginalization and resentment among ethnic people (Nixon Njau, 2014, p. 599). Such as the conflict in Western Sahara, which dates back to Spain's colonization of the region and Morocco's subsequent claim to the territory (Chograni, 2021).

Furthermore, the relationship between state territorial control and international relations is another critical concern. States displaying insufficient territorial control are at risk of external pressures and interventions, as other nations or international entities (might and mostly do) aim to influence or even intrude upon their domestic matters (Bellina et al., 2009; Droz-Vincent, 2018); this reality has been witnessed in the Iraq War of 2003, the Syrian Civil War of 2011, and the ongoing war in Yemen since 2011. In 2024, the collapse of the Ba'ath regime in Syria and the subsequent rise of the opposition forces to power, marking a significant turning point, have led to Israel seizing buffer zones and even strategic locations in Syria, continuing its advance. On the other hand, the PYD (listed as a terrorist organization by Turkey) is taking advantage of this weakness to expand its territorial control (Ravid, 2024). Such dynamics can result in diminished sovereignty and intensify the difficulties of governance, given that external stakeholders may enforce solutions misaligned with local circumstances or requirements, as in the dynamics in Iraq's state-building process (Ar dovini & O'Driscoll, 2023; Mako & Edgar, 2021).

The challenges of territoriality do not affect only the traditional entities of states. NSAG, such as terrorist organizations and insurgent factions, frequently take advantage of vulnerabilities in state authority, thereby further complicating the territorial dynamics (Karakuş, 2022a; McCullough, 2015; Oswald et al., 2020), violence [these groups use violence to intimidate and coerce populations and governments to achieve their political goals] and governance. Such groupings can potentially raise levels of violence and instability that further complicate state efforts to reassert dominance (Chaudhry, 2013). Hence, territoriality dynamics have been turned into an arena of contestation concerning the legitimacy and authority of the state.

3. Non-State Armed Groups' Territorial Control

Territorial control has long been a central aspect of state sovereignty and remains crucial in contemporary conflicts. However, the mechanisms through which NSAGs exert control over territory can be multifaceted and complex. As mentioned in earlier pages, the territorial authority exercised by NSAGs has become a critical factor for the intricacies of conflict and governance in any modern context (Krause & Milliken, 2009). These groups develop from politically turbulent, civil disturbance, or weak state power environments, trying to establish control over a region to establish alternative governance systems – if they have enough resources (Carlson, 2016; Ibáñez et al., 2023)- and the delivery of services [not all armed groups provide services (Asal et al., 2022)] therein to the people they serve.

It is true that the NSAGs present a significant challenge and complexity, as their control over extensive territory undermines classic state authority and governance patterns like the Boko Haram name has become grafted onto acts attributed to hostage-takers, al-Shabaab and PYD with their control over territories; Hamas with local acceptance, ISIS with access to resources and Hezbollah with the chance to perform social and ideational controls. It is noteworthy that states may also choose to interact with armed groups to govern the territories, mostly known as “ungoverned territories (Rabasa et al., 2020)” rather than fighting against the armed group violating its right of “monopoly over the use of force.”

Yet, it is common to see more authorities compete in the search for their structures' legitimacy and make the political context's normalization process particularly difficult. That is the reason why, prominent controversies include the accusations that NSAGs exacerbate humanitarian crises, as their mere presence often leads to more significant instances of violence, displacement, and economic instability for local people (Chaudhry, 2013, pp. 168–170). Understanding the mechanisms through which NSAGs exert territorial control remains integral as the face of armed conflict continues to evolve. The ramifications of this control go beyond the issues of immediate violence itself to the socio-economic situation, political legitimacy, and chances of peace and stability in the respective regions.

The next parts will delve into NSAGs' control system, and then the study will explain the shortcomings in their territorial controls.

3.1.2.1. Types of Control Mechanisms

3.2.2.1.1. Physical Presence and Governance

NSAGs have become prominent actors in the ability to shape the political and social structures in many regions of the world. They create territorial

control through their physical presence,¹ displacing and undermining local governments' authority, which usually leads to their incapacity to wield power effectively. In return, in the vacuum created by this weakened state, NSAGs step in and fill this gap with certain essential services. These groups maintain order and collect taxes (Mampilly & Gutierrez, 2023); they even deliver public goods such as healthcare (Furlan, 2023) and education to the population (Huang & Sullivan, 2021). In providing these services, NSAGs can thus position themselves as viable alternatives to the state from the perspective of the population. The government functions assumed by NSAGs are both varied and extensive. The deployment of security forces usually accompanies the protection of territories and populations by NSAGs, and violence is often resorted to maintain control (Teiner, 2022). In some instances, NSAGs may invest in infrastructure projects such as roads and bridges to improve connectivity and economic activity in the areas under their control. Few armed groups successfully compete directly with the state. Even NSAGs can play a role in resolving local disputes (Bellal, 2024) and conflicts, particularly in areas where state institutions are weak or non-existent, which are crucial in gaining legitimacy among locals.

3.2.2. Social, Ideational and Technological Control

NSAGs, beyond the physical aspect of governance, employ sophisticated social and ideational mechanisms to consolidate power, mostly when they realize that just hard power is not enough. They also include the use of social networking sites (propaganda and social media campaigns) as a means to garner a narrative that resonates both locally and internationally (painting themselves as protectors, liberators, or champions of a particular cause), hence giving a sense of community and support from its adherents. Al-Shabaab used religious rhetoric to exploit clan and tribal divisions (Besenyő & Sinkó, 2021), Boko Haram Employs propaganda to portray themselves as defenders of Islamic values and fighters against Western influence (Thurston, 2017, pp. 12–15), or ISIS manipulated perception by presenting themselves as defenders of Muslims and liberators of oppressed people (Donker, 2022; Müller, 2017). Indeed, it has increasingly come to be realized how NSAGs manipulate public perception to rally civilian support in favor of them as an essential part of their governance strategy.

Furthermore, digital technologies -definitely- have changed how NSAGs exercise control. The occupation of digital space by the groups has allowed them to conduct recruitment (Karakuş & Ak, 2022; Metodieva, 2023), fundraising (Bajekal, 2014), and disseminate propaganda (Weimann, 2004) without the need for such traditional infrastructures of governance. A

¹ This physical presence is often backed by military force and serves to displace or undermine the power of legitimate local governments. Those governments, thus, may become paralyzed and unable to apply power effectively in their domains.

good example is ISIS, which widely used digital platforms for recruitment, propaganda dissemination, and operational coordination (Isakhan, 2015; Kruglova, 2021; McCarthy, 2019). The group used social media platforms like Twitter, Telegram, and YouTube to spread its ideology globally and attract recruits from different countries. Through online magazines like “Dabiq,” for instance, ISIS spread high-quality propaganda to radicalize people around the world and garner support for its activities (Al Hayat Media Center, 2015; Simons, 2018; Wilbur, 2017).

Similarly, digital technologies have helped Al-Qaeda create a virtual presence to complement its physical operations. The group had developed secure communication and an online forum that coordinated operations, recruited new members, and fundraised (EFSAS, 2021; Rudner, 2016). This was particularly important in maintaining their operation after losing territorial control. In fundraising, NSAGs like Hezbollah have used cryptocurrencies to evade traditional financial systems (Wang & Zhu, 2021). Digital currencies, such as Bitcoin, enable a certain level of anonymity and also create hurdles for government agencies in tracing transactions, thereby empowering organizations to fund their activities independently of traditional banking channels (Burgess et al., 2024). This technological element provides flexibility and elusiveness to the activities of NSAGs; thus, it makes their impact quite impossible for states to act against.

4. Shortcomings and Limitations of Non-State Armed Groups

4.1. Territorial Shortcomings and Limitations of Non-State Armed Groups

The territorial deficiencies (such as the lack of centralized authority) and constraints of NSAGs are a rather complex and entangled issue with profound historical, legal, and humanitarian repercussions. More often than not, NSAGs operate in regions with shifting allegiances and fragmented governance structures (Duursma & Fliervoet, 2021; Eleftheriadou, 2020; Walther & Pedersen, 2020), facing multiple territorial deficiencies and constraints. These can strongly influence the group’s ability to reach their goals and hold on to control over territory, as will be explained in the following part.

1.1.1. Difficulty in establishing effective governance structures

The territorial deficiencies of NSAGs are closely linked to the governance challenges they face. NSAGs seek to benefit from such scenarios with an attempt at acquiring control, although the weak institutional setup and lack of formal recognition make it quite difficult. Most often operating in contested or unstable environments –referred to as limited or ungoverned territories in the literature (Lynch, 2016; Marsden, 2017)- without formal recognition as legitimate authorities –despite the criticisms about the level

of legitimacy (Druckman et al., 2024; Terpstra & Frerks, 2017)-, NSAGs often lack the resources (Ahram, 2023; Szekely, 2016) and stability necessary to exercise effective control over particular areas. For example, the Taliban were initially able to grow in Afghanistan since they could provide a level of government in rural areas, whereas the weak national government and continued international opposition to the legitimacy of their regime resulted in sustained governance problems and internal issues. In Somalia, Al-Shabaab tried to gain control over areas by introducing the strictest form of Sharia law. It helped them establish some kind of order in the few places where they are operating (Mudug, Galmudug, and Hirshabelle States in Somalia, or Kenya, and Ethiopia), though they have not been able to provide full public services (Ahmad, Bandula-Irwin, & Ibrahim, 2022; Simpson & Holdaway, 2023). The group's inability to consistently deliver governance functions diminishes its support and reinforces perceptions of it as a predatory actor rather than a viable alternative to the Somali state. They also use force to keep control, which has caused anger among local people. Frequent offensives by Somali government forces, the African Union Transition Mission in Somalia (ATMIS), and U.S. airstrikes have disrupted its ability to maintain stable governance.

1.1.2. Internal Divisions: Fragmentation within Limited Territories

The lack of stable territorial control or territorial deficiencies often exacerbate internal divisions within NSAGs (Duursma & Fliervoet, 2020; Perkoski, 2019; Walther & Pedersen, 2020; Wehrey, 2021), where various factions jockey for control over scarce resources or strategic positions. This is further exacerbated by the lack of any central and established governance structure in the contested territories, where leaders find it difficult to mediate between divergent agendas and priorities (different goals among leaders or ideological objectives). This is evident in groups like Boko Haram, where smaller factions (such as ISWAP, which later turned into a much more sophisticated organization) have emerged based on leadership and strategic differences (CSIS, 2024, pp. 06–07). Such breaking apart only undermines the effective operation of a group but also degrades its ability to hold or practice governance. With regard to the Revolutionary Armed Forces of Colombia (FARC), conflicts between different commanders (Mono Jojoy, Iván Márquez, or Gentil Duarte) over territorial control have, at times, degenerated into violent infighting, thereby undermining organizational cohesion (Gutiérrez, 2022; Stienen, 2020). Similarly, in Libya, internal factions within the Libyan National Army have been fighting each other over control of key oil-producing areas (Droz-Vincent, 2018; Villa & Varvelli, 2019). These divisions only weakened the group and created openings for other armed groups or state forces to exploit the fragmentation of the NSAG and undermine its ability to maintain territorial control.

1.1.3. Corruption: The Challenge of Managing Limited Resources

Corruption is a persistent issue that undermines the governance capabilities of NSAGs, and it further undermines public trust in NSAG governance as it does so in national governments. It is particularly pronounced in contested and unstable regions where state control is limited or absent, and it typically brings about resource shortages, creating fertile ground for corruption within NSAGs. In contested (like Western Sahara, Somaliland, East China Sea, or Jammu & Kashmir) and unstable regions (like Sudan, Syria, Yemen, and Myanmar) due to ineffective or questionable governance, exacerbates resource scarcity, making corruption a survival mechanism for NSAG leadership. The same local leaders and operatives usually pillage available resources, enrich themselves, or engage in smuggling and extortion. In Myanmar, groups like the United Wa State Army (UWSA) and other Ethnic Armed Organizations engage in governance in semi-autonomous regions but are deeply involved in the narcotics (facilitate the production and trafficking of drugs) trade (Peter, 2024) or The Polisario Front, which seeks independence for Western Sahara, has faced allegations of corruption in managing refugee aid and resources in the Tindouf camps (Goldstein, 2008).

1.1.4. Lack of Public Trust: Struggles for Legitimacy

The issue of legitimacy is also a game-changer for both state and NSAGs. It is possible to say that the NSAG cannot ultimately win the hearts and minds together with trust in a contested territory. Their appeal to coercion rather than consent creates problems for them. Without public trust, NSAGs increasingly find it difficult to rally support, recruit fighters, and hold on to power in their territories, further underlining their difficulties due to territorial shortcomings (Karakuş, 2022a).

In Somalia, for example, Al-Shabaab has been unable to gain lasting public support despite establishing rudimentary justice systems (HIR, 2023) and providing some services (Botha, 2021; Marchal, 2019) in the areas it controls. On the other side, the salvation government established in 2017 in Northern Syria by HTS has garnered different reactions from locals, with many viewing their rule as self-serving and predatory (Nassar, 2020; Zelin, 2020).

1.1. Limited Power Consolidation and Logistics

When NSAGs control territories that are fragmented and non-contiguous, they face considerable challenges in imposing cohesive governance and exercising authority uniformly. Their fragmented bases are usually isolated geographically and politically and tend not to give room for creating the administrative structure required to institute their authority cohesively. Like in most cases, such as FARC in the Colombian fight, they do not constitute a united territory but hold many isolated and scattered areas. The fragmentation

of power limited their ability to construct centralized governance structures, and thus, they suffered from irregular rule, which was highly vulnerable to state countermeasures (CSIS, 2022, p. 6). Similarly, before 2021, the Taliban's territories in Afghanistan had been scattered across different provinces, thus thwarting the enforcement of consistent policies and coordination of military campaigns (Muibu, 2024). Without consolidation in a contiguous territory, the group's legitimacy is reduced, and they become ineffective in challenging state sovereignty (Karakuş, 2022c).

In addition, controlling scattered pockets of land hampers an NSAG's ability to mobilize resources and coordinate logistics efficiently. Moving supplies, fighters, and weapons between disconnected areas often requires traversing hostile zones, increasing the risk of interception or attack. During its peak in Syria, for example, the Islamic State—ISIS—suffered greatly from logistical problems as its territory became more and more fragmented under coalition attacks. The disruption of critical supply lines during operations like the battle for Mosul weakened their capacity to resupply at the frontlines and diminished their ability to provide services to local communities, eroding their support and legitimacy. In a related context, the Kurdistan Workers' Party (PKK) faces logistical hurdles in coordinating operations across the mountainous terrains of Turkey, Iraq, and Syria. As dispersed control reduced the mobility of fighters and supplies, it worsened operational inefficiencies and left isolated regions vulnerable to attacks or uprisings. Similarly, the Taliban's pre-2021 dispersed control across Afghanistan's provinces broke their ability to enforce uniform policies and effectively coordinate military actions, thus leaving isolated regions exposed to external attacks and uprisings until they consolidated their power (Felbab-Brown, 2022; Paul, Clarke, Grill, & Dunigan, 2013).

1.1.1. Isolated Territories Increase Vulnerability to External Threats

Geographic fragmentation inherently exposes territories to more significant external threats, as NSAGs often lack the resources to defend dispersed areas effectively. The inherent challenge poses significant prospects for state forces or opposing factions to exploit vulnerabilities. Territorial recovery allows these belligerents to retake key areas gradually. In so doing, by focusing on hotspots, state actors may avoid a confrontation against the stronger NSAGs' strongholds and, at the same time, gradually undermine their foes' territorial integrity. These tactics have been seen in many contemporary conflicts, including those in Syria and Yemen, where fragmented areas have served as battlegrounds for state and NSAGs seeking dominance. Moreover, geographical fragmentation tends to prolong conflicts by creating an unstable environment where several actors compete for influence, leading to a perennial contest over key locations. Indeed, in Somalia, Al-Shabaab has been facing repeated setbacks as government forces, with international backing, have

concentrated their efforts on neutralizing scattered strongholds (Muibu, 2024, pp. 18–19). Similarly, in the Sahel region, Boko Haram has been unable to defend its dispersed bases against regional military coalitions and has thus lost large swathes of territory (Muibu, 2024). These examples underscore a critical dilemma for NSAGs: maintaining coherence and security across fragmented regions is an uphill battle that strains their strategic and operational capabilities. The inability to maintain a secure and unified defense across fragmented areas weakens the overall territorial integrity of the group and reduces its strategic depth, making it harder to withstand sustained counterinsurgency campaigns. Addressing these dynamics requires a nuanced understanding of how geography intersects with *resource allocation*, communication, and local support networks in shaping the resilience of such groups.

1.2. Limited access to resources:

NSAGs confront enormous challenges with finding legal means of access to money. They have no right to collect taxes, print money, or borrow from international banks in the way that governments might. Because of this, many NSAGs turn to the black market for funding whatever they are doing, including:

1.2.1. Extortion: Fragile Control over Populations and Economic Activities

Extortion is considered a core factor for NSAGs' income while operating in restricted or contested territories. It also shows, at the same time, how an NSAG is not able to create structured taxation systems and mechanisms (Mampilly & Gutierrez, 2023; Poveda, 2015; Vélez-Torres & Méndez, 2022). With no institutions to lean on, the NSAG exerts coercion to elicit payments from local people, businesses, or humanitarian actors. In the regions that Al-Shabaab dominates in Somalia, businesses efficiently pay what is a “tax” against protection or being able to keep working (Fontes, 2023; Hoffmann, Vlassenroot, & Marchais, 2016). However, the demands become inconsistent due to a lack of proper formal control, which makes the local population discontented. This aggressive approach may also drive away the people from whom they receive economic and logistic support, which may further provoke those people to oppose them or to side with other groups or governments. These responses bring out the more significant issue of how to retain control over territory without alienating local communities- a glaring weakness in their modes of governance.

The coercive nature of such payments profoundly disrupts economies and creates a sense of mistrust, not only towards the NSAGs themselves but also towards any authority perceived as an enabler or tolerant of these practices. In regions lacking formalized systems, extortion often targets key economic activities, such as agriculture, trade, or transport, further destabilizing

fragile regions. For instance, Al-Shabaab's taxation system is state-like in its organization, although far from efficient. Like taxes, the absence of reciprocal public services or infrastructural improvements significantly sets it apart from legitimate state governance. Over time, this absence of tangible returns erodes the group's credibility among local populations. The erosion of legitimacy is particularly pronounced when the NSAG's rule is challenged by more organized state actors or other groups that offer stability and support. Besides, the incoherence and non-predictability of the demands sharpen the local discontent.

Communities subjected to extortion frequently adapt by developing avoidance strategies, such as hiding their assets or migrating to safer regions, which can severely undermine the revenue streams of NSAGs. This dynamic is one of many reasons these groups' control over territories is fragile and often short-lived. The broader ramifications of such practices signal the paradox of NSAG governance: extortion may yield immediate financial rewards. However, it alienates the communities on which they depend for sustainability. This tension underlines the strategic vulnerabilities inherent in the dependence on coercive economic models, especially in contexts where the rebuilding of the state or international intervention is feasible.

1.2.2. Smuggling: Risks and Inefficiencies in Illicit Trade Networks

Smuggling has long served as a critical revenue source for many NSAGs, especially when operating near porous borders or in areas where a high-value illicit commodity is available. These activities, however, rely on fragile and clandestine networks which can easily be disrupted by rival groups. The FARC in Colombia heavily relied on narcotics trafficking as their primary source of revenue for many years (Norman, 2018). By controlling coca cultivation and trafficking routes, the group generated substantial revenue, but this reliance exposed them to Colombian military offensives, leading to severe financial and operational disruptions. Similarly, in Syria, NSAGs such as the Islamic State (ISIS) capitalized on oil smuggling from captured fields. While this initially provided a significant financial boost, intensified airstrikes on infrastructure and smuggling convoys by international coalitions severely undermined their operations. Or, in the Sahel region, armed groups such as Al-Qaeda in the Islamic Maghreb (AQIM) have engaged in smuggling narcotics, arms, and human trafficking (Walther & Christopoulos, 2015).

The operational secrecy inherent in smuggling poses additional vulnerabilities. The reliance on external intermediaries and trafficking networks creates dependencies that adversaries can exploit. For instance, in the Sinai Peninsula, smugglers aligned with Wilayat Sinai (an ISIS affiliate) have been targeted by Egyptian forces, significantly disrupting the group's operational capacity (Clarke, 2020). Additionally, the fragmented nature

of smuggling operations often leads to internal competition among NSAG factions, as seen among armed groups in Yemen, where disputes over arms and fuel smuggling networks have weakened alliances and operational effectiveness (Salisbury, 2017). Moreover, in places where some NSAGs are operating, such as Syria or the Sahel, competition for smuggling profits tends to undermine efforts at durable territorial control. Smuggling also carries wider economic and political costs for the affected regions: the emphasis on illicit trade diverts resources from legitimate economic activity, further weakening fragile economies; for local populations, in turn, smuggling networks often reflect increased insecurity and corruption that undermine trust in governance structures. Despite its risks, NSAGs continue to engage in smuggling due to the absence of viable alternatives for resource generation.

1.2.3. Resource Extraction: Unsustainable Exploitation and Territorial Conflicts

As related in the previous section, in resource-rich areas, NSAGs often extract natural resources to finance themselves, but their lack of territorial control makes such activities unsustainable and prone to conflict (Le Billon, 2023). Competition for control over diamonds, timber, or other valuable commodities usually pits militias against government forces or other armed groups. For example, in the Democratic Republic of Congo (DRC), armed factions that dominate mineral-abundant areas are persistently challenged by competing groups and government forces, hindering their ability to attain the stability requisite for ongoing operations (Di John & John, 2007). Additionally, the exploitative methods employed by these factions frequently lead to significant environmental degradation (Karakuş, 2024; Srikanth, 2014). The non-sustainable extraction of resources, including excessive mining or deforestation, diminishes the area's natural wealth, thereby impairing its economic sustainability in the long run. This often involves environmental damage, which displaces local communities and denies them their livelihoods. Anger and resentment resulting from these activities can escalate into organized resistance, thereby encumbering the operations of NSAGs.

A notable case is the Democratic Republic of Congo, where the mineral extraction sites have been associated with armed groups unleashing extreme violence, child labor, and ecological degradation (Di John & John, 2007). Such activities destroy local economies and create instability cycles, as communities displaced by extractive industries often find themselves embroiled in further conflicts. In Myanmar, the KIA has faced significant controversy over its jade mining operations, which have led to widespread environmental destruction and labor abuses (Sadan & Lawn Dan, 2021). This has weakened local support for the group, exposed it to reputational risks, and made it more vulnerable to government propaganda and military offensives.

1.3. Limitations on the International Operations

The territorial deficiencies associated with NSAGs seriously impede their operational effectiveness internationally. Unless recognized as sovereign entities, NSAGs encounter several obstacles that limit their diplomatic interactions, access to global assistance, and ability to resist international sanctions. These constraints flow from their ambiguous status under international law and are further exacerbated by their inability to achieve stable and legitimate territorial governance.

1.3.1. Limited Diplomatic Engagement: Barriers to Negotiations and Alliances

Similar to being able to receive international aid, the absence of sovereign recognition significantly limits the diplomatic capabilities of NSAGs, which substantially limits their ability to secure alliances, negotiate peace agreements, or participate in international forums (Al-Shamahi, 2020).

Without recognized statehood, they are often excluded from critical discussions that could shape the future of the territories they control. For instance, during the Syrian Civil War, groups like the Syrian Democratic Forces (SDF) could hardly get meaningful representation in international forums, even though they were able to hold vast swathes of territory (Boyras, 2021). This marginalization would weaken their ability to advocate for their interests and obtain international legitimacy, exposing them to changing geopolitical winds. Similarly, the Taliban, before retaking power in 2021, had to rely on unofficial channels and secret talks, which reduced their ability to wield influence on the world stage. These constraints illustrate how territorial instability and a lack of recognition unite to thwart diplomatic efforts (Maley & Jamal, 2022).

1.3.2. Restricted Access to International Aid: Humanitarian and Development Challenges

NSAGs controlling isolated and non-contiguous territories may encounter significant challenges in accessing international aid. Aid organizations and donor governments typically require partnerships with recognized states to ensure accountability and transparency (IASC, 2016, pp. 23–24). Because aid delivery is not successful, humanitarian suffering is increased while the ability of NSAGs to be practical in governance is diminished, leading to less territorial control. This exclusion particularly hampers the populations under NSAG control, as they may be more exposed to humanitarian crises due to the lack of outside support as Al-Shabaab blocked famine relief to south Somalia in 2011, causing the worsening of the crisis (Haan, Devereux, & Maxwell, 2012). In Yemen, Houthi-controlled areas have had difficulty receiving sufficient humanitarian aid because of international hesitation to work directly with the group (Al-Shamahi, 2020).

1.3.3. Vulnerability to International Sanctions: Economic and Operational Isolation

International sanctions have become a powerful tool against NSAGs' financial and logistical networks. They expose the groups' vulnerabilities, especially their dependence on the available, however frail, geographical and legal structures. Take Hezbollah in Lebanon: massive sanctions against its sources of funding have greatly choked the possibility of engaging in world trade. This then made it difficult for the group to maintain its power and administer services, even within locations under its direct control.

Al-Shabaab has been the subject of much debate and, in some cases, placed severe limits on designation as a terrorist organization within Somalia. The sanctions put in place have broken many of the formal channels of funds, now forcing the group to increasingly depend on illicit activities, such as extortion and smuggling. While these can be short-term survival tactics, they simultaneously increase the isolation of the group and deteriorate its ability to create stable governance. Ultimately, international sanctions not only limit NSAGs' operational capacities but also exacerbate their challenges in asserting authority. By further isolating these groups from economic and political networks, sanctions weaken their territorial control and undermine their long-term goals (Agbonifo, 2021; ICTD, 2022).

1.4. Internal Challenges of Non-State Armed Groups and Their Territorial Limitations

Non-State Armed Groups often face serious internal struggles that undermine cohesion, operational effectiveness, and the ability of such groups to maintain control over territory. Fighting between groups, disagreements about who is in charge, and problems with being responsible and clear often interfere with what they do.

These issues are even more important in places that are unstable and competitive, where just keeping control of an area can be very difficult. Finding and keeping fighters is hard. Since many non-state armed groups operate in areas with few resources, the members need more than promises of power or material rewards to get motivated, much less to keep their spirits up. Added to the difficulties of fighting in tough areas, these internal problems make it very hard for non-state armed groups to gain power or reach their long-term goals.

1.4.1. Lack of Accountability and Transparency: Governance Failures in Unstable Territories

NSAGs often struggle to govern effectively due to the absence of formal structures and accountability mechanisms (Karakuş, 2022b, p. 77). Without such protective measures in place, corruption and misappropriation of resources become the norm, and public confidence and legitimacy are

eroded. Thus, for instance, reports from areas under Taliban control before 2021 pointed out deep-seated corruption among local commanders who systematically diverted funds and resources for personal gain (Singh, 2020). Such actions not only caused resentment among their fighters but also alienated the local populations on which they depended for support (Brenner, 2015; Martin, Piccolino, & Speight, 2022).

A similar dynamic was at play in northern Uganda's LRA-controlled areas, where arbitrary punishments and predatory practices encouraged widespread mistrust (HRW, 2005). Decisions were often executed without either transparency or justice, leaving the communities with a sense of exposure and disappointment. These examples show a common challenge: without accountability, non-state armed groups are ill-equipped to build the governance that would help consolidate territorial control. As time goes by, the inability to create trust and stability erodes their credibility, leading to increasing alienation from the people they seek to dominate.

1.4.2. Difficulty in Mobilizing and Motivating Fighters: Recruitment Challenges in Contested Zones

Recruiting and retaining fighters remains a considerable hurdle for NSAGs, especially in regions marked by economic deprivation, government counter-insurgency efforts, and when rival groups erode their influence. In such areas with unstable territorial control, NSAGs often resort to coercion or material incentives to fill their ranks, yet these methods can come with serious drawbacks. For example, Boko Haram in Nigeria has increasingly turned to forced recruitment (Oladuntoye, 2021; Richards, 2014) and the exploitation of child soldiers, highlighting their struggles to attract willing participants. This tactic diminishes their operational effectiveness and damages their reputation among local communities (Faulkner & Doctor, 2021; Haer & Böhmelt, 2016; Mehrl, 2021).

In Colombia, for example, the FARC faced immense difficulty in keeping combatants as military pressure intensified (Gentry & Spencer, 2010; Schmidt, 2021) and economic alternatives became more attractive (Sticher & Vuković, 2021). These examples point to a broader reality: the instability of territorial control frustrates non-state armed groups' ability to offer their fighters security, supplies, or a unifying ideological base. These organizations thus often find themselves caught in a cycle of repeated violence and attrition that gradually drains their operational effectiveness and legitimacy.

1.4.3. The Role of Limited Intelligence Networks, Capabilities in NSAGs' Territorial Shortcomings

Contested and unstable environments often deprive NSAGs of the robust intelligence (together with factors like leadership, morale, logistics, external

support, etc. (Karakuş, 2022b, pp. 206–220)) networks and technological resources (that state actors possess) needed to sustain control and achieve strategic goals. In other words, protection of the areas within the control of NSAGs requires virtually incessant accurate information input to be able to chart and eliminate the possibility of insurgent activity, governmental attack, or rival factions. However, they are usually dependent on informants, old-fashioned communications equipment, or simple spying, which often creates critical blind spots (Khan, 2024, p. 216). Effective operational planning, therefore, depends on timely and accurate intelligence (Khan, 2024, p. 216), which the NSAGs are usually not privy to because territorial control is typically limited for them if they do not have external support. Without access to advanced reconnaissance tools like satellite imagery or cyber surveillance, many NSAGs have to rely on fragmented or unreliable sources of information (of enemy capabilities, vulnerabilities, and enemy actions). At the end of the day, it may turn into poorly timed attacks, ineffective ambushes, and costly tactical errors, which may result in missed opportunities and internal divisions. For example, most rebel groups found it difficult to synchronize offensives (distancing the Free Syrian Army in most cases (Meininghaus & Schlüsing, 2020)) during the Syrian Civil War because there was no solid intelligence structure (apart from the received from outside sources) that led to ill-timed and ineffective operations. The Taliban in Afghanistan suffered significant losses due to their inability to detect and counter aerial drone strikes and ground offensives launched by NATO forces (CTC Sentinel, 2011). Similarly, the Abu Sayyaf Group in the Philippines has struggled to monitor the movements of government troops, often leading to surprise attacks and disruptions to their operations (Chalk, 2008).

5. Conclusion

The study of territorial control reveals the intricate challenges and limitations faced by state entities and NSAGs in their attempts to exert power over assigned spaces. In the case of state entities, poor governance structures, economic crises, corruption, and the historical legacies of colonization significantly erode their ability to maintain territorial integrity. These gaps give rise to vacuums that non-state actors exploit, further leading to destabilization. While NSAGs are often effective in taking advantage of these vulnerabilities, they themselves are not free from constraints. The lack of centralized authority, internal divisions, resource shortages, and dependence on coercive practices undermine their governance efforts. Geographic fragmentation and the lack of international recognition also amplify their vulnerabilities, exposing them to external military interventions and internal erosion of legitimacy. The interaction between states and NSAGs creates an ever-changing environment in which power vacuums, economic exploitation, and social fragmentation perpetuate cycles of instability. In this respect,

the complexity requires robust international mechanisms for the resolution of territorial disputes while increasing the capacity of the state and holding non-state actors at bay from further influencing governance and conflict dynamics. Addressing such systemic weaknesses in both state and non-state actors would allow policymakers to deal with challenges of territoriality more fittingly and to work towards sustainable conflict resolution and governance.

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CHAPTER 14

JUSTICE BEYOND THE WEST: POSTCOLONIAL FEMINISM, INTERSECTIONALITY, AND THE STRUGGLES OF NON-WESTERN WOMEN

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Introduction

The discourses of the modern world have historically been constructed on a Eurocentric epistemological foundation. This process of construction not only reflected the social, cultural, and political transformations of the West but also systematically excluded other cultural and social contexts through its claims of singularity and universality. Colonialism, far from being merely a tool of economic and political domination, monopolized processes of knowledge production and dissemination, establishing an epistemological power that continues to exert its influence in modern times, shaping the reproduction of societal structures. In this context, the epistemic legacy of colonialism has distorted the historical narratives of non-Western societies, marginalizing their cultural, economic, and intellectual existence and rendering them as the “Other.” Postcolonial feminism emerges as a critical discourse of resistance against this epistemological and ideological domination, aiming to make visible the unique forms of knowledge production, historical experiences, and resistance practices of marginalized societies, particularly women.

Western-centric feminist discourses have historically constructed women’s struggles through a singular narrative, centering on a predominantly white, middle-class, and Eurocentric perspective. This perspective homogenizes the experiences of womanhood, disregarding the multilayered identities, cultural diversities, and historical contexts of women in non-Western societies. As a result, the agency of non-Western women— their capacity to become subjects of social transformation—has been framed through a reductive and paternalistic lens, positioning them as passive and in need of rescue. As Edward Said emphasized in his critique of Orientalism, such approaches not only produce discourses but also function as ideological structures that reinforce the epistemological superiority of the West. Within the feminist movement, these narratives have silenced and rendered invisible the resistance practices of non-Western women, leaving them outside hegemonic frameworks.

However, for the feminist struggle to acquire a genuinely universal character, it is necessary to question the hegemonic epistemology of the West and transcend the one-dimensional discourse it has produced. In this regard, postcolonial feminist theory proposes the reconstruction of feminist struggles beyond a Eurocentric framework, embracing a pluralistic, localized, and culturally sensitive approach. The experiences of womanhood, shaped under different historical, cultural, and economic conditions, are too diverse to fit within a single narrative. This diversity necessitates the reconstruction of feminist solidarity on a sustainable basis. Within this framework, epistemic justice represents not only the recognition of non-Western systems of knowledge but also a critical transformation that brings marginalized voices and resistance practices to the center of feminist discourse and praxis.

Postcolonial feminism, while interrogating the universalist claims of Western-centric feminist discourses, also emphasizes the intersectional nature of women's experiences. This theory demonstrates how women's class, ethnic, geographical, and religious identities interlock to produce multidimensional systems of oppression. Kimberlé Crenshaw's concept of "intersectionality," for instance, offers a critical tool for understanding such mechanisms of oppression. The intersectional experiences that Western-centric feminist movements have often overlooked compel feminist solidarity to move beyond singular contexts and be reconstructed on an inclusive, pluralistic, and equitable foundation.

Postcolonial feminist analysis does not merely offer a critical intervention against Western-centric practices of domination; it also reveals the resistance practices developed by women under multilayered systems of oppression and how these practices reimagine a vision of social justice. In this regard, the primary objective of this study is to challenge the singular "universal" claims of the West, to make visible the experiences of historically silenced subjects, and to construct a feminist imagination rooted in pluralism.

Beyond the Dominant Discourse: Postcolonial Feminism

Postcolonialism is a concept that analyzes the historical process following the end of Western-centered colonialism and examines the social, cultural, and economic structures of the postcolonial world shaped by this process (Said, 1979; Young, 2001). However, the concept is not limited to describing a historical transformation; it also encompasses the effort to reconstruct the ontological status of societies existentially constrained under colonial domination, reclaim their silenced or distorted historical narratives, and redefine their unique practices of resistance and subjectivity.

In this context, postcolonialism can be defined as an epistemological and historical project of recovery that aims to make visible the forgotten or suppressed discourses accumulated in the collective memory of colonized societies. The primary goal of this project is to critically analyze the social, economic, and cultural structures of power constructed by Western imperialism and, through the transformation of the normative order imposed by these structures, reveal alternative modes of existence and discourse.

Postcolonialism cannot be understood solely as a reckoning with the past; it also points to the mechanisms of domination that are reproduced in different forms today. The new forms of exploitation and subjugation produced by global capitalism compel us to question the notion that colonialism has ended. Indeed, in contemporary times, a new wave of domination emerges, which can be described as "soft imperialism," driven by global power dynamics such as non-state actors, transnational corporations, and information technologies (Sassen, 2007; Escobar, 1995).

Postcolonial theory not only analyzes colonial periods but also provides a multilayered critical tool for understanding the enduring impacts of these periods on the modern and contemporary world. This theoretical approach highlights a transformation of consciousness by revealing the effects of colonialism not only on physical territories but also on intellectual and cultural structures. Rooted in the revolutionary works of Frantz Fanon, such as *Black Skin, White Masks* and *The Wretched of the Earth*, postcolonial thought emphasizes the necessity of not only bodily liberation but also the decolonization of minds and cultural perceptions (Fanon, 2008; Fanon, 1961). Fanon lays the philosophical foundations of a profound process of liberation by interrogating the internalized patterns of colonial domination and addressing their reflections on individual consciousness and the construction of social identity.

Another leading figure of postcolonial theory, Edward Said, critically analyzes the strategies through which the West positions itself at the center while constructing the “Orient” in his seminal work *Orientalism* (Said, 1979). Said’s theory of Orientalism reveals how the West defines itself as the “norm” while constructing the East as an exotic, irrational, and backward “Other.” Said considers this mechanism of domination not merely as a literary motif or cultural theme but as a reflection of the West’s power structures and claims of epistemological supremacy. In this context, domination over the East becomes visible not only as a colonial practice but also as a consequence of an epistemological hierarchy that determines how knowledge is produced, transmitted, and institutionalized.

Viewing the world through a postcolonial lens represents an attempt to transcend the invisible epistemic boundaries imposed by Western-centric systems of knowledge. In this framework, not only the knowledge production practices and normative truths of the West but also how knowledge is structured within identity and political contexts are subjected to critical evaluation. Postcolonial theory presents knowledge production not simply as a philosophical or theoretical issue but also as an ideological and political problem.

Fanon’s emphasis on cultural decolonization and Said’s analysis of epistemological domination strengthen the intellectual foundation of postcolonial thought. In this regard, postcolonialism serves as a critical theoretical resource for transcending the boundaries of Western-centric systems of thought and constructing an academic future where multiple knowledge systems and epistemic justice are defended. This theory represents a profound call for transformation toward a more inclusive and just academic paradigm that recognizes the plurality and local contextuality of knowledge.

Postcolonial feminism represents a critical approach aimed at exposing

and dismantling the colonial traces that persist within feminist discourse and activism. In this regard, postcolonial feminism not only rejects the reduction of feminist struggles to a Western-centric narrative but also seeks to transform these struggles into a global demand for justice that incorporates multiple histories, local experiences, and diverse cultural contexts. It aims to deconstruct feminist movements from colonial remnants, rebuilding them on an inclusive platform where marginalized voices are incorporated.

Postcolonial feminist thought exposes the deep impact of colonialism even at the micro-levels of everyday life and questions how these impacts have been normalized (Mohanty, 1984). By critiquing discourses that accept Western-centric and Eurocentric experiences as universal standards, it seeks to create space for marginalized voices. In doing so, it reveals the limitations of feminist theory grounded in a white, Western, and Eurocentric perspective and proposes expanding this framework to incorporate the intersectionalities of different cultural, class, and ethnic experiences. Postcolonial feminism, in its effort to recognize invisible and marginalized women's experiences, serves as a call to address the epistemic justice gap within feminist theory.

In this context, postcolonial feminist literature is not limited to theoretical critique; it also interrogates the colonial foundations of knowledge production processes. In a context where Western-centric feminist discourses are accepted as universal norms, postcolonial feminism reveals the colonial biases embedded within these discourses. It aims to make feminist theory sensitive to local, specific, and pluralistic experiences. By challenging the cultural and epistemological domination imposed by colonialism, this approach enables feminist theory to move away from singular Western knowledge systems and reflect the plurality of diverse social and cultural contexts.

In this sense, postcolonial feminism proposes a comprehensive critical transformation that re-evaluates the ideological foundations and epistemological frameworks of the feminist movement. It addresses not only the justice demands within feminist struggles but also interrogates the colonial origins of the knowledge structures upon which these demands are based. This perspective advocates for a feminist narrative that moves beyond Western-centric roots to construct a multi-vocal and multi-layered framework. Recognizing local experiences, cultural contexts, and colonized histories brings a more inclusive and sustainable dimension to the feminist pursuit of universal justice. Thus, postcolonial feminism aims to reconstruct the foundations of global feminist solidarity on a non-hegemonic, pluralistic, and just basis.

The historical intertwining of colonialism and patriarchal structures reveals the continuity and depth of structural oppression experienced by women in the postcolonial period (Lugones, 2007; Mohanty, 1984). The end

of formal empires did not bring about the liberation of women in former colonial geographies; rather, the cultural and patriarchal hierarchies left behind by colonialism continued to shape women's social positions. In this context, postcolonial feminists critique the persistent effects of colonialism on women while identifying how some postcolonial writers who challenge colonial oppression themselves continue to marginalize women through stereotypes (Minh-ha, 1989). This demonstrates how deeply and insidiously patriarchal ideologies persist, even within feminist discourses and various other domains, despite the formal end of colonialism.

From this perspective, postcolonial feminist thought exposes the patriarchal boundaries hidden behind discourses of "authenticity" and critically questions the postcolonial era's claims of liberation from oppression. By analyzing how patriarchal mechanisms of domination and colonial legacies intertwine, postcolonial feminism provides a more inclusive and transformative critical framework for women's liberation. In doing so, it subjects the reproduction of gender inequality in the postcolonial period to a deep analysis and places the critique of patriarchal-colonial alliances at the center of feminist struggles.

The Paradoxes of Western-Centric Feminism: Tracing Intersectionality

The theory of intersectionality emerged as a conceptual response to critiques of whiteness being accepted as "the universal essence of womanhood" within feminism in the United States. This perspective highlights how the unique experiences of Black women have been systematically neglected in both feminist discourses and anti-racist movements. Black women, falling into the gaps created by the disjointed nature of gender and race discourses, have struggled to make their unique issues and lived realities visible. Within this context, Black feminist legal scholar Kimberlé Crenshaw introduced the concept of "intersectionality" to analyze the multilayered forms of discrimination and marginalization faced by African American women (Crenshaw, 1989; Crenshaw, 1991).

Crenshaw's concept of intersectionality argues that social markers such as gender, race, class, and other identity determinants do not function as isolated or independent categories; instead, they operate as intertwined and mutually reinforcing dynamics that shape individuals' lived experiences (Crenshaw, 1989; Crenshaw, 1991). This framework provides a sophisticated analytical tool to understand social power structures not merely through individual identity categories but through how these categories intersect to create unique systems of oppression (Nash, 2008). According to Crenshaw, systems of domination such as sexism and racism cannot be understood as separate entities; rather, they overlap and reinforce one another, rendering the forms of oppression faced by individuals more complex and multifaceted.

In this regard, intersectionality stands out as a central analytical tool for understanding the multidimensional nature of individuals' social positions and how these positions are reproduced at the intersection of various systems of oppression (Bilge, 2010). Crenshaw's theory has generated an epistemological transformation within feminist and critical race studies, enabling a more inclusive and multidimensional approach to issues of oppression, inequality, and justice. Intersectionality, in this sense, contributes to struggles for social justice by examining social power relations within a broader context, both theoretically and practically.

Kimberlé Crenshaw presents intersectionality not only as a theoretical framework but also as a powerful analytical tool that deciphers the complexity of identity politics and enables a comprehensive analysis of social justice. In her 1991 works, Crenshaw specifically addressed intersectionality in the context of violence against Black women, demonstrating how their experiences differ from those of White women. Crenshaw emphasizes that Black women are rendered vulnerable not only because of their gender identities but also due to the multiple and intersecting systems of oppression stemming from their racial identities.

Crenshaw's work reveals that Black women's exposure to specific forms of violence, such as rape, domestic abuse, and economic dependency, is systematically rendered invisible by existing support mechanisms and justice systems. This underscores how analyzing gender and race as independent categories fails to capture the multilayered forms of oppression Black women face. Consequently, Crenshaw defines intersectionality as a tool for critically analyzing existing social structures to make visible the unique experiences of marginalized groups. This framework facilitates a more inclusive and transformative approach to struggles for social justice, enabling a deeper analysis of multidimensional systems of oppression.

This theoretical framework not only analyzes the points of intersection within individuals' identities but also reveals the hierarchical and domination-producing mechanisms within social structures. By examining power and social relationships in depth, intersectionality critiques the internal limits and structural deficiencies of feminist and anti-racist movements. For example, within feminist movements, the norm of "white womanhood" being imposed as "universal womanhood" systematically excludes the unique experiences of women from different class, cultural, and ethnic identities. According to Crenshaw, such exclusionary practices are not limited to feminist movements; they are also observed in anti-racist organizations, where patriarchal structures and gender-based hierarchies continue to marginalize Black women, positioning them once again as the "Other."

In this context, intersectionality emphasizes that social determinants

such as gender, race, class, and others are not merely categories that define individuals' identities but also dynamic and complex networks of interaction that shape their everyday lived experiences, societal obstacles, and forms of discrimination. Intersectionality provides feminist theory with a critical and inclusive approach by offering both a broadening and deepening perspective to struggles for social justice.

This theory not only makes the experiences of marginalized groups visible but also serves as an effective method for understanding how power relations are produced in social spheres, how individuals' social positions are constructed, and how inequalities are perpetuated. Thus, intersectionality offers an indispensable analytical tool for feminist activism and critical theory. By highlighting the need to analyze the multidimensional nature of social inequalities, it moves feminist and critical discourses to a more inclusive and transformative plane.

Intersectionality provides a multilayered theoretical framework for analyzing the interdependent and interactive nature of social positions and how they shape individuals' social experiences. This approach posits that individuals are located at the intersections of various social positions such as race/ethnicity, indigeneity, gender, class, sexuality, geography, age, ability/disability, immigration status, and religion, forming a complex structure. Intersectionality evaluates the meaning of each identity marker within the dynamics emerging from interactions with other social determinants, emphasizing that these markers cannot be analyzed independently.

These interactive structures operate through power apparatuses such as law, state policies, economy, political institutions, religion, and media, shaping individuals' social positions. The intersectional perspective proposes analyzing structural privileges and systems of oppression not through singular identity categories but through the ways these categories intersect to form unique dynamics of oppression or advantage.

Colonialism, imperialism, racism, homophobia, ableism, and patriarchy are structural power relations that operate through interconnected systems of domination, producing privileges or restrictions unique to specific social positions. Intersectionality makes these systems more visible by enabling a deep analysis of social inequalities and serves as an indispensable theoretical tool for analyzing multidimensional systems of oppression. This approach provides struggles for social justice with a comprehensive and transformative perspective, critically questioning the internal relations of systems of domination.

Intersectionality is an essential theoretical tool for analyzing how the inequalities created by social structures are shaped not only at the level of individual experience but also within social, historical, and political contexts

(Collins & Bilge, 2020). This approach unpacks the structural nature of power, demonstrating how individuals' social positions are formed within a multilayered and dynamic system that arises from the interactions of identity elements rather than isolated categories. Intersectionality evaluates processes of privilege and marginalization as a combination of interconnected and mutually reinforcing social power relations.

In this regard, intersectional analysis offers a dynamic framework that not only examines how different identity categories combine to define individuals' lived experiences but also investigates how these categories are redefined by power structures and shape individuals' positions in society. In doing so, intersectionality reveals the multidimensional nature of social inequalities, demonstrating how power intertwines and reproduces different mechanisms of domination.

This perspective underscores the need for social justice struggles to be waged not only against singular systems of oppression but also against multiple, interlocking systems of power that reinforce and perpetuate one another. Intersectionality deepens the analysis of social structures while developing a more inclusive and transformative perspective for critiquing these structures. In this way, it provides a critical perspective for analyzing the multilayered and dynamic nature of modern power, offering significant contributions to both social justice theory and practice.

Intersectionality: The Dynamic and Multilayered Construction of Identities

Identity can be understood as a discursive and dynamic construct through which individuals define their positions in relation to specific temporal and spatial contexts via social discourses (Coulmas, 2019). Accordingly, identity is not merely a process of individual self-interpretation but a fluid and constructive process in which individuals continually reposition themselves relative to others within social discourses. Identities constrain, structure, and position individuals through the roles assigned to them within the social order. In this context, identity is inevitably constructed in a comparative and relational manner during the process of subjectification.

The preservation of privileged positions emerges as a fundamental dynamic in the construction of identities. White, heterosexual, and masculine identities occupy privileged statuses in social and discursive spaces, whereas Black, homosexual, and feminine identities are marginalized and relegated to secondary positions. Within this framework, privileged identities sustain their existence and superiority by constructing a hierarchical social order based on exclusionary and limiting practices toward marginalized identities.

Marginalized identities are subjected to a continuous process of becoming

and transformation within this hierarchical structure. These identities are defined by a discursive cycle of deconstruction and reconstruction, shaped by their fragile nature. Rather than being fixed, coherent, and immutable entities, “non-essential” identities are constantly fragmented, reconstructed, and actualized through social discourses in a multilayered process. Thus, identities cease to be complete categories and instead become dynamic constructs that are perpetually renegotiated and shaped by social contexts.

Therefore, identity should not be understood as a fixed individual entity but as a political plurality that is multilayered, continuously evolving, and constructed through difference. The fragmented and fragile nature of identity reveals that subjectivities are not fixed wholes but are continuously reconstructed and reshaped through discourses, operating around differences. This theoretical framework offers a deeper and more critical perspective in identity studies by treating identity as a phenomenon continuously constructed within social, historical, and political contexts beyond subjective experience.

According to Crenshaw, Black women face structural disadvantages and forms of exclusion stemming from the multiple components of their identities (Crenshaw, 1989; 1991). Social positions such as gender, race, and class cannot be understood as independent categories; instead, they reflect intersecting systems of oppression that shape individuals’ experiences. Therefore, intersectionality must be regarded not only as an analytical framework but also as a new epistemological approach necessary for understanding and addressing social inequalities. This approach underscores the importance of revising existing policies aimed at combating discrimination and inequality to account for the unique forms of oppression produced by multiple identities.

Intersectionality theory emphasizes the critical role of “intersecting systems of oppression” in struggles for social justice by centering the specific social positions arising from individuals’ identities. Evaluating gender inequality solely through the binary opposition of men and women overlooks the unique issues faced by individuals with complex identities, such as Black women. In this regard, intersectionality emerges as a paradigm that rejects one-dimensional solutions and situates feminism and social justice movements within a broader and more inclusive trajectory.

The conceptual framework developed by Crenshaw invites a deeper and multidimensional analysis of social inequalities. Intersectionality’s primary contribution lies in showing how systems of oppression are reproduced not merely through individual identity categories but at the intersections of these identities. By doing so, intersectionality brings a multilayered perspective to social justice theory, emphasizing the need to address the structural inequalities and societal barriers individuals face within a broad and comprehensive framework. This approach contributes significantly to critical social sciences

literature by ensuring that theoretical and practical interventions aimed at social justice are more inclusive and effective.

The intersectional approach makes a significant contribution to the critical discourse studies literature, offering a comprehensive analysis of the discursive construction of identities. This approach highlights that each identity marker derives its meaning in relation to other identity categories, revealing that social identity is constructed through multiple, dynamic, and interdependent processes.

The intersectional understanding of identity moves beyond treating identity as fixed or static categories, enabling a conceptualization of identity as context-sensitive, variable, and fluid. From a social constructionist perspective, identities are shaped, reproduced, and imbued with meaning within specific social, historical, and interactional contexts. This process allows the significance of identity markers to vary across social contexts, offering a theoretical foundation for surpassing static and singular perspectives on identity formation. Intersectional identities form an analytical framework that not only questions who individuals are but also examines the conditions under which these identities are constructed and the meanings they carry.

This perspective highlights the distinctive feature of intersectionality: the mutual constitution, reproduction, and continuous transformation of identity categories. Intersectional analysis not only examines the points at which identity categories intersect but also analyzes their interactive nature, showing how they construct and transform one another (Crenshaw, 1991). In this sense, identities are evaluated as products of interactive processes shaped by historical, cultural, and social contexts.

Kimberlé Crenshaw asserts that identity politics, beyond individual expressions, offers a critical strategy for collective advocacy based on group identities, which is politically meaningful and effective (Crenshaw, 1991; Cho et al., 2013). According to Crenshaw, the historical practices of marginalized groups to protect and defend their social positions serve as an effective mechanism of resistance to weaken power structures and disrupt dominant discourses. Crenshaw argues that defending these historical and social positions provides a more powerful and meaningful form of resistance compared to strategies that neutralize or render identities invisible.

Crenshaw's approach conceptualizes group-based identity politics as a strategy for intervention aimed at deciphering power structures that evolve across historical contexts. From an intersectional perspective, these social positions function not merely as identity politics but as direct resistance to systems of oppression and critical interventions against domination. The purpose of group-based identity politics, therefore, is not limited to theoretical inquiry but extends to challenging social hierarchies and constructing a

specific voice within these structures.

Crenshaw positions identity politics as a tool for intervening in the sedimented structures of power and addressing the systematic silencing of marginalized groups' demands throughout history. This approach rejects universalist discourses that neutralize identity categories, developing a critical stance against systems that ignore the social and political realities of marginalized groups. According to Crenshaw, the central aim of group-based identity politics is not to construct an absolute "truth" but to critically analyze existing power structures and place the historical forms of exclusion experienced by marginalized groups at the center of theoretical and practical interventions.

The theoretical framework developed by Crenshaw offers a comprehensive analysis of how identity politics can serve as a strategy for resistance against entrenched power structures. In this context, the collective defense of identities by marginalized groups plays a critical role not only as a form of resistance but also in transforming political representation. The collective defense of identities provides a robust framework for redefining social justice by interrogating dominant discourses and structures.

This approach transcends the notion of identity politics as a mere expression of individual belonging, aiming instead to deeply analyze social inequalities and substantiate a structural critique based on the historical experiences of marginalized groups. In this way, Crenshaw demonstrates that identity-based collective struggles possess transformative potential at the core of critical interventions against systems of domination, contributing significantly to the construction of social justice.

Critique of Western-Centric Feminism: From Singularity to Plurality

Western-centric feminism produces a hegemonic discourse that tends to present values and norms shaped within its own cultural context as a universal framework and impose them on non-Western societies. This approach, by disregarding the specific historical, cultural, and social contexts of feminist movements outside the West, results in the imposition of Western values on other cultures under the claim of "universality." Consequently, the multifaceted and plural struggles of non-Western women are homogenized and compressed into a reductive narrative through the ethnocentric gaze of Western feminism. This risks erasing the socio-economic, cultural, and historical diversities of non-Western women involved in feminist struggles, rendering them invisible within the boundaries of hegemonic narratives.

Western-centric feminist discourse often adopts a "savior" mission, positioning non-Western women as "victims awaiting rescue" and thus reducing them to a passive and inert status. Such reductive approaches

overlook, and at times entirely deny, the agency of non-Western women—their capacity to actively participate in processes of social transformation. In this regard, the concept of “White Ignorance” (Mills, 2007) serves as an important explanatory tool. The West’s discourse on non-Western societies, based on limited, biased, and incomplete knowledge, leads to an oversimplified evaluation of gender relations in these societies. As a result, the multidimensional complexity of non-Western women’s social resistance practices, historical struggles, and daily lives is ignored, and local feminist subjectivities are marginalized and rendered invisible.

This analysis reveals that Western-centric feminist discourse not only produces a hegemonic epistemological framework but also weakens the inclusivity of global feminist solidarity by erasing the locality, diversity, and authenticity of existing feminist dynamics in non-Western societies. Therefore, recognizing the specific contexts of non-Western feminist movements and making local feminist subjectivities visible is essential for grounding global feminism on a pluralistic and equitable foundation.

As a reflection of Western-centric feminism, white feminism has been widely critiqued in academic discussions for neglecting the structural intersectionality of gender with race, class, and other identity categories (Mohanty, 1984; hooks, 1981). White feminist discourse, constructed on a “white epistemology,” homogenizes women’s experiences around white, cisgender, and middle-class norms, reducing them to a universal category while rendering invisible the specific social, cultural, and economic contexts of women of color. This approach creates a significant void within the hegemonic narrative of feminist movements, suppressing the diverse forms of resistance and marginalizing non-dominant subjectivities.

Critiques of white feminism are not confined to individual-level neglect; they point to a broader structural and epistemological issue (Davanger, 2022; Shollock, 2012; Bacevic, 2023). This form of feminism not only fails to recognize the intersectional differences among women but also weakens the universality claim of feminist movements by reducing the struggle for social justice to the experiences of white women. White feminism suppresses the voices of marginalized groups, preventing the inclusive construction of feminist solidarity. By reinforcing a tendency to interpret gender justice from a “white perspective,” this hegemonic discourse infringes on the rights of women of color to express their agency and unique experiences as subjects.

White-centric feminist discourses systematically disregard the intersectional nature of gender identities. By failing to recognize the multiple forms of discrimination women face, these discourses weaken the transformative and radical potential of feminist solidarity. The reductive perspective of white feminism not only limits the diversity of feminist

subjectivities but also restricts the critical analytical capacity of feminist theory. The hegemonic position of white feminism in both offline and online public spheres narrows feminist theory's ability to address current social realities and prevents feminist movements from constructing a pluralistic, inclusive, and critical narrative within historical contexts.

Postcolonial feminist critique highlights how Western feminist theories, while addressing their own patriarchal structures, often ignore the specific social, cultural, and historical contexts of non-Western societies (Khader, 2019; El Ouardi & Sandy, 2019; Rather, 2023). This critique underscores the risk that local cultural values and women's unique solidarity practices are erased when Western feminist narratives extend beyond their cultural boundaries and are imposed on non-Western societies. Such epistemological hegemony dulls the liberatory and transformative potential of feminist struggles, rendering invisible the social resistance practices of women in local contexts. For feminist theory to achieve a truly universal character, it is necessary to transcend narrow normative frameworks focused solely on Western values and develop a pluralistic perspective that recognizes and centers the uniqueness of diverse cultural and historical contexts.

The critique of Western-centric feminism also expresses a contemporary imperative for constructing an inclusive, equitable, and pluralistic feminist approach. For feminist movements to create a paradigm that promotes social justice without imposing cultural forms, it is essential to recognize and analyze the diverse socio-political and cultural realities that shape women's experiences. By transcending Western-centric feminist discourse, feminist narratives can be reconstructed in a flexible and inclusive manner. Such a reconstruction would make visible the voices, experiences, and resistance practices of non-Western societies, enabling the establishment of a solidarity framework rooted in global gender equality.

The perspective offered by postcolonial feminist critique calls for a re-evaluation of feminist theory's universality claim. Achieving gender justice requires understanding a world beyond Western norms, thinking with this world, and recognizing local particularities. Only in this way can feminist movements free themselves from hegemonic discourses and undertake an epistemological transformation that encompasses women's multiple identities, diverse social struggles, and historical resistance practices across different contexts. This transformation will allow the pursuit of gender equality to be reconstructed on a foundation of global solidarity, providing feminist theory with a more inclusive and transformative framework.

Non-Western Modernity and Cultural Differences

While there are various assumptions and historical interpretations regarding the origins of modernity, the significant social transformations

that occurred from the 17th century onwards have turned modernity into a phenomenon widely agreed upon in the social sciences. The profound changes that took place in social, economic, and political structures during this period transcended historical phases, enabling the construction of a new vision of the world under the concept of “modernization.” Although there are differing and even contradictory approaches to the nature of modernization, it is widely accepted that this transformation process is fundamentally distinct from other historical change processes (Eisenstadt, 2000; Habermas, 1990; Peng, 2009). Modernization represents the beginning of an era in which epistemological, social, and cultural dimensions of human history were reshaped, offering a conceptual framework at the heart of deep debates within the social sciences.

While the concepts of modernity, modernization, modernism, and modernity have theoretically distinct meanings, they are often used interchangeably in social science literature, pointing to different aspects of the modernization process. Modernity describes the social, intellectual, and economic structures that emerged and developed in Western Europe, while modernization refers to the global spread of these structures, triggering similar transformation processes in other societies. Modernism emerged as a cultural and artistic response to modernity, critiquing existing norms and paving the way for new aesthetic and intellectual forms. Modernity, on the other hand, refers to the process in which individuals reconstruct their identities, values, and practices within the framework of modernity.

Each of these concepts makes visible the multifaceted and dynamic nature of modernity, positioning it not merely as a historical period but as a paradigm shift that created profound transformations in human thought, social structures, and individual identities. Debates on modernization aim to analyze the relationships and points of divergence between these concepts. Studies on modernity contribute to conceptualizing it as a multilayered phenomenon by examining not only the historical accumulation of Western Europe but also global encounters, resistances, and cultural syntheses (Chakrabarty, 2000; Appadurai, 1996).

In this context, modernization continues to be a central subject of examination across all disciplines of the social sciences, as a process in which social structures are transformed, intellectual paradigms are reconstructed, and cultural patterns are critically questioned. The unique nature of modernity signifies not a phenomenon confined to a specific historical period but the continuity of humanity’s effort to understand its existence, environment, and future. Therefore, theoretical and critical approaches to modernity remain one of the fundamental intellectual endeavors of the social sciences, aimed at interpreting the past and reconstructing the present.

Western modernization theories reproduce the centrality and privileged

position of the West by defining the meaning and value of modernity through the concept of the “Other.” These theories construct modernity not only as a process of progress but also as a worldview in which the West positions itself as superior, universal, and normative. In this regard, the presentation of modernity as an inevitable goal for the West and an aspirational target for other societies relies on a progressivist and evolutionary understanding of history. Such historicism envisions the level of “progress” attained by the West as the ultimate and ideal endpoint for humanity, forcing other societies to position themselves along this trajectory.

Western modernization theories, beyond reinforcing the privileged position of the West, impose on “backward” societies the obligation to follow the historical development trajectory of the West. In this framework, non-Western societies are defined within oppositions that legitimize the West’s uniqueness and superiority. In this polarized model, the West is positioned as the “natural representative of civilization and progress,” while non-Western societies are depicted as “delayed” or “incomplete” representatives. This establishes the universality claim of modernization theories as an effort to legitimize the West’s position as the subject of humanity and the bearer of historical progress. In this context, the universality claim of the modernization discourse essentially functions to impose the West’s political, cultural, and economic dominance within a normative framework.

The evolutionary and progressivist understandings of history underlying modernization theories rationalize the West’s hegemonic position by presenting modernization as a natural and inevitable process. Consequently, the idea that modernization is a “necessary and universal path” pressures non-Western societies to situate their historical and social development within the linear progression scheme drawn by the West. Thus, Western-centric modernization theories disregard social and historical diversity, reducing the possibilities of multiple modernities to a single paradigm of progress.

Modernization functions not merely as a historical transformation process but also as an attempt by the West to impose its norms, values, and ideals as universal norms for all of humanity. This process legitimizes the West’s political and epistemological superiority while marginalizing the unique historical contexts and transformation processes of non-Western societies. Therefore, while Western modernization theories conceptualize modernity as a global phenomenon, they present it as a model and standard within the West’s historical monopoly, reproducing the dominance of Western-centric epistemology.

The colonial structures of modernity and gender penetrate the depths of social existence, fundamentally shaping the ways individuals position and interpret themselves. The infiltration of these structures into social life

constructs individual subjectivities not only through gender identities but also by layering them with racial and ethnic categories, creating a multidimensional and comprehensive network of social control. In defining the “Other,” modernity reproduces the gender and ethnic identities of the marginalized from a hegemonic perspective, constructing dichotomies such as “civilized” and “primitive” at social, cultural, and geopolitical levels that shape collective identities. These new geo-cultural identities, integrated into the colonial project through gender, reinforce the global epistemological and ideological dominance of a Western-centric perspective while rendering these identities a complex part of power relations. Thus, modernity’s claim to “universality” emerges as a process in which gendered and racial identities are continuously redefined, operationalized, and colonized within social existence.

The universality claim of modernization theories reproduces a hegemonic discourse that disregards cultural pluralism and imposes the West’s historical development as a singular normative reality. Modernization must therefore be read not only as a process of social transformation but also as an effort by the West to construct its own history and experience as a universal reality. Western-centric modernization theories provide an ideological framework that homogenizes non-Western societies, disregarding their unique historical dynamics and confining them to a linear development path defined by the West.

In Western thought, the concepts of “culture” and “civilization” were constructed to produce ideological distinctions that legitimize social and historical inequalities. This distinction highlights the hierarchical structure between Western and non-Western societies while reinforcing a Western-centric discourse of superiority. In this context, civilization is identified with reason, science, and technology, defined through modernization criteria such as industrialization and urbanization, and structured around narratives of “universality” and “progress.” Civilization, therefore, is presented not merely as a stage of social development but as a model that expresses the “natural superiority” of the West.

By contrast, the concept of “culture” becomes an ideological tool that enables the classification of non-Western societies as “primitive” or “static.” In Western-centric discourse, culture is depicted as local and immutable, devoid of the dynamics of universal progress. This approach restricts the social development of non-Western societies, framing it as “limited” or “incomplete” and presenting historical inequalities as a natural outcome. Thus, while the West’s “civilization” is positioned as dynamic, progressive, and universal, the “culture” of non-Western societies is encoded as static, stagnant, and resistant to development. This dualism produces a hierarchical narrative of progress that disregards historical and social diversity.

In conclusion, the West's distinction between "culture" and "civilization" must be read as an extension of its strategy to position itself at the center of world history. This distinction defines non-Western societies as static, secondary, and incomplete "Others" within the linear progress paradigm drawn by the West, erasing their unique social and historical dynamics. Thus, Western modernization theories reproduce a discursive strategy that imposes the West's values and norms as universal measures, rendering invisible the historical and ideological foundations of global inequalities while legitimizing the epistemological hegemony of the West.

Women's Resistance and Local Feminist Movements

Throughout history, there have been numerous extraordinary women who have influenced social and political domains both locally and globally. However, not all of these figures have actively participated in the struggle for gender equality. The women's movement emerged as a collective arena of struggle aimed at improving women's living conditions as a social group and achieving gender equality. This movement was shaped not only by women but also with the contributions and support of men committed to the ideals of social justice and equality. The inclusive objective of the women's movement sought to transcend the boundaries of existing patriarchal social structures and enable the equal representation of women in cultural, economic, and political spheres.

In the majority of societies, women have historically been confined to traditional social roles, particularly as daughters, wives, and mothers, limiting their visibility to the domestic sphere while restricting their presence in public life. These gender-based constraints rendered women historically invisible and relegated them to roles defined solely by their relationships with famous men or familial ties within historical narratives. Women's contributions to public life and cultural development were often obscured by patriarchal norms and gender roles, further marginalized by male-centered historiography. This has systematically led to the erasure of women's presence in societal and historical domains.

Although the struggle for gender equality can be historically traced, the emergence of an organized women's movement became possible within the social, economic, and political conditions of the 19th century. The women's movement that arose during this period laid the foundation for modern women's rights struggles by articulating demands for gender equality powerfully. This movement not only defended women's individual rights but also spearheaded a broader paradigmatic shift aimed at transforming social structures, strengthening women's presence in public life, and challenging the patriarchal order.

The emergence of organized women's movements marked a transformation that profoundly affected social, political, and economic structures. One of the

fundamental goals of this movement was the recognition of women not just as individuals but as a collective identity and a social force. Women's visibility in public and political life led to the historical redefinition of women's identity and existence. In this context, the women's movement represents not only an effort to achieve gender equality but also an intellectual and political project that enables women to reassert their agency in narratives from which they have been historically excluded. The aim of reconstructing women's historical presence and reclaiming their rightful place in collective memory highlights the critical and transformative nature of the women's movement.

Local feminist movements critically evaluate the limitations and shortcomings of traditional "liberal peace" approaches (Puechguirbal, 2010; Shepherd, 2017). Through evidence-based analyses and alternative solutions, these movements demonstrate how feminist perspectives can contribute to the construction of sustainable peace in post-conflict societies. For example, initiatives such as the "*Feminist (Re)Interpretation of the Dayton Peace Accords*" and "*Feminist Perspectives on Post-Conflict Reconstruction and Recovery*" in Bosnia, which still bears the scars of war, illustrate the transformative and active roles that women can assume in post-conflict peace processes (Helms, 2013; Cockburn, 2001). These movements offer an effective framework for peacebuilding by focusing on concrete objectives such as addressing the root causes of violence, enhancing societal participation, and advancing structural steps toward peace.

On a global scale, women activists work collectively within networks of solidarity and an ecosystemic understanding to foster shared efforts in peacebuilding. From initiatives like the "*Women's Situation Room*" in Nigeria and Liberia to the "*Tolana Mothers*" groups in Pakistan, gender-based early warning systems developed by women provide innovative and effective models for preventing violent extremism and strengthening societal solidarity. These examples demonstrate how local feminist movements develop multidimensional, intersectional, and sustainable approaches to insecurity. In Libya and Yemen, for instance, feminist initiatives are at the forefront, making visible the structural roots of insecurity in these societies through comprehensive analyses of conflict and violence.

Local feminist movements aim not only to transform gender inequalities but also to critically analyze the destructive effects of militarism, exclusion, and armament on individuals and societies. Women courageously highlight the impacts of militarism, discrimination, exclusion, and the widespread presence of explosive weapons on daily life at both local and international levels, while proposing solutions to address these threats (Rehn & Sirleaf, 2002; Cohn, 2013). In this context, feminist movements adopt a holistic approach to peacebuilding, targeting not only the outcomes of violence but also its social and structural causes.

In conclusion, achieving sustainable peace and gender equality requires the active involvement of local women and feminist movements in the process. Without these movements, the goals of transforming gender inequality and attaining lasting peace cannot be realized. True societal transformation must begin as a “bottom-up” movement, emerging from local dynamics to create a paradigm shift that contributes to global peace efforts. Feminist movements function not only as voices in this transformative process but also as indispensable forces in building a non-violent, just, and sustainable world order. In this regard, feminist perspectives serve as foundational pillars for both peacebuilding and social transformation.

Epistemic Justice and Gender Justice in Non-Western Knowledge Production

The anti-colonial approach seeks to deconstruct the hierarchical and exclusionary nature of Western-centered epistemological frameworks, aiming to construct a pluralistic, multilayered, and inclusive field of knowledge production (Mignolo, 2011). This framework not only resists the epistemic domination imposed by Eurocentric knowledge systems but also offers a critical perspective that questions the truth claims of Western knowledge power. Epistemic injustice refers to the systematic marginalization of the voices, experiences, and concerns of individuals, communities, and societies within processes of knowledge production and communicative practices. In contrast, epistemic justice aims to not only recognize excluded forms of knowledge but also to restructure knowledge production processes by ensuring the permanent inclusion of the historical, cultural, and existential truths of marginalized groups in societal memory. This transformation necessitates the recognition and redefinition of knowledge systems historically suppressed by modernity and colonialism.

Epistemic injustice does not solely reflect the lack of plurality and transparency in knowledge production processes; it also operates as a form of domination that limits and narrows social existence. In this process, certain forms of knowledge are hierarchically privileged, while the narratives, worlds of meaning, and societal experiences of marginalized groups are systematically ignored or devalued. Feminist epistemologies, in this context, not only create a space for resistance but also propose a multilayered ecosystem of knowledge where hegemonic structures are dismantled, and the voices and knowledge systems of marginalized groups are brought to the center. By uncovering the role of social power dynamics—such as gender, race, class, and culture—in knowledge production, feminist epistemology seeks to establish knowledge systems within a more inclusive and equitable framework.

Epistemic injustice can also be described as a form of epistemicide. The issue here is not merely the exclusion of marginalized individuals' and

communities' knowledge systems; these systems are actively devalued and destroyed. The suppression of "Other" epistemologies and the systematic marginalization of their representatives function as strategic tools to reinforce Western-centered knowledge structures. In this process, the West positions its knowledge system as "universal" and "objective truth," granting itself the right to judge other cultural knowledge systems through this singular epistemological standard. Thus, Eurocentric epistemology continues its epistemic monopolization by devaluing non-Western knowledge production practices and obstructing the development of alternative systems of knowledge.

The Western-centric epistemic project invalidates the distinct knowledge systems of different cultures, systematically suppressing and narrowing the scope of non-Western epistemologies. In this project, Western knowledge systems are presented as the sole representation of universal, accurate, and legitimate knowledge for humanity, while non-Western epistemologies are relegated to the lower ranks of the knowledge hierarchy, thereby constructing a hegemonic order. By imposing Western knowledge production as the global reference point, Eurocentric epistemic practices systematically exclude the epistemological foundations of alternative knowledge systems.

In this regard, epistemic injustice is not limited to the violation of access to knowledge; it functions as a form of structural domination aimed at invalidating the meaning and origins of knowledge for non-Western epistemologies. In contrast, the pursuit of epistemic justice critically intervenes in this domination, centering the plurality of epistemologies, context-dependent truth-seeking, and the polyphony of knowledge production. The Western-centered effort to impose its conceptual frameworks onto different cultural contexts not only restricts knowledge production but also positions non-Western epistemologies outside the realm of legitimate knowledge, nearly eliminating their epistemic representation.

Postcolonial and postmodern feminist approaches, which are central to these critiques, emphasize the limitations of universal moral claims and the importance of contextuality when theorizing gender justice in non-Western settings. Universalist justice claims developed by Western feminist discourses carry the risk of homogenizing cultural practices and distorting local worlds of meaning. Postcolonial feminist critiques conceptualize justice not merely as a normative goal but as a multidimensional process aimed at transforming social practices. This perspective argues that epistemic justice is not limited to access to knowledge but also necessitates the fair and pluralistic reconstruction, reproduction, and interpretation of knowledge.

This comprehensive interpretation of epistemic justice views knowledge production as a domain of struggle intersecting with social justice. Knowledge is not merely an individual tool of acquisition but also

a space where social relations are reproduced and transformed. Therefore, epistemic justice requires not only the accessibility of knowledge but also its reconstruction and restructuring through the active participation of all social groups. Accordingly, epistemic justice establishes a field of resistance against hegemonic knowledge production practices while offering a paradigm shift for the reconstruction of knowledge on a pluralistic, inclusive, and just foundation. Thus, knowledge is repositioned as a social value that is accessible, representable, and transformative for all.

Conclusion

Achieving the goal of social justice in feminist struggles requires a critical transformation of the epistemological hegemony rooted in Western-centered paradigms and the recognition of non-Western women's knowledge systems, historical resistance practices, and cultural particularities. Feminist theory has the responsibility to center the multilayered experiences of marginalized women, making historically silenced voices visible and ensuring epistemic justice. In this context, postcolonial feminism redefines the universality claim of feminist struggles by offering a theory and praxis that is sensitive to cultural diversity, attentive to local contexts, and inclusive of intersectional dynamics.

The unique resistances of non-Western women within their social, economic, and cultural contexts not only expand the narrow boundaries of hegemonic feminist discourses but also enable the reconstruction of global feminist solidarity on a pluralistic and equitable foundation. Such solidarity strengthens the critical nature of feminist movements, creating an effective field of struggle against the intersecting forms of patriarchal and colonial domination. At this point, postcolonial feminism provides a transformative perspective by moving feminist discourse away from singular and reductionist narratives, bringing together resistance forms emerging from diverse historical, cultural, and class-based contexts at both theoretical and practical levels.

In conclusion, the future of feminist theory and praxis depends on a paradigmatic shift that recognizes local knowledge systems and historical resistances, defends epistemic justice, and transcends Western-centric singularities to construct a pluralistic feminist imagination. Postcolonial feminist critique offers a framework that strengthens the theoretical and political foundations of this transformation, paving the way for the global pursuit of social justice.

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CHAPTER 15

GREEN TRANSFORMATIONAL LEADERSHIP AND PRO-ENVIRONMENTAL BEHAVIORS OF EMPLOYEES AND BUSINESSES: A REVIEW FROM A TOURISM AND HOSPITALITY PERSPECTIVE

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1. Introduction

Sustainable development has become a primary concern across all sectors of today's society, driven by growing global environmental challenges (Farrukh et al., 2022). As a key pillar of the global economy, the tourism and hospitality sectors are not only responsible for fostering economic growth but also face significant ecological pressure due to their resource-intensive nature and considerable environmental impacts. Therefore, balancing tourism development with ecological conservation in these sectors has become a focal point for both academics and practitioners (Saltik & Akova, 2024).

Green transformational leadership, a new leadership theory that combines environmental sustainability and corporate governance, offers a perspective to address this challenge (Singh et al., 2020). Unlike traditional leadership models, green transformational leadership emphasizes the role of leaders in inspiring employees to take responsibility for the environment and act sustainably through an inspirational vision, values communication, and behavioral modeling (Deng et al., 2022).

At the same time, employees' pro-environmental behaviors are considered a crucial component of an organization's green strategy (Alherimi et al., 2024; Wesselink et al., 2017). These behaviors encompass a wide range of actions, including energy conservation, emission reduction, optimal resource use, and innovative environmental protection measures (Nižetić et al., 2019). Studies demonstrate that employees' environmental behaviors are shaped by their personal values and attitudes but also by corporate culture, leadership behaviors, and external social expectations (Al-Swidi et al., 2021). In the hospitality industry, employees' environmentally friendly behavior plays a pivotal role in organizational sustainability (Kim et al., 2016) as it directly affects the organization's performance in terms of environmental sustainability and influences customers' acceptance and engagement in green consumption (Ojo et al., 2020).

Green transformational leaders can effectively guide employees to internalize environmentally friendly behavior as a professional responsibility by clearly communicating environmental values, creating green incentives, and supporting employees' environmental actions (Nduneseokwu & Harder, 2023). This influence not only enhances employees' environmental awareness but also improves the organization's overall environmental performance, thereby contributing to the achievement of green development goals in the broader society (Jia et al., 2018).

The role of green transformational leadership in promoting environmentally friendly behaviors among employees has been confirmed in numerous studies (Mi et al., 2019). On the one hand, by setting environmental goals, green leaders can motivate employees to internalize environmentally

friendly behaviors as part of their professional responsibility (Han et al., 2019). In addition, leaders can effectively influence employees' values and behavioral tendencies by modeling their own actions (de Jong & Den Hartog, 2007).

The aim of this study is to provide a comprehensive review of the existing literature on the impact of green transformational leadership on the environmentally friendly behaviors of employees and businesses in the context of tourism and hospitality. In this context, the study adopts a review methodology, which has been gaining increasing popularity as a preferred approach in tourism research (e.g., Stewart et al., 2005; Becken, 2011; Ogretmenoglu et al., 2023). Within this framework, the study aims to synthesize relevant theoretical and empirical studies, highlight research advancements, identify theoretical gaps, and propose potential directions for future research in this area.

The remainder of this book chapter is organized as follows: First, the concept of green transformational leadership is explained. Next, employees' pro-environmental behaviors are discussed. Following that, studies examining the impact of green transformational leadership on the pro-environmental behaviors of employees and businesses in the context of tourism and hospitality are reviewed. Finally, the conclusion offers recommendations for future research.

2. Green Transformational Leadership

Leadership is defined as the ability to influence others in a way that enables them to unlock and realize their strengths and potential while striving for better outcomes (Blanchard, 2007). Leadership studies classify leadership approaches into three main types: Great Man Theory, Traditional Leadership Theories, and New Leadership Theories. An overview of these is presented in Table 1 (Esmer & Dayı, 2016).

Table 1. Leadership Theories (Aksel, 2008; Esmer & Dayı, 2016)

The Theory	Period	Summary of the Theory
<i>Great Man Theory</i>	Before 1950	It is the leader who shapes the course of history.
<i>Traditional Leadership Theories</i>	Trait Approach	Common qualities of leaders are outlined.
	Behavioral Approach	The behaviors of leaders are described.
	Contingency Approach	The ideal leadership approach differs based on the circumstances.
<i>New Leadership Theories</i>	From the 1980s to the present	It depends on how the society is changing.
Authentic Leadership Transformational Leadership Spiritual Leadership Charismatic Leadership Ethical Leadership Servant Leadership Entrepreneurial Leadership		

One of the new (modern) leadership and approach theories is “transformational leadership” (Burns, 1978). Transformational leadership is a leadership style in which leaders motivate their employees in line with their vision and values, thereby promoting individual and organizational change (Givens, 2008). This leadership approach aims not only to ensure employees fulfill their tasks but also to encourage them to demonstrate higher levels of commitment and personal development (Bass, 1999). In addition, transformational leaders act as role models who inspire their employees to develop leadership qualities, encourage them, listen to their ideas without regard for status, and blend charisma with inspiration to earn their followers’ respect (Iscan, 2006).

On the other hand, the concepts of environment and sustainability have gained considerable attention in social sciences lately (Kesici, 2022; Kesici et al., 2023; Kesici, 2024). Similarly, transformational leadership has recently been explored with a growing focus on environmental considerations. “Green transformational leadership” define as “a leadership behavior wherein key goal of leadership is to provide clear vision, inspiration, and motivation to the employees and also support their developmental needs towards achievement of environmental goals of the organization” (Singh et al., 2020, p. 2).

Green transformational leaders lead to positive outcomes for both organizations and employees, including green creativity (Mittal & Dhar, 2016; Ogretmenoglu et al., 2022), green organizational identity (Mittal & Dhar, 2016), green organizational citizenship (Gurmani et al., 2021), green work engagement (Suliman et al., 2023), green innovation (Elshaer et al., 2022), green recycling (Elshaer et al., 2024), green service recovery performance (Elshaer et al., 2024), green knowledge-sharing behaviors (Elshaer et al., 2024), green dynamic capabilities (Wahba et al., 2024), green human resource management practices (Cahyadi et al., 2022), green corporate social responsibility (Sobaih et al., 2022), and green psychological climate (Younis & Hussain, 2023). All these positive outcomes will be explained in detail under the fourth section.

3. Employee Pro-Environmental Behaviour

Pro-environmental behavior refers to individuals’ behaviors that support environmental sustainability (Kurusu, 2015). These behaviors include actions such as protecting nature, reducing carbon footprint, developing sustainable consumption habits and avoiding environmental damage (Grilli & Curtis, 2021). Pro-environmental behavior is not limited to individual habits; it is also very important for society and workplaces (Inoue & Alfaro-Barrantes, 2015). These behaviors refer to individuals acting consciously and voluntarily to minimize their negative impact on the environment (Kollmuss & Agyeman, 2002).

While tourism is an important economic resource for countries and destinations (Ciki & Tanriverdi, 2024), it also presents significant challenges to environmental sustainability in areas where tourism activities occur (Neto, 2003). From hotel waste to airline emissions, overuse of natural resources to environmental degradation, numerous issues are closely linked to tourism activities (GhulamRabbany et al., 2013). In this context, pro-environmental behavior within the tourism sector is a critical tool for promoting sustainable tourism (Miller et al., 2014). Pro-environmental behavior in tourism encompasses not only the environmental policies of businesses but also the individual responsibilities of tourists and employees (Zhang et al., 2021). For example, a hotel's use of energy-efficient lighting, efficient water management, and waste recycling are behaviors that demonstrate sustainability at the workplace level (D'Souza, 2023). These actions not only influence the environmental performance of companies but also play a significant role in shaping tourists' environmental awareness and experiences (Qin & Hsu, 2022).

Moreover, government policy guidance and the establishment of industry standards play a crucial role in promoting environmentally friendly behaviors (Awewomom et al., 2024). For example, some countries and regions have encouraged the hospitality industry and other tourism businesses to adopt more sustainable practices by introducing energy-saving regulations, emission reduction policies, and environmental subsidies (Konovalova et al., 2018; Pan et al., 2018). These policy measures not only help companies reduce costs but also serve as a model for the industry, encouraging the entire tourism ecosystem to move in a sustainable direction (Ayuso, 2009).

Employees' pro-environmental behavior is influenced by multiple factors (Robertson & Barrling, 2012). Firstly, personal values and environmental attitudes play a crucial role in shaping behavior. Employees in the tourism sector often face complex and demanding work environments (Sharpley & Forster, 2003). However, employees who prioritize environmental protection and view it as a moral responsibility tend to exhibit higher levels of pro-environmental behavior (Lu et al., 2019). Such behaviors can take various forms, such as reducing energy consumption, encouraging tourists to minimize the use of disposable goods (Wang et al., 2021), or even actively engaging in environmental protection activities during their free time (Zhang et al., 2019). Secondly, organizational culture has a strong role in shaping employees' pro-environmental behavior (Ahmad et al., 2023). A number of tourism businesses are actively creating an environmentally friendly work environment through training, incentives and internal promotion (Font et al., 2016). For instance, some hotels implement "green incentive programs" to encourage employees to come up with innovative ideas to save energy and reduce consumption (Shafiq et al., 2023). In this cultural environment,

frontline employees gradually internalize their environmental awareness and translate it into practical behaviors (Li et al., 2022).

In addition, external social pressure and policy orientation are important factors influencing employees' pro-environmental behavior (Alherimi et al., 2024). With increasing public interest in corporate social responsibility, particularly environmental responsibility, companies are under greater pressure to fulfill their environmental commitments (Babiak & Trendafilova, 2011). As a crucial link between tourists and companies, frontline employees play a unique role in this process (González-González & García-Almeida, 2021). In this context, to meet tourists' demand for green tourism, employees must adjust their behavior to reflect the company's environmental commitment (Ayuso, 2009).

In summary, studying employees' environmental behaviors not only reveals the complex interplay between individuals, organizations, and the environment but also provides both theoretical and practical guidance for the sustainable development of the hospitality sector.

4. The Impact of Green Transformational Leadership on the Pro-Environmental Behaviors of Businesses and Employees in the Tourism and Hospitality Sector

Based on the literature review, Figure 1 illustrates the impact of green transformational leadership on the pro-environmental behaviors of businesses and employees within the tourism and hospitality sector. These can be briefly explained as follows:

- ❖ **Green Creativity:** Leaders and their qualities are crucial for fostering creativity within organizations (Halbesleben et al., 2003), as they significantly influence the improvement of environmental performance. Numerous studies have highlighted the importance of green transformational leadership in driving green creative results (Mittal & Dhar, 2016; Ogretmenoglu et al., 2022)
- ❖ **Green Organizational Identity:** Organizational identity is the set of beliefs about what is most core, enduring, and distinctive about an organization. Organizational identities help members make sense of what they do in relation to their understanding of what their organization is. In addition, organizational identities provide the context within which members interpret and assign profound meaning to surface-level behavior. On the other hand, green organizational identity refers to the shared framework that members develop to interpret and give meaning to their actions related to environmental management and protection (Chen, 2011). Several studies have emphasized the beneficial impact of green

transformational leadership on green organizational identity (Mittal & Dhar, 2016).

- ❖ **Green Organizational Citizenship:** Green organizational citizenship behaviors refer to voluntary actions by individuals, not officially rewarded, that collectively support effective environmental management within the organization. These environmentally focused behaviors are additional services related to environmental protection that employees provide on their own initiative going beyond workplace expectations (Raineri & Paillé, 2016; Hooi et al., 2022). Previous research has shown that green transformational leadership enhances employees' green organizational behaviors in the tourism and hospitality industry (Gurmani et al., 2021)
- ❖ **Green Work Engagement:** Work engagement refers to a mental state marked by energy, commitment, and deep involvement in work-related activities (Schaufeli et al., 2002). Green work engagement represents the energy employees invest in completing their green tasks, their willingness to exert effort to accomplish green objectives, and the degree to which they are absorbed in green-related work (Aboramadan et al., 2022; Bhutto et al., 2021). Previous studies have demonstrated that green transformational leadership boosts employees' green work engagement in the tourism and hospitality sector (Suliman et al., 2023).
- ❖ **Green Innovation:** Green innovation involves efforts to minimize the potential negative environmental impacts of operations and production, focusing on improving processes, technologies, systems, products, and management practices. Green innovation embraces creative practices such as using eco-friendly raw materials, reducing material usage in product design, implementing design strategies, and aiming to decrease the consumption of emissions, water, electricity, and other natural resources. Previous research has shown that green transformational leadership enhances green innovation within the tourism and hospitality industry (Elshaer et al., 2022).
- ❖ **Green Recycling:** Green recycling refers to the process of recycling materials in an environmentally friendly way, with the aim of reducing waste, conserving natural resources, and minimizing environmental harm. It involves the collection, processing, and repurposing of materials such as paper, plastic, glass, and metal into new products, using sustainable practices. The goal is to reduce the need for new raw materials, lower energy consumption, and decrease pollution, thus contributing to overall environmental sustainability. Green transformational leadership positively and significantly influences

hotel employees' green recycling behaviors (Elshaer et al., 2024).

- ❖ **Green Service Recovery Performance:** Green service recovery performance refers to an employee's capacity to resolve environmental concerns raised by customer complaints. This often includes identifying the issues, apologizing, and offering solutions to the customers. Previous research has shown that green transformational leadership enhances employees' green service recovery performance within the tourism and hospitality industry (Elshaer et al., 2024).
- ❖ **Green Knowledge-Sharing Behaviors:** Green knowledge-sharing behavior involves employees exchanging experiences and information related to environmental issues with colleagues and peers. Previous research has shown that green transformational leadership enhances employees' green knowledge-sharing behaviors within the tourism and hospitality industry (Elshaer et al., 2024).
- ❖ **Green Dynamic Capabilities:** Green dynamic capabilities refer to an organization's capacity to strategically integrate its resources and competencies to reduce environmental harm and ensure long-term sustainability in its operations and products (Rodrigo-Alarcón et al., 2018). Prior studies have shown that green transformational leadership enhances green dynamic capabilities within the tourism and hospitality industry (Wahba et al., 2024):
- ❖ **Green Human Resource Management Practices:** Human resource management practices refer to the human resource programs, processes, and methods that are implemented within an organization or business unit. In the same way, green human resource management practices are the specific green human resource management programs, processes, and methods put into action within organizations to reduce negative environmental impacts or promote positive environmental outcomes (Arulrajah et al., 2015; Cahyadi et al., 2022). Prior studies have shown that green transformational leadership enhances green human resource management practices within the tourism and hospitality industry (Abou Raia et al., 2023).
- **Green Corporate Social Responsibility:** Green Corporate Social Responsibility refers to a company's efforts to fulfill its responsibilities to society based on environmental sustainability and ecological responsibility principles. Previous studies in the tourism and hospitality sector have found that green transformational leadership increases green corporate social responsibility (Tosun et al., 2022).



Figure 1. *The impact of green transformational leadership on the pro-environmental behaviors of businesses and employees within the tourism and hospitality sector*
(Source: Compiled by the authors)

Conclusion and Suggestion for Future Research

This comprehensive review of the literature highlights the crucial role that green transformational leadership plays in fostering pro-environmental behaviors among employees and businesses, particularly within the tourism and hospitality sectors. The studies analyzed demonstrate how leadership that integrates environmental sustainability can inspire employees to adopt behaviors such as **green creativity**, **green organizational identity**, **green organizational citizenship**, **green work engagement**, **green innovation**, **green recycling**, **green service recovery performance**, **green knowledge-sharing behaviors**, and **green dynamic capabilities**, **green human resource management practices**, **green corporate social responsibility**, all of which are essential for improving environmental performance.

In addition to green transformational leadership, digital transformational leadership has recently emerged as another type of leadership gaining popularity (McCarthy et al., 2022). However, digital transformational leadership has been largely overlooked in the context of tourism and hotel management. Thus, future studies can examine the effects of digital transformational leadership on employees and businesses in terms of tourism and hotel management.

Additionally, comparative research across sectors is a key direction for future development. While tourism and hospitality is the focus of current research, other resource-intensive sectors (e.g. manufacturing, energy) also face serious environmental challenges. How green transformational leadership can foster sustainable innovation and environmentally friendly behaviours in these sectors, and how the specific business models of these sectors can influence the effectiveness of leadership practice, are areas of research that can be explored in depth.

Adapting the core values of green transformational leadership to different cultural contexts can be considered as a critical strategy in achieving sustainability goals. Cultural values can directly affect individuals' perception of environmental responsibility, leadership expectations and attitudes towards environmental behaviours. In this context, leaders' adaptation of their green behaviours and communication styles to different cultural value systems can enhance leadership effectiveness and facilitate the adoption of environmental initiatives. Adopting a cross-cultural comparative approach may make it possible to understand how leaders address these differences and provide both theoretical and practical contributions by revealing the effects of cultural sensitivity on environmental leadership.

The dynamic evolution of technology and human factors interactions offers new possibilities for research. In the rapidly evolving digital and smart era, future research could seek to integrate artificial intelligence and big data analytics tools into the prediction and assessment of green leadership behaviours in order to formulate more precise environmental strategies for companies. Especially in the tourism sector, real-time data can be used to monitor customer and employee behaviour patterns and provide personalised feedback and decision support to leaders.

This conceptual research has some basic limitations. This research focuses on the tourism and hospitality sector. This focus limits the generalisability of the results to other sectors. Since green transformation leadership may have different effects in different industries, leadership practices outside this context were not analysed. As a review of existing literature, the current research provides a theoretical and conceptual framework. However, this framework lacks applications.

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CHAPTER 16

THE CONCEPTION OF LIBERTY IN SPINOZA'S TRACTATUS POLITICUS

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Introduction

Spinoza's oeuvre might be said to advance an ambiguous and perplexing idea of freedom, or particularly political liberty. Not surprisingly, one may come across various interpretations. Jonathan Israel sees that Spinoza's understanding of liberty is by no means a "negative" affirmation in the sense of Hobbes, instead it should be conceived akin to the views of Machiavelli and Rousseau¹ as being "a positive good or inalienable potential" (Israel, 2001: 259). Quentin Skinner parenthetically suggests that Spinoza is mistakenly held to be a proponent of Rousseau's "positive freedom", since it is underestimated the extent he echoes classical republican ideas, especially Machiavelli (Skinner, 1984:217). In a parallel way, Susan James takes the view that Spinoza's emphasis on common good, of which pursuit warrants that subject's obedience serves his/her own interests, largely relates him to the classical republican idea of being at liberty in so far as one is not subjugated to the arbitrary will of another (James, 2012:255). On the other hand, Justin D. Steinberg, in his article "Spinoza on Being *sui iuris* and the Republican Conception of Liberty", attempts to refute any claim trying to conceive Spinoza's understanding of freedom with reference to a republican conception of liberty. Steinberg argues that in *Tractatus Politicus* Spinoza employs the term *sui iuris* (translated as "possessing its own right") in two distinct senses. In its first sense, it means being under its own authority, not being subjugated to another's will or power.² According to this, it may be credible to talk about republican strands in Spinoza's understanding of freedom. However, Steinberg contends that what Spinoza ultimately puts forward as the meaning of freedom is, in the second sense, power. That's how we become free by subjugating to the will of the sovereign. Since the state renders us more powerful, we sacrifice our *sui iuris* as independence for the sake of *sui iuris* as power. "What really matters for Spinoza is not whether one retains one's natural liberty, but rather whether one takes provisions to be as powerful as possible" (Steinberg, 2008:248). Steinberg also notes that Spinoza does not conceive of freedom as regards to the binary predicate of "Free or not" but a matter of degree, which would be hard to conform to the terms of a republican understanding of liberty. Moreover, according to Steinberg, Spinoza does not see a radical difference between monarchy, aristocracy, and democracy in so far as the interest of all is assured. Therefore, it becomes dubious the republicanism of a figure to whom Monarchy is an admissible form (Steinberg, 2008:248).

In this article, I will try to elaborate on Spinoza's understanding of liberty by mainly examining his unfinished *Tractatus Politicus*. I will argue that Spinoza's conception of freedom can be understood in both negative and

1 Israel, apparently, does not find a crucial difference between Machiavelli and Rousseau in terms of their conceptions of liberty.

2 Steinberg also thinks that, for Spinoza, being under authority of another willingly, as long as the bond is to the subject's interest, then, is not a case in which liberty of the subject is harmed or barred.

positive terms. In the section subtitled “State of Nature”, it will be investigated in what way Spinoza sees freedom on an individual level. In the subsequent section, “The State”, the focus will be the ways we can conjoin the idea of freedom with commonwealths. Under the subtitle “Monarchy-Aristocracy-Democracy”, I will concentrate on Spinoza’s evaluation of the status of liberty in these three forms of government. Finally, I will have a brief conclusion on Spinoza’s *sui iuris* and its relation with the republican idea of liberty.

State of Nature

Everything, according to Spinoza, strives to preserve its being, and this striving is absolutely given to each thing by nature or God; therefore, this striving or power peculiar to each thing is the essence of each thing:

So the power of each thing, *or* the striving by which it (either alone or with others) does anything, or strives to do anything—that is, the power, *or* striving, by which it strives to persevere in its being, is nothing but the given, *or* actual, essence of the thing itself, q.e.d. (Spinoza, 1994:159)

This essence is unchangeable, non-transferrable, and inalienable. Power of each thing is “opposed to everything which can take its existence away” (159). How could a thing destroy itself then? For Spinoza, a thing cannot destroy itself by itself. When a human-being kills itself, this means that its essence or power/striving is defeated by forces external to and more powerful than its being. “...Those who kill themselves are weak-minded and completely conquered by external causes contrary to their nature” (Spinoza, 1994:209).

The law of human nature or the particular way for human-beings to persevere in their being is such that human-beings act, live, and preserve their being by the guidance of reason (Spinoza, 1994:212). However, reason is not the only way for us to persevere in our being. We also have appetites, which are also shared by animals, in our power/striving (Spinoza, 2007:196). The essence of man is, then, impossible to be fully realized: “it is not in man’s power to use reason always and to be always at the peak of human freedom” (Spinoza, 1958:273). Human freedom, virtue or perfection, lies in being free from the powers of passions, which are external determinations on us. Spinoza calls bondage, “Man’s lack of power to moderate and restrain the affects” (Spinoza, 1994:197). For when man is dominated by affects, he/she is ceased to be the controller of his/her actions, rather fortune takes upper hand; so that, we become “like waves on the sea, driven by contrary winds, we toss about, not knowing our outcome and fate (Spinoza, 1994:187).” Since we are only a tiny part in nature, which is infinite, we are infinitely vulnerable to the external causes: “The force by which a man perseveres in existing is limited, and infinitely surpassed by the power of external causes” (Spinoza, 1958:202). We are being possessed by external determinations in the same way that, as it was believed, someone is being possessed by devils, totally confronting with

another power other than his/her own within his/her own being: “The force and growth of any passion, and its perseverance in existing, are not defined by the power by which we strive to persevere in existing, but by the power of an external cause compared with our own” (Spinoza, 1958:203).

Since we are “necessarily always subject to passions” (Spinoza, 1958:203), the freedom possible for us (from being subject to the powers of external causes as much as possible, and therefore, to realize our barred essence to the utmost), first of all, should be conceived in negative terms. It is moderating or restraining (by the guidance of reason) the inevitable external determinations operating on us. One may also find a republican theme in this, since, in a sense, human-beings are being subjugated to not only an external force but also to an arbitrary force, in which we cannot be sure where we are moving is conducive to preserving our being:

We experience affects, Spinoza insists, when we are acted on by external things. However, the mere fact of dependence is not enough to enslave us to our passions. As we have seen, political slavery is not constituted by the mere fact that we are subject to the law; rather, it comes into being when the law is arbitrary, in the sense that it is created and enforced by a sovereign who may or may not take account of our interests. In Spinoza’s analysis of the passions as manifestations of our dependence on external things, we find that arbitrariness is once again a central theme. As human beings, we strive to put ourselves in situations that empower us and make us joyful and to avoid situations that disempower us and make us sad. However, insofar as we are unable to control the way we are acted on by external things, we are also unable to control either our own power or the passions in which it is manifested. (James, 2009:233)

The less a thing is acted on by external things, the more it possess its own right (*sui iuris*). The right of each thing or human individual consists of every other thing and also act in so far as each thing or human individual possess power for the act, and also, to act on that other thing, in order to persevere in its being: “...the right of each thing extends so far as its determined power extends” (Spinoza, 2007:195). Nothing is forbidden to human-being except “what nobody desires and nobody can do” (Spinoza, 1958:273). One’s right resides in not only what one’s reason dictates, but one has also the right for things or acts to which one’s appetite or urge directs: “...in fact men are mainly guided by irrational appetite; yet they do not violate the order of nature, but necessarily conform to it” (Spinoza, 1958:279).

Parallel to all these, Spinoza differs from Hobbes about the condition of man in state of nature, especially in terms of liberty. For Hobbes, every individual is equal (also, in equal misery) in state of nature based on the idea that every individual has right to everything (Hobbes, 1991: 86-87). An

individual is at liberty in state of nature since he/she does not encounter any external impediments to its motion as much as his/her power endows (i.e. as long as the impediment to motion is not the constitution of the thing itself) (Hobbes, 1991: 91, 146). For Spinoza, an individual may or may not possess his/her own right even in state of nature, or may only possess it to a certain degree:

It also follows that one individual is subject to the right of another, or dependent upon him, for as long as he is subject to the other's power; and possessed of its own right, or free, in so far as he can repel all force, take what vengeance he pleases for harm done him, and, to speak generally, live as his own nature and judgement dictate." (Spinoza, 1958:273).

Spinoza also argues that fear is inconsistent with liberty.³ "Nor can it be disputed that the more cause for fear an individual has, the less power he has, and in consequence the less right he has" (Spinoza, 1958:277). This, we already inferred from *The Ethics*, and we should also think of other passions, weakening our striving, in the same way that they are inconsistent with liberty.

But most significantly, Spinoza claims that, in state of nature, "human natural right or freedom is a nonentity" (Spinoza, 1958:277). The reason he gives is that since an individual could only be said to possess his/her own right as far as he is not subdued by others, and given that his/her individual power would not secure a protection from other individuals, this individual right in state of nature can only exist in imagination and, therefore, is not factual (Spinoza, 1958:277). Hence, sovereign is defined by no means as an entity established in consequence of the transference of each individual's right of nature to it; rather, Spinoza tries to say, state is the only way for each individual to possess its own right (of nature):

I therefore conclude that the right of nature peculiar to human beings can scarcely be conceived save where men hold rights as a body, and thus have the power to defend their possession of territories which they can inhabit and cultivate, to protect themselves, to repel all force, and to live in accordance with the common judgement of all. For the more men there be that unite in this way, the more right they collectively possess; and if it is because men in the state of nature can hardly be possessed of their own right that the schoolmen wish to call man a social animal, I have nothing to say against them. (Spinoza, 1958:277).

Man is not a social animal, then. The essence of man, as we have seen, is preserving its being. Man can be regarded as social in so far as this sociability with other members of the humankind is devoted to its own perseverance in

³ "Feare, and liberty are consistent; as when a man throweth his goods into the Sea for *feare* the ship should sink, he doth it neverthelesse very willingly, and may refuse to doe it: it is therefore the action, of one that was free..."

(Hobbes, 1991:146)

being. In addition, the condition is that only as long as one can defend one's persistence in being against other individuals, one could be said to be free. Needless to say, this might include attacking by all force, vengeance, and even destruction, in some cases.

Up to now, we saw the negative aspect of liberty on its two levels. On the first level, freedom means being free from the dominance of passions. On the second level, it means being free from the dominance of other individuals. However, Spinoza's understanding of freedom does not have solely a negative aspect. As we said earlier, law of human nature is that human beings persevere in their being by the guidance of reason. But, we saw that this particular way of perseverance in being is highly difficult to accomplish, and always to be blocked by external causes. Thus, we concluded that human beings are free as much as they could free their internal being from the domination of affections, i.e. render their mind prevailing over their existence. Reign of reason, here, is not to be understood as merely being free from arbitrary power of another. Spinoza does not claim that reason "freely" may choose to act this way or another. I should very much emphasize that a dictate of reason is the same for all (to the extent that it is for the sake of preserving each individual on its own), who managed to attain the guidance of reason. It may be conceived analogically with Hobbes' laws of nature. Spinoza does not try to say that an individual does whatever he/she chooses when he/she become free. Rather, "...the more free he is, and the more completely he obeys himself" (Spinoza, 1958:281). Man of virtue does what reason necessitates for him:

And this is why I call a man completely free in so far as he is guided by reason, for then he is determined to action by causes which can be understood adequately through his own nature alone. But he is necessarily determined to action by them; for freedom does not remove the necessity of acting, but imposes it. (Spinoza, 1958:275).

The more power one possesses, the less liable one is to the powers other than one's own. Then, the more free one is, the more one is guided by reason. Equivalently, the more free one is, the more one obeys the dictates of reason. Tautologically, the more one obeys the reason, the less one is subjected to fortune or arbitrary wills and powers.

Although reason imposes its dictates, this is not to say that it lays down moral obligations regardless of subjective interests somewhat in a Kantian sense. Morality and advantage is the same. Obeying what reason imposes is identical with doing what is most advantageous to our being. Reason or intellect is the most reliable power in determining what is most conducive to our well-being. As reason is part of nature, and everything in nature strives to persevere in being, reason cannot be an exception. Moreover, since reason would possess adequate ideas, instead of the inadequate ones, dictates of

reason would always be our truest interests:

Since reason demands nothing contrary to Nature, it demands that everyone love himself, seek his own advantage, what is really useful to him, want what will really lead a man to greater perfection, and absolutely, that everyone should strive to preserve his own being as far as he can. (Spinoza, 1994:209).

The State

Let me summarize my propositions so far before going on to the analysis of freedom on the level of states. I most generally argued that Spinoza's thinking carries facets of both negative liberty and positive liberty at the same time. Internal to our being there are the affections from which we should be freed. This I may call *Negative Liberty I*. On the level of state of nature, there are other individuals from whose domination we should be freed. Let's call this *Negative Liberty II*. Lastly, I call *Positive Liberty* our realization of what pertains to our essence/nature, a movement from dominance of passion towards the dominance of reason. Though, I have schematized them, it should be seen that they are the same thing. The more we become positively free, the more we are free in the negative sense, and vice versa.

We saw that without the commonwealth, human beings cannot retain their right of nature. Meaning of this is that Spinoza does not talk about an "Artificial Person." State is, in a sense, natural:

...since all men, savage and civilized alike, everywhere enter into social relations and form some sort of civil order, the causes and natural foundations of the state are not to be sought in the precepts of reason, but must be deduced from the common nature or constitution of men. (Spinoza, 1958:265).

The state pertains to which men possess rights as a body, and are guided as if by one mind. In state, there is no individual right of nature, but corporate right of nature. The more men are included in this corporate right, the less right each individual possess for its own. "...his only real right against other things in nature is what the corporate right allows him" (Spinoza, 1958:277). The name of this corporate right is sovereignty.

A sovereign is like an individual in state of nature. Therefore, it has right to everything; and similarly, nevertheless, its actions are "necessarily limited by the capacity of the object affected as well as by the power of the agent" (Spinoza, 1958:303). However, the right of sovereign to everything is not fictional like the individual in state of nature. We saw that *Negative Liberty II* is impossible to realize for the individual in state of nature. Conversely, Spinoza argues, the difference between man in state of nature and sovereign is that "a commonwealth can guard itself against being subjugated by another, as a man in the state of nature cannot do" (Spinoza, 1958:295).

Moreover, like individuals in state of nature are enemies by nature, two commonwealths are always in a position of war; as there is no civil law between commonwealths, but only right of nature. “If, therefore, one commonwealth wishes to attack another and to use extreme measures in order to make it subject, it has the right to attempt this, since all it needs to wage war by right is the will to wage war” (Spinoza, 1958:295).

State can also break any treaty, alliance or pledge whenever it sees that the promise does not conduce to its advantage (Spinoza, 1958:297), as an individual is always able and free to break his/her promise if he/she wills (Spinoza, 1958:275).

Spinoza makes a definition of a commonwealth at liberty as follows, and in it *Negative Liberty I* and *Negative Liberty II* could be seen at the same stroke:

A commonwealth, then, is possessed of its own right in so far as it can guard and protect itself against being subjugated by another: and subject to the right of another in so far as it fears the power of the other commonwealth, or is prevented by it from doing what it wants, or, finally, requires the help of the other for its own preservation or growth. (Spinoza, 1958:295).

Commonwealths, then, are very much alike individuals, in the sense that they even partake in our experiences of affections or passions like fear, and also hold ability to affect others with those passions. This means that liberty of the commonwealths should be judged not only in terms of *Negative Liberty II*, but also in the sense of *Negative Liberty I*. Corresponding to the un-freedom of an individual under the affect of fear, a state cannot be said to be free, or fully possessed of its own right, as long as it cannot counter the authority of its passions or obliterate them altogether.

Thus far, we looked at Spinoza’s examination of the right of sovereign with respect to its interplay with its externality. Now, I would like to go on talking about the liberty of the state concerning the interactions internal to its body and mind.

As we said, the right of each thing is, in a sense, limited by its own power (Spinoza, 2007:251). The power or right of the sovereign on its subjects is also finite considering the impossibilities of the power of the sovereign and the potentialities of the power of the subjects. It is unimaginable that a person could surrender his/her mastery on his/her own thoughts; so, it follows, sovereign cannot have authority over the minds of its subjects (Spinoza, 2007:251).

Sovereign also possess no right over things for which nobody can be led with threat or reward. Sovereign is not able to render subjects believe contrary to their judgements, love someone they hate, bear witness against themselves, torture themselves, retreat from trying to avert death etc (Spinoza, 1958:289).

Demands which are likely to instigate the indignation of numerous subjects are, as well, said to fall outside the right of the sovereign. In fact, when state undertakes such an act, it diminishes its own right. Because the more it gives cause for subjects to conspire and uprising, the more it intensifies the fear affecting on it by its own subjects; and therefore, the less it possess its own right (Spinoza, 1958:291).

Sovereign is the sole master in matters concerning all the rest. It solely possess the right to decide on what is good, bad, fair, illegal etc., religious affairs being no exception. Subjects are obliged to obey every decree of the commonwealth, and this is not against the dictates of reason; even if the command of the state is opposed to the judgement of a subject's reason, he/she must still follow the orders of the sovereign. As we saw earlier, there is no freedom or right for individuals aside from the state, and in this way, "...the more a man is guided by reason, i.e. the more free he is, the more steadfastly will he observe the laws of the state and carry out his sovereign's commands" (Spinoza, 1958:289).

It is impossible for sovereign to do wrong, if we take the meaning of wrong according to the civil law. The being of civil laws is fully at the disposal of the commonwealth. The only criterion in making and maintaining the civil laws is that what commonwealth sees to be good for itself is the good, and what it sees to be bad for itself is the bad. It possess complete right not only to make, enforce, and interpret laws as it wishes but also "the right to repeal them, and to pardon any offender out of the plenitude of its own power" (Spinoza, 1958:305).

The only way for state to do wrong, in so far as we are talking about wrong in the sense of natural right, is acting in the direction of things that are contrary to its nature, i.e. its persistence in being:

A commonwealth, then, does wrong when it does, or allows to be done, things that can be the cause of its downfall. When it acts in this way, I say that it does wrong in the sense in which scientists or doctors say that nature does wrong; and in this sense we can say that a commonwealth does wrong when it does something contrary to the dictate of reason. For a commonwealth is most fully possessed of its own right when it acts in accordance with the dictate of reason; in so far, then, it acts against reason, it fails to realize its true nature, or does wrong. (Spinoza, 1958:303)

In the previous section, we saw, especially in the quotation from Susan James, that the problem of the passions is that we can never be sure whether our actions are for the sake of our true interests as long as we act under the domination of them. In contrast to passions or any kind of external causes/powers, we saw that the dictates of reason could guide us to the paths in which we can attain the maximum perseverance in our beings. In this light, similarly,

the freest state is the one being guided by reason. The more a commonwealth is guided by reason, the more it acts in accordance with its advantage, the more it preserves its being, and therefore, the less it becomes being dominated by external causes, i.e. passions and other states. Again, what pertains to the essence of man also pertains to the essence of state (*Positive Liberty*). For both, freedom is to be understood concurrently negative and positive, which are the two sides of the same coin.

Monarchy-Aristocracy-Democracy

In what way exactly can the commonwealth be guided by the dictates of reason? Spinoza contends, it is highly difficult and rare for individuals to attain the guidance of reason. Most men are to live with little acquisition of their essence. On the other hand, he seems to believe that achieving the guidance of reason is more accessible to commonwealths. “Reason of State”, in Spinoza’s account, should be comprehended as inhering in the organization of the state. So we are not talking about a man or men of virtue running the state. Individuals are unreliable since they are necessarily subject to passions. Also, their virtue is not much a concern for the commonwealth. Hence,

...if a state is to be capable of lasting [i.e. *preserving its being*]⁴, its administration must be so organized that it does not matter whether its rulers are led by reason or passion- they cannot be induced to break faith or act badly. In fact it makes no difference to the stability of a state what motive leads men to conduct its affairs properly, provided that they *are* conducted properly. (Spinoza, 1958:265)

Common welfare should not be entrusted in any particular men. It is foolish to demand from any man to be more conscientious about the interests of others than his own (Spinoza, 1958:315). Common good for Spinoza has no connection with “civic virtue.” Goodness or badness of a polity, or virtuosity or wickedness of citizens/subjects is solely pertinent to the excellence or faultiness of a commonwealth (Spinoza, 1958:309). It is only a commonwealth which can guarantee peace and security of a political order:

...it is necessary to organize the state so that all its members, rulers as well as ruled, do what the common welfare requires whether they wish to or not, that is to say, are compelled to live according to the precept of reason, if not by inclination, then by force or necessity- as happens when the administration is arranged so that nothing which concerns the common welfare is wholly entrusted to the good faith of any man. (Spinoza, 1958:315)

Organization of a commonwealth should also be designed in such a way that its foundation must be passions of men as well as their reason. As the motivation for “uniting and being guided as if by one mind” can only be a

4 Between brackets is my addition.

shared passion; “common hope, common fear, or a common desire to avenge some common injury” (1958:315), a commonwealth not addressing some common passion of its subjects or citizens would be void:

Clearly, if any state can last for ever it must be the state whose constitution, once established on correct principles, is kept intact. For the constitution is the soul of a state: so that to maintain the constitution is necessarily to maintain the state. But a constitution cannot be kept intact unless it is supported both by reason and by the common passions of men; otherwise, of course, i.e. if it depends on the support of reason only, it is weak and easily overthrown. (Spinoza, 1958:437).

Every state has right to preserve its being, whether founded by a free people or established by conquest. But for each there are different means for its preservation (Spinoza, 1958:311). Likewise, organization of monarchy, aristocracy, and democracy have different precepts of reason. In general, state should be organized based on two considerations for rendering reason as their guide. The quantitative consideration is that the numerous the persons deciding on public affairs, the more likely the state is run in accordance with the dictates of reason. In monarchy, this necessitates the king’s counsellors to be in large numbers (Spinoza, 1958:321), and similarly, in aristocracy, the supreme council (sovereign) to be crowded (Spinoza, 1958:367). In this way, the passions or private interests are to be prevented from ruling as much as possible. Secondly, the qualitative consideration is that there should be a supervisory formation charged with holding sovereign power at check. This necessitates composition of a council external to sovereignty in monarchy (Spinoza, 1958:321), and bringing into existence other councils/formations subordinate to the supreme council in aristocracy (Spinoza, 1958:385).

In all cases, the assumption is that the more fear the sovereign has from its own subjects, the less it possess its own right. Monarch would be occupied with plotting against its own subjects, and aristocrats would act with likelihood of uprising in mind; therefore, the commonwealth would be less free and less powerful (Spinoza, 1958:317, 371).

Because the fear (from the retaining natural right of the ruled outside of the sovereign’s body) cannot be eliminated completely, for Spinoza, these two forms of government does not deserve the name “absolute sovereignty.” The absolute sovereignty is democracy (Spinoza, 1958:371, 441), in which the power of the ruled stops creating an affection of fear, since the place of sovereign is occupied by every citizen, i.e. there is no ruled. Therefore, concerning everything said in this paper on liberty, we may infer from this unfinished book, *Tractatus Politicus*, that, Spinoza argues, democracy is the most powerful and freest form of government.

Conclusion

To conclude, firstly, I found Steinberg's contentions wrong. There is no trade-off between *sui iuris* as independence and *sui iuris* as power. Liberty of Spinoza does not require that "...we sacrifice our independence or *potestas*, putting ourselves under the authority (*sub potestate*) of the sovereign" (Steinberg, 2008:248). I argued that in Spinoza negative and positive liberty are not contradicting, but corresponding. Individuals are not in a position to opt for either for the sake of the other. Since they do not possess *potestas* in the absence of the state, nor do they lose it under the authority of the state. As being one body and mind, i.e. corporate right, they possess both independence and power. Moreover, because only a democracy can be called absolute, the other forms of government are less free and powerful. Therefore, form of government makes a difference for Spinoza in terms of freedom. Secondly, it seems that Spinoza's liberty is peculiar and divergent from a republican understanding. Being free from arbitrary power does not enjoy primacy over civic duty, in the way that the latter is necessary evil in pursuance of the first. What's more, civic virtue is inconceivable to have a central place in the political order, given that human nature is unlikely to contribute virtuosity.

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CHAPTER 17

EXPLORING TEXTBOOKS AS CORPUS FOR EDUCATIONAL STUDIES

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INTRODUCTION

Textbooks rank among the earliest forms of modern mass media. With the advent of compulsory education, they became a fundamental aspect of daily life for students and teachers alike. From a European perspective, the origins of textbook production can be traced back to the 16th and 17th centuries, when religious orders and churches held a central role in education and in producing instructional materials. The 19th century introduced a pivotal shift with the state assuming control over education, leading to the development of officially sanctioned textbooks. In this way, textbooks began to function as instruments for the state to shape educational content and direction. Today the possibilities introduced by the digital age have brought noticeable changes to various aspects of education. Language education and linguistic research have also been affected by these changes, with studies in these fields becoming more systematic and in-depth through the use of digital datasets. Traditional language education materials, such as textbooks, have long been an essential resource tailored to specific age groups and language levels. Digital technologies have transformed textbooks from simple teaching tools into valuable digital corpora, offering new insights for both teaching and linguistic research (Absalom, 2021; Sur, 2022; Hoang & Van, 2024). This shift aligns with the broader trend of digitalization in education, where data-driven approaches and technological advancements redefine how language is taught and learned. A “corpus” is a structured collection of linguistic data gathered for a specific research purpose. This dataset can consist of various texts or spoken language samples and is used to examine particular language features, conduct analyses, or develop linguistic models. Corpora are often valuable resources in fields like linguistic research, natural language processing (NLP) projects, and language teaching

Textbooks form the foundation of language education with the grammar, vocabulary, and communicative skills patterns they contain. These materials are prepared according to specific curricula, incorporating linguistic structures aimed at particular age groups, levels, and cultural contexts (Darshika, 2024; Noor, 2024). These characteristics elevate textbooks beyond being merely classroom texts, transforming them into a rich data source for research. For researchers seeking to answer questions about how a language is taught at different levels, which grammatical structures are emphasized, and how vocabulary is shaped, textbooks serve as an invaluable resource. Furthermore, each textbook reflects diverse cultural, historical, and pedagogical approaches, providing variety in language research

By converting textbooks into digital corpora, researchers can analyze large datasets more quickly and systematically. Techniques such as text mining, natural language processing (NLP), and linguistic structure analysis can yield significant insights from these educational materials. For example,

analyzing the words or grammatical structures that students at a particular language level frequently encounter can be used to assess the effectiveness of language teaching programs. It is also possible to examine which topics are emphasized more in language teaching and how these emphases change over time. In this context, digitized textbooks provide easy access to critical linguistic data, such as the frequency of words used at different language levels, the complexity of grammatical structures, and the distribution of themes.

As digital corpora, textbooks are valuable for researching historical shifts in language teaching and the use of language in different cultural contexts. Comparing textbooks from different years makes it possible to examine what changes have occurred in the teaching of a language over time. For example, reflections of shifts in language education policies or the evolution of pedagogical approaches can be revealed through these analyses. Additionally, comparisons between language teaching programs in different countries provide opportunities to understand how cultural and linguistic differences are reflected in teaching. A study on German textbooks, for instance, could highlight how German language teaching has varied between countries like Germany, Turkey, and New Zealand. Intercultural differences and pedagogical approaches to language teaching can be more clearly analyzed with such digital datasets.

Another significant aspect of this digital transformation is ease of access. Conducting research on textbooks using traditional methods required physical access to the books and a manual analysis process. However, with textbooks converted into digital formats, researchers can access the data they need more quickly and conduct large-scale data analyses. It also becomes possible to analyze a large number of textbooks targeting different language levels simultaneously. This facilitates answering questions such as which structures are more commonly used in language teaching or which words are more frequently encountered at various levels. Moreover, thanks to these access possibilities, language researchers can compare textbooks from different regions and cultural contexts to examine general trends in language teaching. These analyses contribute to the development of language education in a more effective and comprehensive way.

In conclusion, textbooks converted into digital corpora offer new opportunities for language teaching and linguistic research (Vyatkina, 2020; Tracy-Ventura & Braidì, 2023; Li, 2024). These books enable the tracking of historical processes in language education and help facilitate more comprehensive and systematic linguistic analyses. Digital corpora derived from textbooks offer valuable prospects for language teaching and linguistic research by enabling data-driven approaches and refining teaching practices. Incorporating corpora into language education allows the use of authentic language data, which enhances teaching methods and increases student engagement.

1. BENEFITS OF DIGITAL CORPORA IN LANGUAGE TEACHING

1.1 Authentic Language Exposure

Digital corpora provide learners with invaluable access to real-world language use, offering a vast collection of texts, transcripts, and spoken language from diverse contexts. This exposure allows learners to engage with language as it is naturally used, rather than relying solely on contrived or simplified examples often found in traditional textbooks. By interacting with authentic texts and spoken language, students gain deeper insights into how language functions in various settings, from casual conversations to formal discourse.

Such engagement with real-world language enhances learners' understanding of vocabulary, idiomatic expressions, and grammatical structures in their natural environments, leading to a more nuanced grasp of usage and context. Exposure to authentic language also helps learners develop pragmatic competence—an essential skill in understanding how meaning changes depending on factors such as tone, register, and audience. Furthermore, authentic materials reflect cultural and social nuances, giving learners a richer understanding of the language's use in different cultural contexts. This holistic approach to language learning not only sharpens learners' linguistic abilities but also helps them become more adaptable and confident language users in real-world situations (Ablakulova, 2024).

1.2. Data-Driven Learning (DDL)

DDL promotes language pattern exploration through corpus analysis, empowering students to take a more active role in their learning process. Instead of relying solely on traditional instruction methods, where language rules and structures are typically provided by the teacher, DDL encourages learners to independently investigate and discover these patterns. By analyzing authentic language data, students can identify recurring structures, vocabulary, and grammatical patterns directly from the corpus. This hands-on exploration fosters autonomy, as learners take responsibility for their own discoveries, making the learning experience more personalized and meaningful. One of the key benefits of DDL is its ability to enhance critical thinking skills. As students engage with real data, they are required to draw conclusions, test hypotheses, and evaluate the relevance of the patterns they observe. This process not only deepens their understanding of language but also encourages them to think analytically about how language is structured and used in different contexts. Additionally, DDL allows for more individualized learning paths, as students can focus on language areas that are most relevant or challenging to them, promoting a more flexible and student-centered approach to language learning.

Furthermore, DDL encourages an inquiry-based learning approach, where learners pose questions and seek answers from the data themselves, reinforcing their understanding through discovery rather than passive reception of information. This method also promotes long-term retention, as students are more likely to remember and apply linguistic patterns they have uncovered through active exploration. As a result, DDL not only enhances language proficiency but also equips students with analytical skills that can be applied beyond language learning, fostering a deeper, more critical engagement with the material (Lusta et al., 2023).

1.3. Innovative Teaching Methods

Incorporating corpora in the classroom allows educators to introduce a wide range of diverse and dynamic activities that foster active learning. One of the most valuable exercises in this context is the use of concordance lines, which provide students with multiple examples of how a particular word or structure is used across various contexts. By analyzing these concordance lines, students can observe language in action, examining how certain phrases, grammatical structures, or vocabulary items function within authentic sentences. This method helps learners grasp the nuances of language use that might otherwise be missed in traditional textbook-based instruction.

Concordance exercises also give students the tools to explore linguistic patterns independently. They can investigate how specific language elements—such as prepositions, collocations, or verb tenses—are used in real-life communication, enabling them to develop a deeper understanding of context, frequency, and variation. This hands-on approach to learning not only helps students internalize language rules through discovery but also encourages them to make connections between theory and practice. Additionally, it reinforces the idea that language is not static but dynamic, evolving across different situations and registers.

Furthermore, corpora-based activities allow educators to tailor their lessons to meet the specific needs of their students. For instance, educators can select corpus examples relevant to the students' field of study, career goals, or interests, making the learning experience more engaging and practical. This flexibility supports differentiated instruction, where activities can be customized based on students' proficiency levels or particular areas of difficulty. Beyond concordance lines, teachers can design various tasks such as frequency analysis, genre comparison, and error analysis to further enrich the learning experience.

Moreover, corpus-based teaching promotes learner autonomy, as students become more self-reliant in their exploration of language patterns. By investigating language on their own, they develop research skills and the ability to critically evaluate linguistic data, making them more effective

and independent learners. This approach also fosters active participation, as students are encouraged to work collaboratively on language analysis tasks, engage in discussions, and draw insights from the data they have analyzed.

Incorporating corpora in the classroom ultimately leads to a more interactive and learner-centered approach to language instruction, where students are actively engaged in the process of discovery and reflection, rather than passive recipients of pre-determined content. This methodology helps create a classroom environment where students are encouraged to think critically, analyze language patterns, and apply what they have learned to real-world communication (Bennett, 2024).

With the increasing use of digital corpora in the future, it is anticipated that research on textbooks will deepen and more efficient methods for language teaching will be developed. The possibilities offered by digital corpora provide a powerful tool for researchers seeking to adopt a scientific approach to language teaching.

2. THE DIGITALIZATION OF TEXTBOOKS

The digitalization of textbooks has become an important part of the technological transformation in education. Traditionally produced in printed format, textbooks have been one of the primary resources in education; however, the development of digital technologies has made it necessary to convert these books into digital formats. This process is not merely a physical transformation but also means that educational content becomes more accessible, flexible, and interactive. Digitalization has significantly increased the usability of textbooks in both education and linguistic research. Digital textbooks provide immediate access to a wide range of resources, breaking geographical and temporal barriers and shown a powerful impact on the education system (Haleem et al., 2022).

The process of digitalizing textbooks consists of several stages. The first stage involves transferring existing printed materials into digital format. This process typically begins with scanning technology. Printed books are scanned page by page, and these pages are saved as digital images. To convert the scanned documents into digital text, a technology called Optical Character Recognition (OCR) is used. OCR technology recognizes the text in the scanned images and converts them into editable digital text. In this way, digital copies of the books are created.

However, this stage is only the initial step in the digitalization of textbooks. The digital texts obtained from the scanning and OCR processes are not always flawless. OCR technology can produce errors, especially when scanning old or worn books or pages with complex graphics and tables. Therefore, a verification and editing process is required to ensure that the

scanned texts are accurately converted into digital copies. At this stage, the scanned texts are carefully reviewed, and any incorrect character recognition is corrected. This process can be done manually, or advanced OCR software can be used to assist in this task.

Another important aspect of the digitalization process is the formatting of the texts. Textbooks usually consist not only of plain text but also include graphics, tables, images, and interactive elements. Therefore, the digitalization of textbooks must preserve not only the textual content but also the visual and structural elements. Digital formats ensure the accurate representation of these elements, allowing the educational material in the original book to be fully reflected in its digital copy. For example, digital formats like PDF or ePub allow the preservation of visual elements and flexible organization of content. This way, students and teachers can navigate the texts, take notes, and interact with the content more easily.

The digitalization of textbooks is not limited to the transfer of educational content; it also facilitates the enhancement of this content. Digital formats allow textbooks to be enriched with multimedia elements. Videos, audio files, and interactive components, which are not available in traditional printed books, can be integrated into digital textbooks. This provides students with a more comprehensive learning experience and makes textbooks more interactive. Particularly in language learning, interactive elements such as reading aloud exercises or video explanations can make the learning process more efficient for students.

Digitized textbooks also become a vast data source for research. Researchers can use these digitized texts to conduct for example linguistic analyses and collect data on topics such as word frequency, language structures, and linguistic changes. As a result, digital textbooks have become a valuable resource not only in education but also in linguistic and educational research. With the advancement of natural language processing (NLP) technologies, the automatic analysis of digital textbooks and the collection of linguistic data have become much easier. Researchers can use digitized textbooks as a corpus to derive new insights into language education and teaching materials (Zheng & Han, 2024; Jacobs & Isaac, 2024; Li, 2024; Dabamona et al., 2024)

Another important consideration in the digitalization process is copyright and legal regulations. Many textbooks contain copyrighted material, and their conversion to digital format must be done in compliance with legal regulations. With the increasing prevalence of digitalization, educational institutions and publishers are taking various precautions and striving to produce digital textbooks that adhere to these legal requirements. This is crucial for the appropriate use of digital materials in education.

The process of digitalizing textbooks also presents significant

opportunities for promoting equity in education. Traditional printed books may not be accessible to all students due to distribution costs and geographical limitations. However, digital formats, accessible from anywhere with an internet connection, make it possible to reach a broader audience. This is especially advantageous for students in developing countries. Additionally, since digital textbooks are easy to update and distribute (Susilo & Ahmad Suhardi, 2024; Ifrim, 2024; Wang, 2024) they provide continuous access to up-to-date content in education.

In conclusion, the digitalization of textbooks can be regarded as a major step toward the future of education and research. This process not only ensures the storage of educational materials in digital form but also contributes to making the content more accessible, interactive, and flexible. Thanks to digitalization, students and teachers can access textbooks anytime and anywhere, while researchers can perform large-scale data analyses, making language education and linguistic studies more efficient. Digital textbooks have become an indispensable element in the education landscape of the future.

3. CORPUS CREATION AND MANAGEMENT

The process of creating a well-structured digital corpus is crucial for conducting research efficiently. Corpus creation involves collecting, organizing, and preparing linguistic data for use in research. In this process, corpus management software plays a critical role. Some widely used corpus management software includes AntConc (Anthony, 2022) and Sketch Engine (Kilgarrieff et al., 2014).

AntConc is a free software frequently used by language researchers and offers functionalities such as word frequency, concordance, and word list generation. With this tool, quick analyses can be conducted on data collected from textbooks. AntConc enables researchers to examine specific language structures, identify recurring expressions in texts, and analyze grammatical patterns. These features greatly facilitate processes like word frequency analysis and the examination of grammatical structures, which form the foundation of linguistic research.

Sketch Engine is a more advanced, commercial corpus management software. It is used for conducting detailed analyses on large amounts of data in language research and pedagogical studies. Sketch Engine offers advanced tools for analyzing linguistic structures. For instance, the 'word sketch' feature allows researchers to examine the functions and meaning relations of words within sentences, making it useful for analyzing how certain words are used in different contexts in educational materials. Additionally, Sketch Engine can be used to compare textbooks and conduct in-depth research on how language education policies are implemented in different countries

Thanks to corpus management software, linguistic analyses on digitized textbooks become more systematic. These software tools serve as fundamental instruments for managing, analyzing, and visualizing the data obtained from textbooks and are used effectively by language researchers.

4. NATURAL LANGUAGE PROCESSING (NLP)

Natural language processing (NLP) technologies play an important role in the processes of data collection, processing, and analysis from textbooks. NLP is a field of technology developed to enable computers to understand, interpret, and process human language. In addition to linguistic research, it is also an indispensable tool for educational and pedagogical studies. NLP techniques are widely used to convert textbooks into digital corpora and systematically analyze the data obtained from them.

The most significant contribution of NLP technologies in the process of data collection from textbooks is their ability to automatically process and analyze large volumes of data. This allows researchers to automatically analyze the frequency of language structures, word usage, and grammatical patterns. For example, identifying the most frequently used words in a language textbook can be done quickly using NLP tools. Additionally, NLP technologies can be employed to examine how grammatical structures are used in specific contexts.

Artificial intelligence models, such as machine learning algorithms, and data mining techniques play a crucial role in the analysis of textbooks, automatically identifying linguistic patterns and trends. AI-based models can process linguistic data and automatically classify which structures are used and how in language education materials. Particularly when integrated with natural language processing (NLP) techniques, AI models greatly facilitate the identification of linguistic patterns and the analysis of word usage in textbooks. Data mining analyzes large datasets within textbooks to uncover relationships between language structures and how these structures are taught. These analyses help achieve more efficient and comprehensive results in language education research.

Additionally, automatic analysis methods enable quick and accurate results on linguistic data. These methods are used to identify deficiencies in language teaching materials and to restructure teaching programs based on these findings. For example, an AI model can focus on grammatical structures or words that are not adequately covered in language textbooks, contributing to making educational materials more efficient.

In conclusion, NLP technologies and AI-based models enable a more effective and systematic analysis of language education materials. These technologies allow for more comprehensive processing of data obtained from

digitized textbooks and play a significant role not only in linguistic research but also in the development of educational policies.

5. TEXTBOOKS AS A DATA SOURCE FOR RESEARCH

Textbooks have evolved from being merely tools used for educational purposes to becoming valuable data sources for research. Designed to be used in education systems for many years, textbooks are structured according to specific curricula and language levels, providing systematic, consistent, and comprehensive datasets that can be utilized in linguistic research. In this context, data obtained from textbooks contribute significantly to the study of language teaching, language use, and language structures.

The contribution of textbooks to linguistic research can be examined on several levels. First, textbooks can be used to analyze how specific language structures are taught. The grammatical structures, vocabulary, and syntactic patterns used in language instruction are determined according to different language levels and are systematically presented in textbooks. Researchers can examine digitized textbooks to analyze which structures are used to teach a language, how these structures are sequenced, and which grammatical elements are emphasized at various levels. These analyses are crucial for evaluating the effectiveness of language teaching and identifying difficulties in the language learning process.

For example, a researcher who wants to demonstrate that certain grammatical structures are more complex for students during the language learning process can examine the frequency and presentation of these structures in textbooks. This data provides important insights in linguistic research regarding which structures are emphasized more in language teaching and which ones are introduced later. Additionally, by examining the transitions between language levels, it becomes possible to better understand how the language is taught progressively.

Data obtained from textbooks are also of great importance for analyzing the vocabulary used in language teaching. Word frequency plays a critical role in language instruction, as the words students need to learn are determined based on their frequency. Researchers can use digitized textbooks to conduct word frequency analyses and identify which words are taught at different levels. This plays a significant role in the development of language teaching strategies. For example, the most frequently used words at the beginner level of a language can be analyzed, and how these words are presented to students can be examined. In this way, it can be determined how well the teaching materials meet the needs of students and which words need to be emphasized more

Textbooks also serve as a valuable resource for tracking linguistic changes. Comparing textbooks from different years can reveal what changes have occurred in the teaching of a language over time. This is especially useful for examining shifts in language policies and pedagogical approaches in education. For example, by comparing textbooks from the 1980s with those from the 2020s, it is possible to identify changes in vocabulary selection, the frequency of grammatical structures, and teaching methods. Such comparative analyses show how the language has evolved and how educational materials have adapted to this evolution.

Data obtained from textbooks can also be used to examine the cultural contexts related to language education. Language teaching is not only about grammar and vocabulary but also includes cultural contexts. Textbooks help language learners understand the cultural elements of the target language. The levels at which different cultural elements are introduced and how they are taught can be analyzed using data from textbooks. For example, the presentation of symbolic figures, traditions, or historical events of a particular culture in textbooks can be used to help language learners gain cultural awareness. This data provides researchers with insights into how cultural transmission is achieved in language learning and which teaching materials are used for this purpose.

Another important aspect of textbooks is that they allow for comparisons between different curricula. Students learning the same language in different countries may encounter different curricula. Therefore, converting textbooks into digital formats and using them as a data source provides an important tool for international comparative language education research. For example, comparing the textbooks used for German learners in Turkey, Germany, and Japan can reveal the similarities and differences in the language education approaches in these countries. Such comparisons can be used to examine the pedagogical approaches in language teaching and identify which elements of the target language are emphasized.

Another significant contribution of textbooks used for research purposes is the identification of deficiencies and areas for improvement in language learning. It can be detected in textbooks when certain topics are not sufficiently emphasized or when some grammatical structures are not adequately covered. Such shortcomings can be revealed more quickly and systematically through the analysis of textbooks as digital corpora. Researchers can determine which topics are less represented or which language structures are lacking at specific language levels, and they can make recommendations for restructuring language teaching programs.

Finally, the integration of data obtained from textbooks with technological innovations is also important. Today, natural language processing (NLP)

and AI-based analysis methods are widely used to process linguistic data. The analysis of large datasets from textbooks with such technologies allows for a more comprehensive examination of patterns and trends in language teaching. These technologies make it possible to automatically analyze linguistic structures, word choices, and pedagogical approaches in textbooks and obtain meaningful results.

In conclusion, textbooks offer a rich data source for linguistic research. Many important topics, such as language structures, vocabulary, cultural contexts, and pedagogical approaches, can be examined using data obtained from textbooks. In an increasingly digital world, the use of textbooks as a data source holds great potential for the future of linguistic and language education research.

6. CONCLUSION AND FUTURE PERSPECTIVES

The advantages of using classic printed textbooks as digital corpora for linguistic and educational research are becoming increasingly evident. The digitization of printed textbooks has provided researchers with the opportunity to conduct more systematic and comprehensive analyses on large amounts of data. This offers valuable insights for studies on language learning and teaching, language usage, and cultural transmission. The digitization of classic printed textbooks not only facilitates data storage and accessibility but also allows for more in-depth research. Further significant developments in this area are expected in the future.

One of the greatest advantages offered by digitized textbooks is access to large-scale datasets. When traditionally printed textbooks are converted into digital formats, it enables more systematic linguistic analyses. Using text mining, natural language processing (NLP), and data analysis methods, researchers can examine the frequency of grammatical structures, the richness of vocabulary, and trends in language teaching in greater detail. By utilizing digitized printed textbooks, researchers can focus on specific language structures and analyze how these structures are used in language teaching and which levels they are emphasized. These analyses contribute not only to linguistic theories but also provide recommendations for making teaching materials more effective.

With the digitization of classic textbooks, researchers can better examine historical changes in language education by comparing books from different years. For example, a set of language textbooks used from the 1960s to the 2000s can demonstrate how the vocabulary of a particular language has changed over time, how grammatical structures have evolved, and the paths pedagogical approaches have followed. Such comparative studies offer an important opportunity to understand the development of methods and content used in language teaching. From a language education research

perspective, historical data holds great significance, and digitized textbooks provide a rich resource in this regard.

Another advantage of using digitized textbooks as a data source in research is the ability to compare different cultural and linguistic contexts. Textbooks used in different countries reflect the various approaches used to teach language and culture. For example, comparing textbooks for German language education in different countries can reveal how pedagogical approaches in language teaching differ. These analyses provide important insights into how language teaching is enriched with cultural elements and how these elements are addressed in textbooks. In the future, such comparisons are expected to become even more common in international language education research.

The use of textbooks as digital corpora contributes not only to language education but also to broader linguistic research. Research on language usage, in particular, gains a wider perspective through this digital data. Comparisons between texts can reveal how expressions and structural elements in a language have changed over time, which words are used more frequently, and which grammatical structures are emphasized more. These types of analyses help linguists better understand the dynamics of language.

In the future, significant developments are expected in the use of classic printed textbooks as digital corpora. As NLP and AI technologies continue to evolve, future advancements may include real-time corpus analysis and adaptive language teaching tools, further revolutionizing both research and educational practices. AI-based analysis tools can process large datasets, automatically classify language structures, and reveal how language elements are used in teaching materials. These technologies can make the materials used in language teaching more efficient and effective, offering important contributions.

Additionally, the contributions of digitalization to education should not be overlooked. The digitalization of printed textbooks offers significant advantages, particularly in terms of updating and distributing educational materials. While the renewal and distribution of traditional printed books require lengthy processes, the updating and sharing of digital materials are much faster and easier. This increases access to up-to-date and reliable information at all levels of education. In language teaching especially, providing students with access to the most current grammatical structures and vocabulary can accelerate the language learning process and make it more effective.

In conclusion, the digitization of classic printed textbooks and their use in research offer significant contributions to linguistic studies. These books serve as valuable data sources for examining trends in language teaching,

pedagogical approaches, and language usage. In the future, digital corpora supported by AI and NLP technologies will allow for more comprehensive and efficient outcomes in both language education and linguistic research. The opportunities presented by using textbooks as digital corpora are seen as a promising development for the future of language education and linguistic studies.

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CHAPTER 18

DETERMINATION OF WOMEN'S CAR PREFERENCES: GREY RELATIONAL ANALYSIS METHOD

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1. INTRODUCTION

Automobiles have become tools that make people's lives easier with the developing technology, greatly shorten their transportation time from one place to another and allow them to move freely. Simple vehicles, which were initially used only for short distances, have evolved over time into advanced automobiles that provide great convenience and comfort for very long journeys. Today, automobiles are an indispensable means of individual transportation thanks to their comfort, safety equipment, speed and practicality, while deeply affecting social and economic life as an integral part of urbanization and modern life.

Owning a personal automobile has become a basic need rather than a luxury for many people today. Especially for those living in big cities, the hectic pace of work, school and social life necessitates fast and comfortable transportation. However, when owning a car, it is necessary to consider many different features, not just price. Factors such as fuel efficiency, safety equipment, interior space and technological features affect both the driving experience and costs in the long run. Therefore, individuals should make an informed decision by considering their needs and long-term usage habits when choosing a vehicle.

In studies on automobile preference, the general aim is to select the most appropriate option according to the specified criteria and to determine the factors affecting the preferences. In their study, Choo and Mokhtarian (2004) aimed to determine the impact of the factors they identified on individuals' vehicle preferences and to develop a selection model based on these factors as well as demographic variables. Individuals' travel attitudes, personalities, lifestyles, and mobility were identified as factors that may affect vehicle preferences. As a result of the study, the identified factors were determined to influence individual drivers' preference for vehicle type. Şişman and Eleren (2013) utilized the Grey Relational Analysis and the ELECTRE methods to determine the most suitable automobile among those listed for sale on a website. In their study, which involved a comparison of the two methods, they

observed that the results obtained from each method differed. Arıtan and Akyüz (2015) used the Markov chain method to determine the loyalty of automobile users to automobile brands and to predict their brand preferences in the future periods. As a result of the analysis, they determined the relationship between the demographic characteristics of automobile users their brand preferences, and their brand loyalty towards automobile brands in the market. Ruhlusaraç and Nakip (2016) examined the relationship between the demographic structures of academicians and their automobile preferences and usage. As a result of the study, monthly income, age, and gender were determined as demographic factors affecting academicians' automobile purchase preferences. Kester, Sovacool and Heida (2019) aimed to reveal the perspective of children, who are the future car drivers, on electric vehicles and their thoughts about the advantages and disadvantages of personal vehicles. The data of the study were obtained from children aged 9-13 living in the Netherlands and Denmark. The analysis revealed that children see the environmental impact of cars as a disadvantage and are aware of electric vehicles and their main benefits. Connor et al. (2022) examined the influence of the Big Five personality traits: openness, agreeableness, extraversion, conscientiousness, and neuroticism along with narcissism, on individuals' automobile preferences. The study revealed that younger, extroverted, and narcissistic individuals tend to prioritize style and performance when purchasing a car, whereas older, agreeable, and conscientious individuals place greater importance on safety. Polat and Süzülmüş (2024) used the Markov chain method to predict the automobile brand, fuel type, and transmission type preferences of automobile users. The data obtained through the survey method were used to analyze the automotive preferences of males and females; low, middle and high income; young, middle and old age individuals comparatively.

The automobile industry provides drivers with a wide range of brands and models. Each brand and model differ in terms of physical equipment, design and performance. This diversity in the sector enables users to find the vehicles that suit their needs and lifestyles. From small and economical cars to spacious

cars with large interior volumes or performance-oriented sports cars, there are many options available for those who want to buy a car. Given that purchasing a car represents a long-term investment, drivers typically conduct thorough research on various models before making an informed decision to select the most suitable option.

The active participation of women in the workforce, combined with their responsibilities toward children, family, and personal commitments, has made vehicle usage an essential aspect of their daily lives. Balancing routine activities and meeting family needs has become increasingly reliant on having access to a personal vehicle. In particular, the growing traffic challenges in densely populated urban areas have made it increasingly difficult to adhere to schedules and maintain the pace of modern life. In today's contemporary era, women not only play active roles within the household but also in social and professional spheres, gaining economic empowerment. Consequently, there is a need to identify the factors influencing women's preferences for vehicles that align with their lifestyle and provide comfort and convenience.

The aim of this study is to identify the factors influencing women's vehicle preferences and to select the most suitable car based on the vehicles they use. To achieve this goal, the Grey Relational Analysis method was employed. In this context, the methodology is explained in the second section. The third section presents the findings of the research, and finally, the results are discussed in the fourth section.

2. METHODOLOGY

Grey Systems Theory is a mathematical method developed by Ju-Long Deng in 1982 (Deng, 1982). This method, which is based on analyzing uncertain and incomplete data, can be easily applied to problems from many different fields without the need for complicated and complex formulas compared to other mathematical approaches (Liu et al., 2011, p.3).

The Grey Systems Theory, which can be applied to the estimation problems of systems with small sampling and lack of information, has been divided into various sub-disciplines since it was first introduced. One of the important sub-disciplines of this theory is the gray relational analysis method. The Grey Relational Analysis is a method used to solve complex interrelated problems between multiple factors and variables (Bektaş and Tuna, 2013, p.188).

The Grey Relation Analysis methodology is as follows:

Step 1: Define the problem

$$\chi_i = (\chi_i(j), \dots, \chi_i(n)), \text{ alternatives } (i = 1, \dots, m), \text{ criteria } (j = 1, \dots, n) \quad (1)$$

The χ_i series can be represented as a matrix form:

$$\chi_i = \begin{bmatrix} \chi_1(1) & \chi_1(2) & \cdots & \chi_1(n) \\ \chi_2(1) & \chi_2(2) & \cdots & \chi_2(n) \\ \vdots & \vdots & \ddots & \vdots \\ \chi_m(1) & \chi_m(2) & \cdots & \chi_m(n) \end{bmatrix} \quad (2)$$

Step 2: Determine the reference series

$$\chi_0 = (\chi_0(1), \chi_0(2), \dots, \chi_0(n)) \quad (3)$$

The reference series may appear through a minimum or maximum values of the alternative series or a nominal value (Hamzaçebi and Pekkaya, 2011, p.9189). If the criterion requires maximization (minimization), the reference series value of the relevant criterion takes the maximum (minimum) value of the alternative series.

Step 3: Normalization

Since the series used in the problem are measured in different units, a normalization process is required to make them comparable. The normalization process can occur in three types:

i. Higher is better:

$$\chi_i^* = \frac{\chi_i(j) - \min_j \chi_i(j)}{\max_j \chi_i(j) - \min_j \chi_i(j)} \quad (4)$$

ii. Lower is better:

$$\chi_i^* = \frac{\max_j \chi_i(j) - \chi_i(j)}{\max_j \chi_i(j) - \min_j \chi_i(j)} \quad (5)$$

iii. Nominal is better: If the target value is $\chi_{ob}(j)$ and $\max_j \chi_i(j) \geq \chi_{ob}(j) \geq \min_j \chi_i(j)$

$$\chi_i^* = \frac{|\chi_i(j) - \chi_{ob}(j)|}{\max_j \chi_i(j) - \min_j \chi_i(j)} \quad (6)$$

After the original data series is normalized, the matrix (eq. 7) can be revised as:

$$\chi_i^* = \begin{bmatrix} \chi_1^*(1) & \chi_1^*(2) & \cdots & \chi_1^*(n) \\ \chi_2^*(1) & \chi_2^*(2) & \cdots & \chi_2^*(n) \\ \vdots & \vdots & \ddots & \vdots \\ \chi_m^*(1) & \chi_m^*(2) & \cdots & \chi_m^*(n) \end{bmatrix} \quad (7)$$

Step 4: Compute the distance of $\Delta_{0i}(j)$

$$\Delta_{0i}(j) = |\chi_0^*(j) - \chi_i^*(j)|$$

$$= \begin{bmatrix} \Delta_{01}(1) & \Delta_{01}(2) & \cdots & \Delta_{01}(n) \\ \Delta_{02}(1) & \Delta_{02}(2) & \cdots & \Delta_{02}(n) \\ \vdots & \vdots & \ddots & \vdots \\ \Delta_{0m}(1) & \Delta_{0m}(2) & \cdots & \Delta_{0m}(n) \end{bmatrix} \quad (8)$$

Step 5: Calculate the grey relational coefficient

$$\gamma_{0i}(j) = \frac{\Delta_{min} + \xi \Delta_{max}}{\Delta_{0i}(j) + \xi \Delta_{max}} \quad (9)$$

Where $\Delta_{max} = \max_i \max_j \Delta_{0i}(j)$, $\Delta_{min} = \min_i \min_j \Delta_{0i}(j)$, and $\xi \in [0,1]$.

Step 6: Calculate the grey relational grade

Γ_{0i} is the degree of grey coefficient. If the weights (w_i) of all criteria is equal, Γ_{0i} can be calculated by eq. (10).

$$\Gamma_{0i} = \frac{1}{n} \sum_{j=1}^n \gamma_{0i}(j) \quad (10)$$

If the weights (w_i) of all criteria is different, Γ_{0i} can be calculated by eq. (11).

$$\Gamma_{0i} = \sum_{j=1}^n [w_i(j) \cdot \gamma_{0i}(j)] \quad (11)$$

3. APPLICATION

In this study, the Grey Relational Analysis method was used to identify the most suitable vehicle aligned with women's preferences. To achieve this,

criteria influencing vehicle preferences were defined. The selected criteria included vehicle body type, vehicle age, fuel system, transmission type, vehicle color, parking sensor, and sunroof. Data for the analysis were collected from women residing in Adana.

Table 1: Criteria and Descriptions

C1	Vehicle body type	A weight of 3 was assigned for SUVs, 2 for sedans, and 1 for hatchbacks.
C2	Age of vehicle	A weight of 2 for used vehicles and 1 for new vehicles is given.
C3	Fuel system	A weight of 4 was assigned for gasoline vehicles, 3 for hybrid vehicles, 2 for diesel vehicles, and 1 for electric vehicles.
C4	Transmission type	A weight of 2 was assigned for automatic transmission and 1 for manual transmission.
C5	Vehicle color	A weight of 4 was assigned for grey, 3 for white, 2 for black, and 1 for blue.
C6	parking sensor	A weight of 2 was assigned if the vehicle has a parking sensor, and 1 if it does not.
C7	Sunroof	A weight of 2 was assigned if the vehicle has a sunroof, and 1 if it does not.

The criteria are weighted for ease of calculation. Fuel system and vehicle color criteria are weighted according to Turkish Statistical Institute's Road Motor Vehicles, August 2024 report (TURKSTAT, 2024). Vehicle body type, vehicle age and transmission type criteria were weighted according to the Automotive Distributors' and Mobility Association's 2024 report (ODMD, 2024). All criteria will be evaluated according to the biggest is best principle.

3.1. Findings:

The $m \times n$ decision matrix created in step 1 is given in Table 2. A_i 's indicate automotive preferences, with $i=1, \dots, 10$.

Table 2: Decision Matrix

	C1	C2	C3	C4	C5	C6	C7
A1	3	1	4	2	1	2	2
A2	1	2	4	2	3	2	1
A3	3	1	2	2	4	2	1
A4	3	2	4	2	3	2	1
A5	3	1	2	2	3	2	2
A6	2	1	4	2	3	2	1
A7	2	1	4	1	3	1	1
A8	2	1	4	2	3	2	2
A9	3	1	3	2	2	2	1
A10	1	1	4	2	1	2	2

A reference series should be created to find the comparable series of alternatives that is closest to the reference series. The comparison matrix is created by adding the reference series as the first row to the decision matrix in Table 3. The reference series is formed through the maximum values of the alternative series as shown in step 2.

Table 3: Reference Series

	C1	C2	C3	C4	C5	C6	C7
RS	3	2	4	2	4	2	2
A1	3	1	4	2	1	2	2
A2	1	2	4	2	3	2	1
A3	3	1	2	2	4	2	1
A4	3	2	4	2	3	2	1
A5	3	1	2	2	3	2	2
A6	2	1	4	2	3	2	1
A7	2	1	4	1	3	1	1

A8	2	1	4	2	3	2	2
A9	3	1	3	2	2	2	1
A10	1	1	4	2	1	2	2

Formula (4) in Step 3 is used to normalize the data and the normalization matrix is given in Table 4.

Table 4: Normalization Matrix

	C1	C2	C3	C4	C5	C6	C7
RS	1,000	1,000	1,000	1,000	1,000	1,000	1,000
A1	1,000	0,000	1,000	1,000	0,000	1,000	1,000
A2	0,000	1,000	1,000	1,000	0,500	1,000	0,000
A3	1,000	0,000	0,000	1,000	0,750	1,000	0,000
A4	1,000	1,000	1,000	1,000	0,500	1,000	0,000
A5	1,000	0,000	0,000	1,000	0,500	1,000	1,000
A6	0,500	0,000	1,000	1,000	0,500	1,000	0,000
A7	0,500	0,000	1,000	0,000	0,500	0,000	0,000
A8	0,500	0,000	1,000	1,000	0,500	1,000	1,000
A9	1,000	0,000	0,500	1,000	0,250	1,000	0,000
A10	0,000	0,000	1,000	1,000	0,000	1,000	1,000

The calculation of the distance between the normalized reference series value and the normalized alternative values is performed with the help of equation (8) in Step 4 and the values are shown in Table 5.

Table 5: Absolute Value Table

	C1	C2	C3	C4	C5	C6	C7
RS	1,000	1,000	1,000	1,000	1,000	1,000	1,000
A1	0,000	1,000	0,000	0,000	0,750	0,000	0,000
A2	1,000	0,000	0,000	0,000	0,250	0,000	1,000
A3	0,000	1,000	1,000	0,000	0,000	0,000	1,000
A4	0,000	0,000	0,000	0,000	0,250	0,000	1,000

A5	0,000	1,000	1,000	0,000	0,250	0,000	0,000
A6	0,500	1,000	0,000	0,000	0,250	0,000	1,000
A7	0,500	1,000	0,000	1,000	0,250	1,000	1,000
A8	0,500	1,000	0,000	0,000	0,250	0,000	0,000
A9	0,000	1,000	0,500	0,000	0,500	0,000	1,000
A10	1,000	1,000	0,000	0,000	0,750	0,000	0,000

The Grey Correlation Coefficients are calculated using the formula (9) in the Step 5, and the Grey Correlation Coefficient Matrix is shown in Table 6.

Table 6: Grey Correlation Matrix

	C1	C2	C3	C4	C5	C6	C7
A1	1,000	0,333	1,000	1,000	0,333	1,000	1,000
A2	0,333	1,000	1,000	1,000	0,600	1,000	0,333
A3	1,000	0,333	0,333	1,000	1,000	1,000	0,333
A4	1,000	1,000	1,000	1,000	0,600	1,000	0,333
A5	1,000	0,333	0,333	1,000	0,600	1,000	1,000
A6	0,500	0,333	1,000	1,000	0,600	1,000	0,333
A7	0,500	0,333	1,000	0,333	0,600	0,333	0,333
A8	0,500	0,333	1,000	1,000	0,600	1,000	1,000
A9	1,000	0,333	0,500	1,000	0,429	1,000	0,333
A10	0,333	0,333	1,000	1,000	0,333	1,000	1,000

In Step 6, the Gray Relational Degrees are calculated using the Gray Relational Coefficients presented in Table 6. These values are derived without applying any weight to the criteria, implying that all criteria are treated as equally significant. Based on the Gray Relational Degrees values, the alternatives are ranked, with the highest Gray Relational Degrees value receiving the top rank. Accordingly, **A4** secured the first position, followed by **A1** in second, and **A8** in third place. **A7**, having the lowest Gray Relational Degrees, ranked last. This ranking reflects the relative performance of the alternatives under the assumption of equal importance across all criteria.

Table 7: Grey Relational Degrees and Rankings

	C1	C2	C3	C4	C5	C6	C7	Γ_{0i}	Ranking
A1	1,000	0,333	1,000	1,000	0,333	1,000	1,000	0,810	2
A2	0,333	1,000	1,000	1,000	0,600	1,000	0,333	0,752	4
A3	1,000	0,333	0,333	1,000	1,000	1,000	0,333	0,714	7
A4	1,000	1,000	1,000	1,000	0,600	1,000	0,333	0,848	1
A5	1,000	0,333	0,333	1,000	0,600	1,000	1,000	0,752	4
A6	0,500	0,333	1,000	1,000	0,600	1,000	0,333	0,681	8
A7	0,500	0,333	1,000	0,333	0,600	0,333	0,333	0,490	10
A8	0,500	0,333	1,000	1,000	0,600	1,000	1,000	0,776	3
A9	1,000	0,333	0,500	1,000	0,429	1,000	0,333	0,656	9
A10	0,333	0,333	1,000	1,000	0,333	1,000	1,000	0,714	6

In cases where the criteria hold different levels of importance, the criteria weights (w_i) assigned by the decision-makers are provided in Table 8. Under this approach, the Gray Relational Degrees are computed as the weighted sum of the Gray Relational Coefficients, where each coefficient is multiplied by its corresponding w_i (eq.11). Based on these weighted calculations, the preferences are ranked, with the highest value receiving the top position. As a result, **A4** ranks first, followed by **A1** in second place, and **A5** in third place. **A7**, having the lowest score, ranks last. Therefore, different rankings are generated based on the varying and equal weights assigned to the criteria, reflecting the impact of weight variation on the decision-making process.

Table 8: Grey Relational Degrees for Weighted Criteria and Alternative Rankings

	C1	C2	C3	C4	C5	C6	C7	Γ_{0i}	Ranking
w_i	0,200	0,100	0,100	0,200	0,150	0,150	0,100		
A1	1,000	0,333	1,000	1,000	0,333	1,000	1,000	0,833	2
A2	0,333	1,000	1,000	1,000	0,600	1,000	0,333	0,740	6
A3	1,000	0,333	0,333	1,000	1,000	1,000	0,333	0,800	4
A4	1,000	1,000	1,000	1,000	0,600	1,000	0,333	0,873	1

A5	1,000	0,333	0,333	1,000	0,600	1,000	1,000	0,807	3
A6	0,500	0,333	1,000	1,000	0,600	1,000	0,333	0,707	8
A7	0,500	0,333	1,000	0,333	0,600	0,333	0,333	0,473	10
A8	0,500	0,333	1,000	1,000	0,600	1,000	1,000	0,773	5
A9	1,000	0,333	0,500	1,000	0,429	1,000	0,333	0,731	7
A10	0,333	0,333	1,000	1,000	0,333	1,000	1,000	0,700	9

4. CONCLUSION AND RECOMMENDATIONS

The widespread use of cars has been part of the modern lifestyle. Today, the limitations of public transportation and the increasing importance of personal freedom have led individuals to drive. Owning a car has become a factor that saves time and improves quality of life, especially in cities. Especially after the pandemic, the need to use individual vehicles instead of public transportation has increased even more.

The decision to purchase a car is a significant one for an individual. Consumers do not base their car purchase solely on a single feature, as the importance (weight) assigned to each characteristic can vary. Different individuals may prioritize different criteria when evaluating a vehicle. For some, the fuel system may hold greater significance, while for others, factors such as color or interior features may be more important.

In this study, women's car preferences were analyzed, and the most suitable vehicle was selected based on the cars they currently drive. For the analysis, the Grey Relational Analysis method was chosen due to its applicability in situations with small sample sizes and uncertain problem contexts. Two separate analyses were conducted using this method. In the first analysis, all criteria were assigned equal importance, while in the second analysis, varying importance levels—i.e., different weights—were assigned to the criteria. As a result of the first analysis, the A4 option was identified as the most suitable car, followed by the A1 and A8 options, respectively. Upon analyzing these results, it is observed that both the A4 and A1 options are SUV-type vehicles. The higher structure and larger interior volume of SUVs,

compared to other vehicle types, make them preferable for women. Additionally, the fact that both vehicles feature automatic transmission and parking sensors contributes to their appeal, as these features are often valued by women drivers. An automatic transmission enhances driving comfort, particularly in city traffic, by reducing driver fatigue. This feature is especially important for women with demanding work schedules, as well as for those who are new to driving or feel uneasy in traffic. Additionally, a parking sensor simplifies parking in tight spaces, making driving safer and providing extra reassurance for women drivers. Parking is often one of the most significant challenges for women in traffic, which makes these features particularly valuable in addressing their daily driving needs and comfort expectations. As a result of the second analysis, the most suitable car was again identified as the A4, like the first analysis. The A4 was followed by the A1 and A5 options, respectively. However, in the second analysis, where weights were assigned to the criteria, the A5 option ranked third, a shift from its position in the first analysis.

The A7 ranked last in both analyses. This can be explained by the fact that the A7 has a manual transmission and lacks features such as a parking sensor and sunroof. The manual transmission requires more effort, especially in urban traffic, while the lack of a parking sensor and sunroof may not have satisfied driver expectations in terms of driving comfort and in-car experience. These features stand out as factors affecting the preferences of women, especially those who seek practicality and comfort in daily life.

Car driving is not a luxury but a necessity for women, who have a strong presence in all areas of life. Although they drive much more carefully and cautiously than many members of the opposite sex, we witness that women are subjected to psychological violence in traffic. However, regardless of their age, women's ability to maintain their economic independence and their presence in working life has led to the need to drive. The strengthening economic status of women has led them to determine some criteria in their vehicle preferences. The results of the study show that women prefer SUVs,

automatic transmission vehicles and vehicles with parking sensors, which make them feel safer and more comfortable.

In this study, the most suitable vehicle was determined based on women's automobile preferences. For future research, multi-criteria decision-making methods such as the Analytical Hierarchy Process (AHP), TOPSIS, and Data Envelopment Analysis (DEA) can be utilized alongside the Grey Relational Analysis method to provide a more comprehensive evaluation of efficiency and performance measures across car preferences. Furthermore, the findings from these analyses could serve as valuable data for the development of marketing strategies and the design of vehicle specifications tailored to women's automobile preferences.

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CHAPTER 19

PARTY PROLIFERATION UNDER COMPETITIVE AUTHORITARIAN REGIMES: THE CASE OF TURKEY

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Introduction

Many scholars contend that the Adalet ve Kalkınma Partisi (AKP) has increasingly exhibited clear authoritarian tendencies, particularly since its third term in office (Özbudun, 2014; Taş, 2015; Sözen, 2019; Somer, 2019; Gümüştü, 2023). This shift toward authoritarianism has weakened checks and balances, instrumentalized the judiciary, and fostered a personalized style of leadership. Institutional mechanisms have eroded, political polarization has intensified, and government control over the media has tightened. The erosion of democratic principles is reflected in the findings of the Rule of Law Index 2024, which assesses adherence to legal principles across 142 countries. Turkey ranks 117th overall, 133rd in the *fundamental rights* sub-category, and 135th in the *constraints on government powers* sub-category. These rankings underscore the significant weakness of the rule of law in Turkey compared to democratic countries, particularly in areas crucial for safeguarding civil liberties and ensuring horizontal accountability (World Justice Project, 2024).

Recent studies have examined the significant effects of authoritarianism on democracy, party institutionalization, and party competition in Turkey. Despite declining social support due to poor economic management and anti-democratic practices, the AKP has managed to retain power by changing the form of government, fueling affective polarization, and weakening the link between voter support and government performance. In addition to the existing unfair political competition in terms of the use of public resources and media access, the AKP intensified its propaganda campaign to demonize the opposition (Esen, Gümüştü and Yavuzyılmaz, 2023). Authoritarianism has also eroded the AKP's institutional identity, leading to the disappearance of intra-party democracy, increased personalization, and a more leader-oriented party (Kumbaracıbaşı, 2020; Yardımcı-Geyikçi and Yavuzyılmaz, 2022). Electoral institutions have also been affected by authoritarianism, with the AKP using pre-electoral alliances to counter increasing political fragmentation (Ayan Musil, 2024). While some have examined the relationship between authoritarianism and the emergence of splinter parties from larger parties (Tanca, 2024), the broader impact of authoritarianism on party competition has not been sufficiently explored. This includes its effects on new parties, both inside and outside parliament, as well as its relationship with the fragmentation of the party system and the proliferation of political parties.

In countries with democratic backsliding, elections often serve to consolidate the regime, as the ruling party retains its majority and the party system remains relatively stable, as seen in Hungary, Albania, Serbia, or Venezuela. However, in Turkey, despite an uneven playing field, the ruling party has consistently lost support from election to election, while the fragmentation of the party system has increased, and the number of political parties has proliferated. Following the 2017 constitutional referendum,

Turkey experienced a surge in political party formation, with 102 new parties established by 2024. In the 2023 general elections, 24 parties participated – the highest number since 1950. What political developments in Turkish politics have driven the rapid emergence of new parties in recent years? This article explores the link between AKP's authoritarian rule and the proliferation of political parties.

Democratic backsliding and political competition in Turkey

Most experts on Turkish politics characterize the country as either a democracy with limited freedoms, a system where the majority rules unchecked, or even an authoritarian regime consolidating power under a single leader. Consequently, they employ terms such as *delegative*, *illiberal*, or *majoritarian democracy*, and *electoral* or *competitive authoritarianism*. For example, Esen and Gümüşçü (2016:1853) find the concept of competitive authoritarianism more appropriate, asserting that Turkey should be classified as an authoritarian regime rather than merely a system lacking democracy. They contend that the political regime as a whole, rather than just the electoral system, must be examined to fully understand Turkey's current trajectory.

Competitive authoritarian regimes occupy a middle ground between fully authoritarian regimes and democracies. On the one hand, elections are competitive. Major opposition candidates are typically not excluded, opposition parties can campaign openly, and large-scale fraud is minimal. On the other hand, these elections are often neither fully free nor fair. In such regimes, state institutions are frequently exploited for partisan purposes. Incumbents consistently have an advantage over the opposition, and the opposition's capacity to organize and compete in elections is significantly restricted (Levitsky and Way, 2010: 8-10). As incumbents use state institutions to consolidate their power, it blurs the lines between government and state. The electoral system is designed to favor incumbents. Opposition parties are weakened in various ways, including restrictions on media access and pressure tactics. In short, these regimes are competitive in the sense that opposition parties compete democratically for power, but authoritarian in the sense that the playing field is unevenly designed to favor the ruling party.

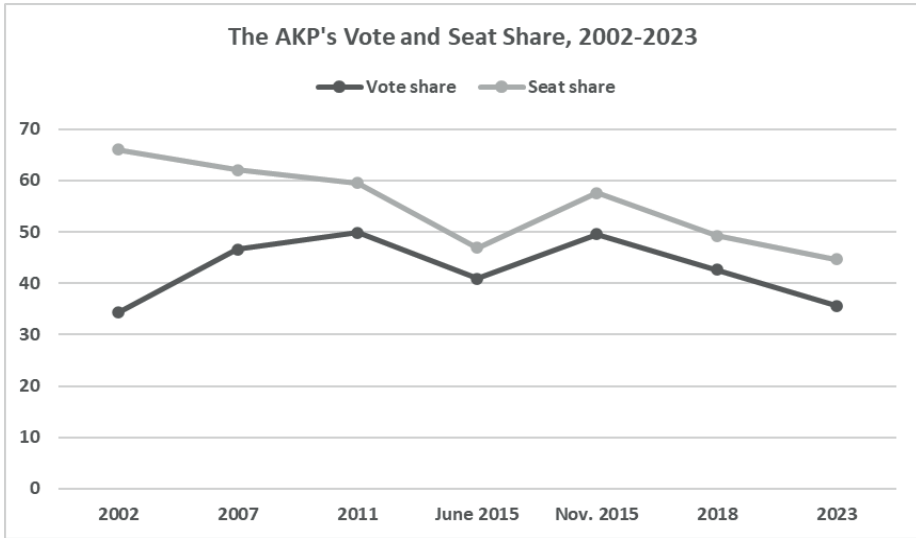


Figure 1. The AKP's Electoral Performance from 2002 to 2023

After the Gezi Park protests in June 2013, the AKP government's authoritarian tendencies intensified. In August 2014, Turkey effectively transitioned to a *de facto* presidential regime, with the president holding significant power beyond constitutional limits, following the first direct election of the president. After the AKP's loss in the June 2015 elections, Erdoğan refused to share power. A period of unprecedented terrorism and political violence ensued, culminating in early elections in November 2015, where the AKP regained sole power (Sayarı, 2016). The failed coup attempt of July 16, 2016, provided Erdoğan with the opportunity to further suppress civil liberties through a heightened security policy. In 2017, the constitutional referendum solidified the *de facto* presidential regime, reinforcing Turkey's authoritarian trajectory. The president's increased power further eroded horizontal accountability, while government control over the media made the electoral process increasingly skewed in favor of the ruling party, undermining fairness for opposition parties. As a result, Freedom House downgraded Turkey from *partially free* to *not free* for the first time since the 1980 coup, and this situation has not changed in the following years (Freedom House, 2018).

Despite an uneven playing field (Sözen, 2019; Esen, Gümüştü and Yavuzylmaz, 2023), the 2018 and 2023 elections revealed a significant shift in Turkish politics. First, the AKP has been unable to prevent the loss of votes. For instance, the AKP's share of the vote fell from 42.6% in 2018 to 35.6% in 2023, narrowing the gap with the main opposition party to just 10 points (see Figure 1). Second, in contrast to the 2002-2015 period, the party system has been fragmented at levels reminiscent of the 1990s. For example, in the

2023 general elections, the effective number of electoral parties (ENEP) rose to 4.54 and the effective number of parliamentary parties (ENPP) to 3.32 (3.80 thanks to MPs who switched to their own party), marking the highest level of fragmentation during the AKP era (see Figure 2).

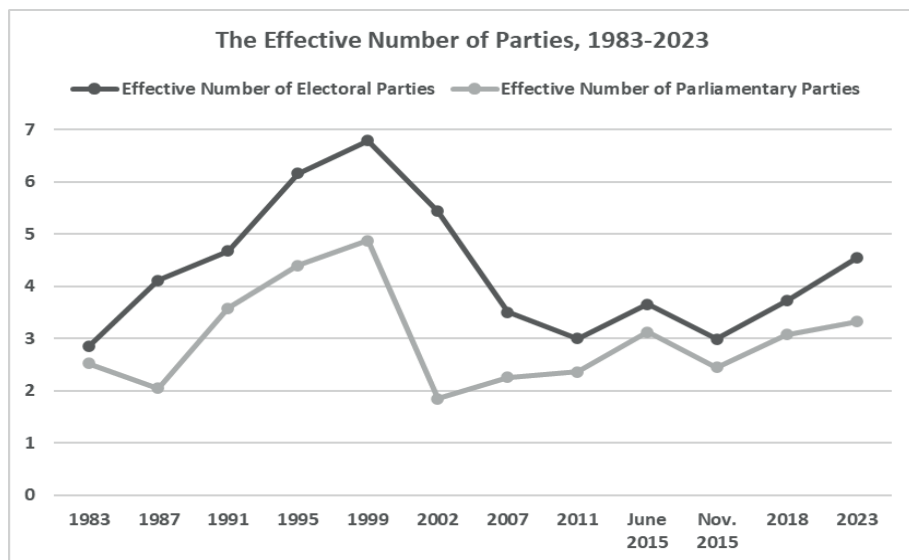


Figure 2. Party System Fragmentation from 1983 to 2023

A notable trend has been the emergence of new right-wing parties. The nationalist İyi Parti (İYİ), founded just seven months before the 2018 elections by MPs who had left the Milliyetçi Hareket Partisi (MHP), won 43 parliamentary seats in June 2018 with nearly five million voters (9.96%) and maintained strong support in the May 2023 elections. The Islamist Yeniden Refah Partisi (YRP), founded shortly after the 2018 elections and representing the Milli Görüş (*National Outlook*) tradition, was part of the People's Alliance in 2023. It secured 2.8% of the vote and 5 parliamentary seats, preventing some votes from going to the opposition. Another newly established right-wing party, the far-right nationalist Zafer Partisi (ZP), founded in 2021, participated in the 2023 elections as the Ancestral Alliance outside the two main blocs. Though it failed to pass the 7% threshold (receiving 2.2% of the vote), its candidate, the former MHP deputy Sinan Oğan, garnered 5.2% of the vote in the presidential race, playing a pivotal role in the election outcome by endorsing Erdoğan in the second round (BBC News Türkçe, 2023).

In addition, the May 2023 general elections produced a more pluralistic parliament with 14 parties winning seats, as some small parties overcame the threshold as a result of pre-election alliances and candidates from the lists of

the major parties returned to their own parties after being elected as MPs. As a result, the number of parties in parliament reached its highest level since 1950.

How can the recent proliferation of parties in Turkey be explained?

Since 1923, more than 400 political parties have been established in Turkey (TESAV, 2021; The Court of Cassation, 2024). Most of these parties have disappeared. Today, the number of active parties in Turkey is 162. 60 of the active parties were established between 1983 and 2016. The remaining 102 were founded after 2017 (see Figure 3). How can there be such a proliferation of parties at a time of democratic backsliding?

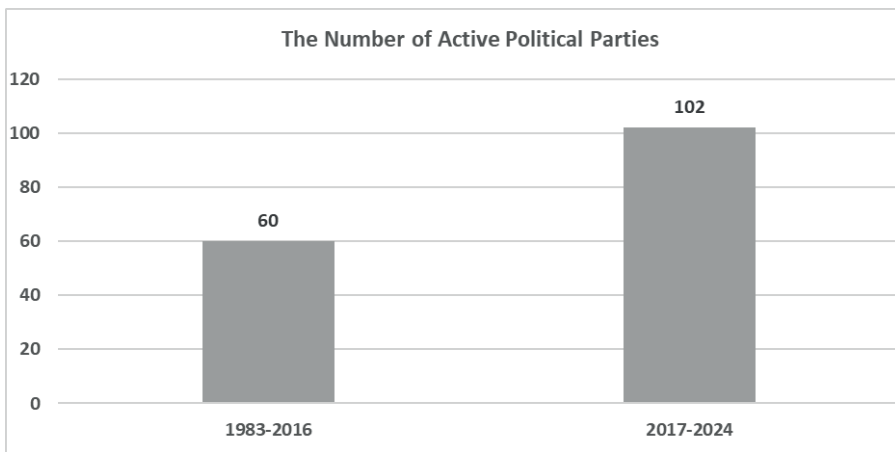


Figure 3. The Number of Active Political Parties from 1983 to 2024

In the wake of new political cleavages that emerged in the aftermath of the failed coup attempt in 2016, the AKP, facing declining support, formed an authoritarian power-sharing arrangement with the MHP to consolidate its power (Ayan Musil, 2024: 278). This alliance facilitated the transition to a presidential system through a controversial referendum in 2017, accelerating democratic backsliding and significantly altering the dynamics of party competition. The presidential system has further eroded the checks and balances and contributed to executive aggrandizement.

The post-2017 political developments, particularly the new electoral system and form of government, have significantly contributed to the rise of new parties. One key factor is the pre-election alliance system, which allowed smaller parties to bypass the 10% electoral threshold. For instance, in the 2018 general elections, the İYİ narrowly missed the 10% threshold but was able to enter parliament due to its alliance with the CHP. This brought the number of

parties in parliament to five – the highest since 2002 – highlighting alliance system directly contributed to the fragmentation of the party system. Without the pre-election alliance system, the İYİ would not have been able to enter the election and perhaps would have disappeared soon.

Ahead of the 2023 general elections, the electoral threshold was reduced to 7% for the first time since the post-1980 period. This change further encouraged political fragmentation, enabling seven parties from the People's Alliance, the Nation Alliance, and the Labor and Freedom Alliance to secure parliamentary seats. Moreover, the fact that 5.9% of votes were excluded due to not reaching the threshold highlights the potential for new alliances or parties to emerge in future elections, further intensifying political competition.

Table 1. The Ideological Distribution of Parties Formed Between 2017 and 2024

Party Ideology	n	%
Right-wing parties	73	72%
Left-wing parties	29	28%
Total	102	100%

Another factor is the increase in the number of right-wing parties seeking to capture the votes of those defecting from the AKP. Ruling parties often attempt to weaken the opposition by fostering divisions within its ranks. This strategy frequently leads to the proliferation of political parties. The AKP has actively employed this approach (Tanca, 2024: 18-19). However, despite the AKP's efforts, the number of parties in the parliament is increasing, sometimes even undermining its strategies. Indeed, given the diversity of political cleavages, the landscape of the Turkish party system between 2002 and 2011 was exceptional. The two-party system after 2002 was a temporary result of anger. However, this system began to unravel in 2007 when the MHP entered parliament, and more significantly in June 2015, when the HDP passed the electoral threshold. Even before this, the AKP's loss of votes in the 2009 local elections had already spurred efforts to create a center-right party that could challenge the ruling party. Indeed, since 2002, there has been a consistent push to form a party targeting the center-right vote in an attempt to oust the AKP from power. For instance, efforts to merge the Anavatan Partisi (ANAP) and the Doğru Yol Partisi (DYP), two dominant center-right parties of the 1990s, failed. Similarly, the Türkiye Partisi (TP), founded in 2009 by Abdüllatif Şener, a former AKP founder and deputy prime minister, failed to gain traction. However, the AKP's gradual decline in the last two elections has provided new hope for right-wing politicians, encouraging them to form new parties. Of the 102 parties founded after 2017, around 72% are ideologically right-wing (see Table 1). The AKP's share of the vote in 2023 is almost the same as it was in 2002. This decline has inevitably fostered the emergence of

new right-wing parties, regardless of the AKP's strategy. The AKP's strategy of supporting the YRP through the government-dominated media in an attempt to divide the opposition backfired in the 2024 local elections. The YRP emerged as the third-largest party, dealing significant damage to the AKP.

The two-round majority system in presidential elections has also contributed to the proliferation of political parties. This electoral framework compels parties to align themselves with one of the two major blocs, offering smaller parties, which would otherwise have limited influence under a parliamentary system, the opportunity to act as *kingmakers*. Most of these smaller parties have minimal membership and rely on narrow social bases. In a parliamentary system, these parties would lack the *blackmail* or *coalition* power necessary to impact governance. However, under the presidential system, they collaborate with larger parties striving to secure 50% of the vote through alliances, often in exchange for access to state resources. As a result, many new parties have gained bargaining power, even though their actual electoral strength remains uncertain due to their reliance on alliances rather than independent participation. For example, in the 2023 general elections, the Table of Six, an expanded version of the Nation Alliance, struggled to agree on a presidential candidate despite extended negotiations. CHP leader Kemal Kılıçdaroğlu insisted on his own candidacy, while the İYİ preferred other politicians, such as Istanbul Mayor Ekrem İmamoğlu or Ankara Mayor Mansur Yavaş, who appeared to have much stronger popular support according to polls. Ultimately, Kılıçdaroğlu secured the alliance's backing by agreeing to nominate candidates from smaller parties on CHP lists in exchange for their support of his candidacy. As a result, the Demokrasi ve Atılım Partisi (DEVA) won 15 seats each, the Gelecek Partisi (GP) and the Saadet Partisi (SP) each won 10, and the Demokrat Parti (DP) secured 3 seats. However, in the 2024 local elections, these parties participated independently, and their combined vote share remained below 2.5%. These developments illustrate how the dynamics of the presidential system encourage alliances and reshape the strategies and survival mechanisms of small parties, ultimately supporting the personalization of politics.

In elections proceeding to a second round, such as in 2023, the personalization of politics becomes more pronounced. Major party candidates negotiate with leaders of small parties, offering political concessions in exchange for their support. For instance, in the second round of the 2023 presidential election, some parties that did not qualify for the election, such as the Ülkem Partisi (ÜP), the Güzel Parti (GP) and the Aydınlık Geleceğin Partisi (AGP), agreed with the People's Alliance candidate Erdoğan (Aydınlık, 2023; Milliyet, 2023). Similarly, the Milliyetçi Türkiye Partisi (MTP) and the Doğru Parti (DP), which were not qualified to participate in the election, and the Milli Yol Partisi (MYP), which received only 0.03% of the votes in the parliamentary election, supported Kılıçdaroğlu, the Nation Alliance

candidate. (BirGün, 2023a; Cumhuriyet, 2023; BirGün, 2023b).

As a result, the number of political parties has increased significantly, with more parties actively participating in elections. Among the 24 political parties that contested the elections under their own party label, nine (approximately 40%) were established after 2017. Most of these parties barely meet the minimum number of local organizations required for elections. Additionally, many did not nominate candidates across all 87 constituencies in the 2023 general elections. For instance, the Adalet Birlik Partisi (ABP) contested in 47 constituencies, the MYP in 49, and the Güç Birliği Partisi (GBP) in 59. A similar pattern can be observed in the 2024 local elections. The Aydınlık Demokrasi Partisi (ADP) nominated candidates in just 4 out of 1393 municipalities. In short, even parties that claim to be election-oriented fail to exhibit the characteristics of competitive parties. This is evident in their limited local presence, the modest number of votes they receive, and the narrow range of constituencies they contest.

Many of the new parties are parties of political entrepreneurs. Examining the profiles of their leaders reveals that only a few are former senior party executives. Most come from outside institutional politics, having previously served as heads of associations, foundations, or chambers of artisans. Those with political experience have mostly been involved in local politics.

Although running in elections requires a large-scale organization, the process of establishing a party does not. Thanks to the rise of social media, political communication now demands far less economic and human capital than in the past. As a result, these parties do not rely on broad-based movements, civil society organizations, or founding cadres with substantial political and economic influence. Of the 102 parties established between 2017 and 2024, only nine have managed to attract more than 10,000 members. Even more strikingly, just three parties boast a membership exceeding 100,000. Thus, most of them were not created with the intent of competing in elections but rather serve other purposes within the political landscape.

In advanced democracies, political parties are seen as organizations that unite and represent the broad-based interests of citizens while coordinating competition for elected office. Consequently, classical theories primarily regard political parties as election-oriented organizations (Downs, 1957; Duverger, 1964; Epstein, 1980; Aldrich, 1995). In competitive authoritarian regimes, however, political parties are formed for non-electoral reasons. As Kelly (2020: 8) stated parties are formed to negotiate access to the state – rather than to contest and win elections – with founders and their followers seeking personal advancement through this access, whether via lucrative positions, material benefits from the ruling elite, or closer ties to the ruling party's patronage networks.

Some of these parties can be categorized as *telephone booth parties*, consisting mainly of family members or relatives, and are often the result of opportunistic self-promotion (Kelly, 2020: 5). For instance, the Merkez Ana Partisi (MAP) and the Milli Parti (MP) have a husband-and-wife party chairman and deputy chairman. Similarly, in the Cumhuriyet Partisi (CP), relatives occupy positions on the central decision-making board. These examples illustrate how certain political parties prioritize personal relationships and self-interest over broader organizational goals.

Conclusion

The proliferation of political parties in Turkey amidst the AKP's authoritarian rule highlights a complex and multifaceted dynamic. While democratic backsliding has eroded institutional checks and balances, leading to the consolidation of power by the ruling party, the subsequent fragmentation of the political system underscores the resilience of party competition in the face of authoritarianism. The rise of new parties, particularly right-wing factions, can be attributed to the changing electoral framework, including the introduction of pre-election alliances and the reduction of the electoral threshold, which enabled smaller groups to gain parliamentary representation. However, this proliferation is not merely a response to challenge the status quo; it also reflects the actions of opportunistic political entrepreneurs seeking access to state resources, making these new parties more vehicles for personal advancement than genuine electoral competition.

While the proliferation of parties may appear to enhance political competition, it often masks the underlying authoritarian tendencies of the regime. The fragmentation of the party system can weaken the opposition and facilitate the incumbent party's continued dominance. Furthermore, the emergence of numerous small parties can contribute to political instability, undermining effective governance. To address this issue, it is crucial to strengthen democratic institutions while ensuring a level playing field. Ultimately, the future of Turkish democracy depends not only on restoring democratic norms and values but also on the reform of electoral and political institutions that can support the development of a vibrant, competitive party system.

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CHAPTER 20

LABOR FORCE PARTICIPATION TRENDS IN TÜRKİYE: 1988-2006¹

Serkan DEĞİRMENCİ²

1 This study is derived from the author's master thesis titled "A Decomposition Analysis of Labor Force Participation Trends in Turkey: 1988-2006" supervised by Prof. Dr. İpek İlkaracan Ajas.

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1. Introduction

Türkiye's economic growth trajectory over recent decades has been marked by significant fluctuations. Following the economic reforms implemented after the 2001 financial crisis, the country experienced periods of rapid economic expansion, fueled by an increase in exports, financial inflows, and favorable global liquidity. However, much of this growth was driven by external factors rather than substantial improvements in internal productivity or long-term structural advancements. As a result, while the country saw substantial economic growth, this did not necessarily translate into inclusive growth, particularly in terms of addressing persistent labor market challenges. Despite periods of economic expansion, Türkiye has struggled to generate sufficient employment opportunities and to improve labor force participation, which has remained weak since the 1980s. These challenges have been exacerbated during recent periods of economic contraction, marked by rising unemployment and the widening gap in labor market participation, particularly among women and youth.

The dynamics of the Turkish labor market have been shaped by a range of factors, including the shift from an agrarian to an industrial and service-based economy, urbanization, and various socio-demographic changes. One of the most notable trends has been the decline in labor force participation rates from 1988 to 2006, a trend that has varied significantly based on gender, age, and educational attainment. Women, in particular, face unique barriers to entering and remaining in the labor force. Cultural norms, occupational segregation, and difficulties associated with transitioning from rural to urban labor markets all contribute to the lower participation rates seen among women. On the other hand, youth face their own set of challenges, including extended periods of education, a lack of job opportunities, and the difficulty of transitioning from school to work. Understanding these trends in detail requires a thorough analysis of labor market indicators and the structural determinants behind them.

When compared to other countries in the region and OECD nations, Türkiye lags behind in key labor market indicators, including labor force participation and employment rates, especially for women. International comparisons suggest that Türkiye's labor market performance is notably weaker, and many studies have pointed to education as a critical factor in improving labor force participation. While education is undoubtedly a key determinant, focusing on it alone is insufficient to understand the complexity of Türkiye's labor market issues. A more nuanced analysis that includes a breakdown of demographic factors and deeper empirical methods is necessary to unravel the underlying causes of Türkiye's labor force participation patterns.

This chapter seeks to bridge existing gaps in the literature by conducting

a detailed examination of labor force participation trends in Türkiye between 1988 and 2006. Using microdata and logit regression techniques, the study will explore how changes in labor force participation have been influenced by factors such as gender, urban/rural divides, age, and educational attainment. By providing a comprehensive and multifaceted analysis, the chapter aims to contribute valuable insights that can inform policy interventions. These insights will be crucial in designing effective strategies and policies to address Türkiye's persistent labor market challenges and to improve employment prospects for all demographic groups, particularly women and youth. The findings from this study will also help policymakers understand the structural determinants of labor force participation, enabling more targeted approaches. Ultimately, the chapter aims to offer a foundation for future research and policy development to enhance labor market inclusivity and efficiency in Türkiye.

2. Literature

Empirical research on labor force participation (LFP) has seen significant advancements over the past few decades, primarily due to the availability of micro-level data and the adoption of advanced econometric techniques. Among these, logit and probit regression models have emerged as the preferred methodologies due to their ability to handle binary outcomes effectively. Unlike linear probability models, which can produce predicted probabilities outside the $[0, 1]$ interval, logit and probit models constrain predictions within this range, ensuring more accurate and meaningful results. This methodological shift has had a profound impact on the study of LFP determinants, providing clearer insights into the factors that influence individual decisions to participate in the labor market.

The use of logit and probit models in LFP research is rooted in the seminal work of Gunderson (1980), who critiqued the use of ordinary least squares (OLS) regression for estimating LFP. Gunderson identified several limitations of OLS, including heteroskedasticity and the inappropriate functional form when applied to binary outcomes like labor force participation. His analysis, based on data from the 1971 Canadian Census, demonstrated that logit and probit models provided more reliable predictions, especially when probabilities were near zero or one. This work was pivotal in establishing the superiority of nonlinear models for LFP analysis and set the stage for future research in this area.

Subsequent studies have expanded on Gunderson's work by exploring various socio-economic and demographic factors influencing LFP decisions. Tunali (1997), for example, used a binary logit model to explore the relationship between education and women's LFP in urban Türkiye. Utilizing data from the 1994 Household Labor Force Survey (HLFS), Tunali found a U-shaped pattern, where the likelihood of participation increased with education but

decreased at later life stages. The presence of young children was identified as a major barrier to women's labor force participation, highlighting the significant role of household dynamics in shaping women's economic behavior.

The issue of non-participation has been another focal point in LFP research. Ozar and Gunluk-Senesen (1998) approached this topic by examining the determinants of non-participation in urban Türkiye. Using logistic regression models and survey data from four major cities, they found that higher education was associated with a decreased likelihood of non-participation, suggesting that education serves as a key enabler of labor force engagement. Their study also emphasized that the number of children, rather than their age, was a crucial determinant influencing women's decision to remain outside the labor force. This finding was attributed to traditional gender roles in Turkish society, where women are often expected to fulfill caregiving responsibilities within the household.

In a similar vein, Dayioglu and Kasnakoglu (1997) utilized probit models to analyze the determinants of LFP for men and women in urban Türkiye, using data from the 1987 Household Income and Consumption Expenditures Survey. Their results showed that education played a central role in shaping labor force participation, with university graduates exhibiting the highest probabilities of participation, particularly among women. Conversely, household income and non-wage income were found to reduce women's participation, as they were often perceived as secondary earners. Moreover, the presence of young children was shown to negatively affect women's likelihood of participating in the labor market, while being a household head increased the chances of participation.

The impact of macroeconomic conditions on labor force participation has also been a topic of interest. Dayioglu (2000) explored the changes in LFP determinants over time, specifically focusing on data from 1987 and 1994. Her study revealed that the impact of education on LFP probabilities had declined in 1994, particularly for women, which was attributed to the economic crisis and rising unemployment during that period. This analysis highlighted how macroeconomic shocks can alter labor market behavior, especially among vulnerable groups such as women. Dayioglu's findings underscore the importance of considering the broader economic context when analyzing LFP trends.

A more nuanced approach to analyzing women's labor force participation was adopted by Baslevant and Tunali (2002), who categorized women's participation choices into non-participation, self-employment, wage labor, and unemployment. Using data from the 1988 Household Labor Force Survey, they incorporated regional labor market variables into their models, emphasizing the importance of both individual preferences and structural factors in

shaping labor market outcomes. This study contributed to the understanding that women's labor force decisions are not binary but rather shaped by a range of choices that reflect broader socio-economic and structural forces.

The influence of socio-demographic factors, particularly family characteristics, on women's labor force participation has been another significant area of research. Yildirim and Dogrul (2008) examined the determinants of women's non-participation in urban Türkiye, using logistic regression models to explore the role of marital status, family income, and the number of children. Their findings indicated that marital status and family income were key factors influencing non-participation, with women in higher-income families or those with more children being less likely to participate in the labor market. This study reinforced the idea that traditional family roles and economic conditions significantly constrain women's integration into the workforce.

The studies reviewed above all underscore the importance of addressing the structural and socio-cultural barriers that limit labor force participation, particularly among women. The use of logit and probit regression analyses has proven to be a robust methodology for identifying and quantifying the factors that influence labor force decisions. These studies suggest that improving educational opportunities, addressing household dynamics, and providing targeted support for women and other marginalized groups could help enhance labor market outcomes.

Policy interventions that promote gender equality, such as improved access to childcare and family support services, are frequently suggested as key solutions. Additionally, economic policies aimed at reducing unemployment and improving job quality, particularly in the context of economic downturns, are crucial for fostering higher levels of labor force participation.

In conclusion, the literature reveals that labor force participation is influenced by a complex set of factors, including education, family dynamics, macroeconomic conditions, and cultural norms. Logit and probit models have become essential tools in analyzing these factors, providing valuable insights into the determinants of LFP. The findings from these studies contribute to a more nuanced understanding of labor market behavior and highlight the need for targeted policies that address the specific barriers to participation faced by women and other vulnerable groups. This paper adopts a similar supply-side approach, using HLFS microdata to examine LFP in Türkiye while acknowledging the limitations of the available dataset, which does not include demand-side factors.

3. Data and Methodology

Logistic regression is particularly useful when predicting the presence or absence of a characteristic or outcome based on a set of predictor variables.

While it shares similarities with linear regression, logistic regression is designed for models with a binary dependent variable. Logistic regression outputs allow for the calculation of marginal effects or odds ratios for each independent variable. It is important to note that the numerical values of estimated coefficients in logistic regression lack direct economic interpretation; instead, their signs indicate the direction of their effects on the dependent variable. However, marginal effects derived from the coefficients provide insight into how changes in an independent variable affect the dependent variable while holding other variables constant at their mean values. For dichotomous independent variables, marginal effects reflect the change from 0 to 1 while all other variables remain constant. Consequently, this chapter emphasizes the interpretation of marginal effects after logit estimations. Using microdata from the Household Labor Force Surveys (HLFS) for 1988, 2000, and 2006, several logistic models are estimated and analyzed.

This research employs the microdata from the HLFS conducted by TURKSTAT for 1988, 2000, and 2006. The October 1988 HLFS was the first nationwide survey adhering to International Labour Organization (ILO) standards, encompassing 102,062 individuals from 22,320 households. This dataset serves as a baseline for comparison with subsequent surveys. The 2000 HLFS is used to analyze trends from the 1980s to the 2000s, as it represents a period of high economic growth following financial liberalization. It includes data from 288,735 individuals in 74,368 households. Despite its utility, the lack of regional variables in the 2000 dataset necessitates running regressions both with and without regional controls for comparative analysis. The 2006 HLFS represents the terminal year for this study, capturing the effects of the economic crisis of the early 2000s and the ensuing persistent unemployment rates. This survey includes data from 497,137 individuals across 129,527 households.

To ensure clarity in empirical analyses, the research delineates specific subsamples. Initially, the entire working-age population is analyzed for each year. Subsequently, the focus shifts to urban adults, given that 52.4%, 70.3%, and 62.9% of participants in the 1988, 2000, and 2006 datasets, respectively, resided in urban areas. For 1988, the working-age population includes individuals aged 12 and above, while for 2000 and 2006, it encompasses those aged 15 and above. These groups represent 70.4%, 71.3%, and 71.7% of the total data in 1988, 2000, and 2006, respectively. Data is further disaggregated by gender. In summary, the subsamples consist of (1) all working-age individuals (urban and rural, male and female) and (2) urban working-age males and females. Table 1 summarizes the sample and subsample sizes.

Table 1. Sample and subsample sizes, 1988-2000-2006 HLFS

	1988 HLFS				2000 HLFS				2006 HLFS			
	All Sample		12+		All Sample		15+		All Sample		15+	
	Level	%	Level	%	Level	%	Level	%	Level	%	Level	%
Total	102.062	100	71.894	100	288.735	100	205.833	100	497.137	100	356.390	100
Male	50.701	49,7	35.116	48,8	142.576	49,4	99.448	48,3	242.310	48,7	169.483	47,6
Rural	19.673	19,3	13.327	18,5	35.722	12,4	23.822	11,6	80.480	16,2	54.701	15,4
Urban	31.028	30,4	21.789	30,3	106.854	37,0	75.626	36,7	161.830	32,5	114.782	32,2
Female	51.361	50,3	36.778	51,2	146.159	50,6	106.385	51,7	254.827	51,3	186.907	52,4
Rural	19.800	19,4	13.940	19,4	36.227	12,5	25.685	12,5	87.346	17,6	62.722	17,6
Urban	31.561	30,9	22.838	31,8	109.932	38,1	80.700	39,2	167.481	33,7	124.185	34,8

Source: TURKSTAT (1988, 2000, 2006 HLFS micro data)

In logistic regression, the dependent variable represents the probability of an event occurring, constrained between 0 and 1, while independent variables can be binary, categorical, or continuous. The probability of an event, denoted as, is modeled as follows:

$$p_i = F(Z_i) = 1 / (1 + e^{-Z_i})$$

where $Z = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \dots + \beta_iX_i$. As Z tends to infinity, e^{-Z} tends to 0 and p has a limiting upper bound of 1. As Z tends to minus infinity, e^{-Z} tends to infinity and p has a limiting lower bound of 0. Thus, predictions remain within valid probability bounds.

The marginal effect of Z on the probability, which will be denoted $f(Z)$, is given by the derivative of this function with respect to Z :

$$f(Z) = dp / dZ = e^{-Z} / (1 + e^{-Z})^2$$

The model is estimated using maximum likelihood, an iterative process. The logistic equation can be linearized to a log odds (logit) relationship:

$$\log [\Pr(y=1) / \Pr(y=0)] = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \dots + \beta_iX_i$$

In this linearized form, changes in explanatory variables correspond to changes in log odds rather than direct changes in the dependent variable. Coefficients indicate whether explanatory variables positively or negatively affect the occurrence probability of an event, but their numerical values require marginal effect calculations for interpretation.

In this study, the dependent variable, labor force participation (LFP), is binary, taking the value 1 for participants and 0 for non-participants.

Explanatory variables are categorized into individual, household, and regional variables. Individual variables include age and education level, with age representing life-cycle patterns and education level reflecting human capital. Household variables include marital status, household size, relationship to household head, and presence of children below age 14. Regional variables account for geographical differences in employment opportunities and cultural factors.

Table 2 summarizes the explanatory variables and their expected signs on participation probability.

Table 2. Explanatory variables and their expected signs

Variables	Male	Female
Standardized Age Groups		
ageW_19	+	+
age20_24	+	+
age25_29	+	+
age30_34	+	+
age35_39	+	+
age40_44	+	+
age45_49	+	+
age50_54	+	+
age55_59	+	+
age60_64	+	+
age65	-	-
Education Levels		
illiterate	-	-
literatewithoutdiploma	+	+
primarysch	+	+
secondarysch	+	+
highsch	+	+
occuphighsch	+	+
univ	+	+
Geographical Regions		
ageanandmarmara	u	u
mediterranean	u	u
centralanatolia	u	u
blacksea	u	u
eastandsoutheast	u	u
Household Characteristics		
married	+	-
hhhead	+	u
phhchildren0_14	+	-
hhsiz	+	u

(+): positive effect, (-): negative effect, (u): uncertain

4. Results of the Logistic Regression Analyses

Table 3 presents the marginal effects from logit estimations, focusing on the labor force participation (LFP) probabilities of the working-age population in Türkiye across three different years: 1988, 2000, and 2006.

The predicted LFP probability for individuals with average characteristics shows a notable decline from 55.4% in 1988 to 40.7% in 2000, followed by a partial recovery to 47.9% in 2006. This decline in LFP during the 1990s is consistent with broader trends of economic stagnation and the impacts of the 1994 financial crisis, which likely reduced job opportunities and increased unemployment. The recovery in 2006 suggests some stabilization in the labor market, possibly attributed to the economic reforms and structural adjustments that followed the 2001 crisis.

Importantly, the marginal effects for all years (1988, 2000, and 2006) were statistically significant, indicating that the observed trends are not due to random variation, but rather reflect genuine changes in labor market participation patterns.

Table 3. Marginal effects of logit models (1988, 2000 and 2006)

		1988	2000	2006	
Pr(lfp)		55,4%	40,7%	47,9%	
INDIVIDUAL CHARACTERISTICS	sex	0,4252 (0,0053)***	0,4436 (0,0031)***	0,4567 (0,0023)***	
	rural	0,3770 (0,0044)***	0,3036 (0,0033)***	0,2445 (0,0023)***	
	ageW_19	0,4749 (0,0092)***	0,4501 (0,0066)***	0,3611 (0,0047)***	
	age20_24	0,4906 (0,0047)***	0,5478 (0,0042)***	0,5211 (0,0024)***	
	age25_29	0,4998 (0,0044)***	0,5896 (0,0033)***	0,5568 (0,002)***	
	age30_34	0,4958 (0,0041)***	0,5877 (0,0033)***	0,5570 (0,0019)***	
	age35_39	0,4864 (0,004)***	0,5901 (0,0033)***	0,5527 (0,0018)***	
	age40_44	0,4615 (0,004)***	0,5674 (0,0034)***	0,5459 (0,0019)***	
	age45_49	0,4368 (0,0045)***	0,4970 (0,0045)***	0,4946 (0,0023)***	
	age50_54	0,4151 (0,0051)***	0,3946 (0,0061)***	0,4242 (0,0031)***	
	age55_59	0,3454 (0,0078)***	0,2996 (0,0079)***	0,3359 (0,0042)***	
	age60_64	0,2430 (0,0121)***	0,1766 (0,0094)***	0,2345 (0,0058)***	
	literatewithoutdip.	0,1520 (0,0084)***	0,2125 (0,008)***	0,1957 (0,0043)***	
	primarysch	0,2583 (0,0054)***	0,2216 (0,004)***	0,1677 (0,0032)***	
	secondarysch	0,2912 (0,0072)***	0,3054 (0,0054)***	0,3083 (0,0033)***	
	highsch	0,3578 (0,0057)***	0,3118 (0,0051)***	0,2499 (0,0038)***	
	occuphighsch	0,3567 (0,0072)***	0,3904 (0,0055)***	0,3310 (0,0036)***	
	univ	0,4104 (0,0048)***	0,5148 (0,0034)***	0,4355 (0,0026)***	
	HOUSEHOLD CHARACTERISTICS	married	-0,0425 (0,0075)***	-0,0600 (0,0043)***	-0,0812 (0,0032)***
		hhhead	0,3242 (0,0072)***	0,2835 (0,0047)***	0,1892 (0,0034)***
phhchildren0_14		-0,1120 (0,0057)***	-0,0254 (0,0033)***	-0,0402 (0,0026)***	
hhsiz		0,0283 (0,0011)***	0,0200 (0,0007)***	0,0121 (0,0005)***	

Beyond gender and location of residence, several other key factors also significantly influenced labor force participation (LFP) probabilities. These factors, including age, education, and household dynamics, provide a more nuanced understanding of the shifts in participation trends over time.

Age emerged as a crucial determinant of LFP, with younger age groups showing a decline in participation probabilities over time. This can largely be attributed to the increasing number of years spent in education, as younger individuals pursued longer periods of schooling, delaying their entry into the labor force. The trend highlights the growing importance of education as a factor in shaping labor market behavior. In contrast, older age groups (specifically those aged 50–64) saw a rise in participation probabilities from 2000 to 2006. This shift was likely driven by changes in retirement policies, such as the gradual increase in retirement ages and pension reforms, which encouraged older workers to remain in the labor market longer. These shifts in age-related participation trends reflect broader demographic and policy changes in the labor market.

Education was generally found to enhance LFP probabilities, with higher educational attainment leading to greater participation. However, the findings revealed a notable anomaly: high school graduates exhibited a decline in participation probabilities over time, especially during the period between 2000 and 2006. This decline is worthy of policy attention, as it suggests that the labor market for high school graduates may not have kept pace with their increasing numbers, possibly due to structural mismatches between education levels and available job opportunities. The trend underscores the need for policies that bridge the gap between educational outcomes and labor market demands, particularly for individuals with secondary education.

Household-related variables exhibited complex and evolving effects on LFP. For married individuals, particularly women, the presence of a spouse significantly reduced the likelihood of labor force participation. This aligns with the traditional view of marriage and family roles in Türkiye, where married women, especially in rural areas, are often expected to prioritize domestic responsibilities over paid work. The impact of household size on participation diminished over time, reflecting shifting economic conditions and the growing need for all household members to contribute to the household's income. This change may also be indicative of broader social transformations, where economic pressures have necessitated more inclusive labor market participation across different family structures.

The presence of children, particularly those under the age of 14, had a negative impact on women's LFP. This effect was most pronounced for mothers, as childcare responsibilities are a significant barrier to women's participation in the labor market. However, the negative effect of children on women's

participation showed signs of diminishing over time. This could reflect societal and economic changes, such as the increased availability of childcare services, shifts in family dynamics, or economic pressures that required more women to enter the workforce to support their households. These trends point to the importance of policies that support working mothers, such as affordable childcare and family-friendly workplace policies.

The analysis also revealed significant differences between rural and urban labor force participation dynamics. While gender and location of residence emerged as critical determinants of LFP, rural areas exhibited unique participation patterns shaped by small-scale agricultural production and distinct employment behaviors. Rural residency, while diminishing in its significance over time, still played an important role in shaping LFP probabilities in the earlier years of the study. The rural labor market, traditionally dominated by agriculture, has seen a decline in job opportunities as the sector has contracted. As a result, the labor force participation rate in rural areas is generally lower, with women, in particular, facing challenges due to cultural and economic barriers.

Given these complexities, subsequent analyses focus on urban subsamples, where labor force participation dynamics are likely to differ due to more diversified employment opportunities, higher levels of industrialization, and greater access to education and services. Urban areas offer a contrasting environment to rural ones, where employment is increasingly service- and industry-oriented, leading to different patterns of labor market engagement.

In conclusion, the analysis of marginal effects highlights the crucial role of gender, education, age, and household dynamics in shaping labor force participation. The findings emphasize the persistent gender disparities in participation, particularly for women, and suggest that while education generally boosts participation, there are specific challenges related to high school graduates. Moreover, household factors, such as marriage and the presence of children, continue to influence participation, although the effects of these variables are evolving with time.

The urban-rural divide in LFP dynamics further underscores the need for policies that account for regional differences, particularly in areas where small-scale agriculture still plays a significant role. These results point to the importance of targeted policy interventions, including those that address gender inequalities, provide support for working mothers, and ensure that education and labor market opportunities align to promote higher participation rates, especially for vulnerable groups.

The evolving nature of these factors over time calls for continuous monitoring of labor force participation trends to inform policy decisions. Policies aimed at fostering gender equality, improving educational outcomes,

and addressing family-related barriers to participation will be crucial in enhancing labor market outcomes for all segments of society.

5. Conclusions

This study provides a comprehensive examination of labor force participation (LFP) trends in Türkiye over the years 1988, 2000, and 2006, utilizing logistic regression analysis to identify the key determinants influencing participation. The analysis, based on the Household Labor Force Survey (HLFS) microdata, highlights the persistent influence of gender, urbanization, and educational attainment on labor market dynamics in the country.

One of the major findings of the study is the declining trend in overall LFP probabilities. This decline is reflective of broader structural shifts within Türkiye's economy, notably the transition from an agrarian to an industrial and service-based economy. As urbanization increased and agricultural employment opportunities decreased, labor force participation in rural areas, where agriculture had once been the dominant sector, also fell. The decreasing participation rates are indicative of a transformation in the labor market, which is becoming increasingly urban-centered.

The study reveals that gender continues to be a critical determinant of LFP, with males consistently exhibiting higher participation rates. This is in line with entrenched socio-cultural norms and traditional gender roles, which assign women to domestic responsibilities, limiting their participation in the formal labor market. The study's findings underscore the need for policies that address gender inequality in the labor market and promote female labor force participation.

Urbanization has emerged as a significant factor influencing LFP trends. Over time, rural areas have shown decreasing participation rates, primarily due to the decline in agricultural employment and the limited availability of industrial or service-based jobs in these areas. As Türkiye has urbanized, the labor force participation dynamics in urban areas have become more complex, offering greater employment opportunities, particularly in the service and industrial sectors.

Age and educational attainment play a crucial role in determining labor force participation. Younger cohorts show declining participation rates as more individuals pursue extended education, which delays entry into the labor force. Conversely, older age groups (50-64) exhibit fluctuating trends in participation, influenced by economic conditions and policy changes, such as the introduction and eventual abolition of early retirement schemes. Education levels demonstrate a generally positive relationship with LFP, with higher education leading to higher participation probabilities. However, the study notes that high school graduates exhibited a decline in participation rates

over time, suggesting that the labor market may not have sufficiently absorbed this group, highlighting the need for targeted policies aimed at improving the employment prospects of high school graduates.

Household characteristics, such as marital status, household size, and the presence of young children, were also significant in determining LFP, especially among women. Marital status and the presence of young children were associated with lower participation rates for women, reinforcing the gendered nature of labor force participation. The study points to the critical role of family dynamics in shaping participation decisions, with women often facing greater obstacles due to household responsibilities. These findings call for policies that support women's integration into the labor force, including family-friendly policies such as parental leave and affordable childcare.

In conclusion, this study offers valuable insights into the complex dynamics of labor force participation in Türkiye. It underscores the importance of addressing structural barriers to higher and more equitable participation, particularly those related to gender and regional disparities. To foster a more inclusive labor market, policy interventions should focus on:

Policies aimed at reducing gender disparities in labor force participation should be prioritized, with a focus on enhancing women's access to education, reducing cultural and structural barriers to employment, and promoting equal opportunities in the workplace.

Given the complex relationship between education and labor force participation, particularly among high school graduates, there is a need for policies that better align education outcomes with labor market demands. Vocational training and initiatives that connect education to employment can help bridge the gap for individuals with lower levels of education.

As rural areas continue to exhibit lower participation rates, especially as agriculture declines, policies should be aimed at diversifying the rural economy, promoting rural industrialization, and creating job opportunities in these areas.

To support greater labor force participation among women, especially those with children, there is a need for policies that provide social and family support. Measures such as affordable childcare, flexible working hours, and family leave policies would help reduce the barriers that currently prevent many women from participating in the labor market.

Future research should explore longitudinal and sector-specific analyses to provide a deeper understanding of the evolving dynamics of the Turkish labor market. In particular, further studies could examine the impact of sectoral shifts (e.g., the rise of the service economy) and technological advancements on labor force participation trends. Additionally, exploring the intersectionality

of factors such as age, gender, education, and household structure in greater detail could provide more tailored policy recommendations.

This study contributes to the literature on labor force participation in Türkiye by offering a comprehensive analysis of key trends and determinants, while also providing a foundation for future research and policy development aimed at enhancing labor market inclusivity and efficiency.

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CHAPTER 21

THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY (CSR) ACTIVITIES OF SPORTS CLUBS ON CLUB AND BRAND IMAGE

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Introduction

In recent years, sports philanthropy has become a growing and attention-grabbing subject. Professional leagues and sports organizations use sports as a means of social development, peace and education to fulfill their social responsibilities (Alexander, Liz, Kat & Buendia, 2011). According to Anagnostopoulos, Byersa and Shilbury (2014), competition drives sport organizations to make strategic decisions about the environment and society, and these decisions can be directed towards corporate social responsibility, which shows the growing interest of sports organizations on social involvement. Studies on the topic suggest that today many professional sports organizations are increasingly turning to CSR activities, and CSR has become one of the areas of sports management (Anagnostopoulos, Byersa, & Shilbury, 2014; Athanasopoulou, Douvis & Kyriakis, 2011; Babiak, 2010; Babiak & Wolfe, 2006; Brietbarth & Harriss, 2008; Godfrey, 2009; Jung, 2012; Smith & Westerbeek, 2007).

According to practices in the CSR area, sports clubs in different leagues of the United States (USA) are involved in CSR activities (Babiak, 2010), and many sports clubs and leagues in Europe are active in CSR activities (Brietbarth & Harris, 2008; Hamil & Morrow, 2011; Reich, 2013). It catches the attention that some sports clubs tend to be involved in social activities by setting up charities (Reiche, 2013). From Turkey's point of view, it is seen that sports clubs are beginning to address social and environmental issues, and they are turning to CSR activities.

Supporters of sports clubs, sponsors, media organizations, etc. have strong associations with stakeholders, and they carry social organizational features that are intertwined with the society, demonstrating that they are suitable organizations for spreading of CSR programs to larger areas (Hamil and Morrow, 2011). It is stated that sport clubs have CSR initiatives in their programs (Babiak and Wolfe 2009) due to the fact that they are important actors in implementing CSR programs more effectively and in creating social awareness through sports (Babiak and Wolfe 2009; Sheth and Babiak 2010). For example, sports clubs provide various services for millions of people in areas such as education, health, sports for everyone, social cohesion, environment and developing amateur sports clubs (www.csrinsport.com).

CSR, which is a public relations activity, too (Frankent, 2001), is effective in developing brand and corporate image (Frost, 2005, Melo and Galan, 2009). According to Ferrand and Pages (1999), image, in the point of view of sports organizations, has an important influence on consumer behaviors in the sports field. It is seen as a way to develop brand value through this effect, and at the same time, as a feature that differentiates and positions the sports organization from the other sports organizations. According to Sheth and Babiak (2010),

sports club managers view CSR programs as an instrument of reflection, marketing or public relations or organizational values.

The structuring of sports clubs in Turkey is carried out in accordance with the Law No. 5253, and sports clubs operate in the status of association. Some of the sports clubs in the status of association carry out their activities by bearing the name of private enterprises. Such clubs are regarded as enterprise sports clubs. In this context, especially in the field of basketball, the sports clubs established by private sector organizations in their own structures are attracting attention (e.g. Efes Pilsen, Pınar, Tofaş etc.). It can be considered that such sports clubs offer the opportunity to contribute to the brand of the enterprises or to integrate with the society through the club. Moreover, features of sports such as its industrialization, globalization, growingly becoming focus of interest, economic growth and being watched by millions of people are also worthy reasons for the investment of commercial organizations in sports. For these reasons, it can also be considered as a strategy of differentiation for commercial enterprises in a competitive environment to consider sports as an area of social responsibility.

This study was planned to understand the effect of the CSR studies – carried out by the sports club, which is the subject of the research, to draw attention to the effect of CSR activities carried out by sports clubs in the Turkish sports leagues – on perceptions of the audience/customers towards the corporate and brand image of the enterprise whose name the club bears. Based on the literature, another reason for the study to emerge is that there are not enough studies to provide the information flow and evidence that will direct the sports organizations to CSR studies (Babiak and Wolfe 2009), and this is also true in the case of Turkey. It is expected that the study will provide a framework to understand the role of CSR in terms of sports marketing in the theoretical sense and, therefore, to contribute to the sports literature. The fact that the study is the first one to deal with the relationship between CSR, corporate image and brand image in terms of the sports industry represents the original value of the study. It is hoped that an understanding will be developed for enterprises, enabling more investment in this area by explaining the distinctive roles of sports clubs in CSR.

Literature review

Corporate social responsibility in sports

In recent years, people in the field of sport management, which is a part of the business world, have headed towards studies to create more social benefits for sports (Ratten 2010). CSR, which has become increasingly important in providing social benefits (Athanasopoulou, Douvis and Kyriakis, 2011; Babiak and Wolfe 2006; Brietbarth and Harriss 2008; Smith and Westerbeek 2007), has emerged as a line of business and an effective corporate strategy that

attracts more media attention (Ratten, 2010). Especially sports clubs are said to be the most appropriate organizations to spread the CSR projects because of their strong stakeholder relations and their being intertwined with the society (Hamil and Morrow 2011). Professional sports managers who work in some sports organizations also consider CSR as a mandatory management strategy for their managerial works (Sheth and Babiak 2010). However, it is also emphasized that professional sports organizations take CSR initiatives with rapid steps but there is not enough work to motivate the sports organizations towards CSR activities (Babiak and Wolfe, 2009). It can be said that the same situation is true when Turkey is the case and that there are very few studies on the awareness and development of the CSR campaigns of sports clubs in the upper leagues of football and basketball.

Along with the financially-growing structures of sports clubs, their social importance is undoubtedly becoming more prominent. In the Scottish Premier league, contemporary professional football clubs are also seen as local representatives in addition to their historical significance; and their created social identities cause them to be seen as the main representatives of the community (Hamil and Morrow 2011). Walker and Kent (2009) address the CSR activities of professional sports clubs in five categories: philanthropy, community involvement, youth, education and youth health initiatives.

Corporate (Club) and Brand Image

Today, the concept of image has an important influence on consumer behaviors, trust and appeal; and it is seen as a marketing and management strategy for businesses (Flavia'n, Guinali'u and Torres 2005). Corporate image is a mental picture of companies; it is remembered when an individual hears or sees the company logo or name (Gray and Balmer 1998). In this context, according to Keller (1993), corporate image is the whole of subjective and perceptual phenomena that the consumer creates about the institution in his mind. Neal and Strauss (2008) define corporate image as a promise of an organization and its ability to transfer or position it in such a way as to place it in the minds of the clients over time. While there are countless marketing research that suggest that corporate image has a critical effect on customers' purchasing behavior, it is seen that corporate image is expressed as feelings or impressions in the minds of the society about an organization or institution (Barich and Kotler, 1991). The corporate image that is linked to the concept of reputation is an important factor that expresses the sum of feelings, impressions, knowledge, thoughts and values for an enterprise and affects the perceptions of stakeholders (Tran, Nguyen, Melewar & Bodoh, 2015). In recent years, corporate managers, suppliers, customers, government agencies, other organizations in the business world and the like are concerned about positioning their organizations against stakeholders; they attach importance to concepts such as corporate reputation and image in their organizational

philosophies, giving importance to what their stakeholders think about their organizations (Spyropoulou, Skarmeas, and Katsikeas 2010). Flavia'n, Guinali'u and Torres (2005) argue that corporate image is influential in consumer behavior, and that the image perceived by customers is an element today that reduces individual risk perceptions and increases the likelihood of purchase. The concept of corporate image is seen as a competitive advantage for businesses. It is stated that the concept of corporate image is not only an element that makes the business attractive but also a factor that affects the trust of other relevant groups or stakeholders of the company positively. The image that customers perceive through the experiences they receive from the services and activities of the institutions not only affects their purchasing behaviors but also increases their trust in the institutions.

The brand image is considered as the sum of the perceptions related to the brand in the mind of the consumer (Hsieh and Lindridge 2005). It is stated that when it is thought that brand is the promises created and realized in the minds of consumers, it lowers the credibility and the brand value to be unable to fulfill the promises (Pringle and Thompson 2000). Arnold (1992) emphasizes the importance of businesses' brand image positioning because of the high competition in the business world today. It is indicated that marketers need to explore ways to better manage their brand image as they become more aware of the increasing strategic importance of the brand image in customers' brand evaluations (Graeef 1996). Uncontrollable factors such as word-of-mouth communication, conversations among customers, and transfer of knowledge and experience influence brand image (O'Shaughnessy, 1995). Keller (1993: 3-6) evaluated brand image and brand association under the same heading in the brand value model and defined the brand image as brand-related perceptions that it creates in the consumer's mind. The power, suitability and uniqueness of the brand association plays an important role in determining the brand value. Similarly, Netemeyer et al. (2004) describe the brand image as brand associations that allow consumers to be willing to pay the premium fee.

It is seen that there are some research that relate the three main issues mentioned above (Lembet, 2013, Khojastehpour and Johns, 2015; Park, Lee and Kim, 2014; Wang and B. Anderson 2011). Lembet (2013) states that all dimensions of CSR are extremely effective both in the creation and development of corporate image and brand image. It has been pointed out that providing organizations with corporate profitability, branding and competitive advantage is influenced by perceptions of CSR initiatives and the importance of CSR issues (Khojastehpour and Johns 2015; Park, Lee and Kim, 2014).

METHODOLOGY

Research Model

This study was conducted using the Structural Equation Model (SEM) to investigate the relationship between CSR activities performed by sports clubs, the club image, and the brand image of the enterprise whose name the sports club bears. SEM is a method that enables researchers to answer interrelated research questions in a systematic and comprehensive analysis by modeling the causality relationships between multiple independent and dependent structures with a model (Gefen, Straub and Boudreau, 2000: 3).

Research Hypothesis

The main hypothesis of the research:

Research Hypothesis: CSR sub-dimensions in sports clubs have a positive effect on the image of the sports club and on the brand image of the enterprise whose name the sports club bears (h1)

Sub hypotheses:

There is a positive effect of the economic responsibility dimension of CSR on the club and brand image of the enterprise whose name the club bears (h1,a);

There is a positive effect of the legal responsibility dimension of CSR on the club and brand image of the enterprise whose name the club bears (h1,b);

There is a positive effect of the ethical responsibility dimension of CSR on the club and brand image of the enterprise whose name the club bears (h1,c);

There is a positive effect of the philanthropic responsibility dimension of CSR on the club and brand image of the enterprise whose name the club bears (h1,d);

Based on the above hypotheses, in the model proposed in this study, it was assumed that the CSR sub-dimensions affected the club and brand images, and the club image affected the brand image.

Sample

The sample consisted of 178 spectators of a sports club, which bears the name of a company serving in the food sector, in the Beko Basketball League of Turkey. According to Anderson and Gerbing (1988), a sample volume with 150 subjects may be sufficient in SEM analyses.

Data Collection

A questionnaire consisting of five parts was used in the research. In the first part of the questionnaire was a personal information form and in the second

part was an information form containing examples from the CSR activities of the sports club. The third section had the CSR scale, the fourth had the club image scale, and the final section had the brand image scale. The following are the information about the scales:

CSR Scale: The original consisted of 4 sub-dimensions including economic, legal, ethical and philanthropic responsibilities. The preliminary test was based on Carroll (1979), Brown and Dancin (1997), Kim et al. (2005), Lichtenstein et al. (2004), and Ramasamy and Yeung (2009) in the sports marketing literature. It was composed of 4 dimensions and 28 items developed by Jung (2012). CSR was a data collection tool that was reduced to 16 items as a result of Turkish adaptation of the 7 point-likert type scale (1 = strongly disagree, 7 = strongly agree).

Club Image Scale: The original of the scale was applied by Winter (1986). It was aimed at measuring the basketball spectators' opinions on club image. It was developed by Chun (2008) and modified by Jung (2012). Originally a 7-point Likert-type scale with 11-items, it was reduced to 6 items as a result of the Turkish adaptation.

Brand Image Scale: It was developed by Yüce (2010) by using the studies of Lassar et al. (1995), Aaker (1996a), Motemeni and Shahrokni (1998), Berry (2000), Low and Lamb (2000) and Keller (2003). It is a 5-point Likert type scale (1 = strongly disagree, 5 = strongly agree) with 14 items to measure brand image (association). This data collection tool was reduced to 8 items as a result of the Turkish adaptation.

Questionnaire distributions were carried out by receiving professional assistance from Soilpoint to collect the data of the study. During the distribution of the questionnaires, the interviewers were trained by the researcher in detail about the things that they should pay attention during data collection. The questionnaires were administered face-to-face to the spectators by the researcher together with the five interviewers at the Beko Basketball League match of the sports club – being the subject of the study – on April 5, 2015. The whole process was checked by the researcher. In the application of the main study with a total of 292 people, 114 faulty or incomplete questionnaires were excluded by the researcher. As a result, 178 questionnaires with a return rate of 60.98% were accepted as valid and included in the evaluation.

Data Analysis

SPSS 13.0 and LISREL 8.7 package programs were used for the analysis and testing of the model presented and predicted in the study. Confirmatory factor analyses were applied for the validity analysis of the questionnaire questions to be used in the research. For the reliability analyzes of the items, the alpha coefficients were examined. Structural Equation Modeling (SEM)

analysis was used as the basic statistical analysis technique, which is frequently used in the social sciences, for testing the presented model. In the structural equation model used in the study, the acceptable values were taken as ($2 \leq X^2/sd$; ≤ 3 ; $0.05 \leq RMSEA \leq 0.10$; $0.05 \leq SRMR \leq 0.10$; $0.90 \leq GFI \leq 0.95$; $0.85 \leq AGFI \leq 0.90$; $0.95 \leq CFI \leq 0.97$; $0.95 \leq NNFI \leq 0.97$; $0.90 \leq NFI \leq 0.95$) and good fit values were taken as ($0 \leq X^2/sd \leq 2$; $0.05 \leq RMSEA \leq 0.08$; $0 \leq SRMR \leq 0.05$; $0.95 \leq GFI \leq 1.00$; $0.90 \leq AGFI \leq 1.00$; $0.97 \leq CFI \leq 1.00$; $0.97 \leq NNFI \leq 1.00$; $0.95 \leq NFI \leq 1.00$) (Hu and Bentler 1999; Schermelleh-Engel and Moosbrugger, 2003; Raykov and Marcoulides, 2006; Byrne, 2010; Kline, 2011).

RESULTS AND DISCUSSION

The Findings of Research

Frequency and Percentage Values Related to Demographic Data as shown in **Table 1** below.

Table 1. Frequency and Percentage Values Related to Demographic Data

		f	%	Total
Gender	Male	111	62.4	178
	Female	67	37.6	
Marital Status	Married	47	36.4	178
	Single	131	73.6	
Educational Background	Primary Education	6	3.4	178
	High School	85	47.8	
	Associate Degree Program	44	24.7	
	Undergraduate	37	20.8	
	Postgraduate	6	3.4	
Reason for going to match	Employee	10	5.6	178
	Spectator	105	59	
	Local	46	25.8	
	Community	17	9.6	
Spectators of the Sports Club	Sports Club, which is the Subject of the Research	40	22.5	178
	Other	124	69.7	
	Non-responses	24		

178 questionnaires collected in the study were analyzed in the SPSS program, and the percentages and frequency distributions carried out in the program were presented. Table shows the percentages and frequency distributions of the spectators by gender. It was seen that 62.4% (n=111) of

the sample were males and 37.6% (n=67) females; 26.4% (n=47) were married, and 73.6% (n=131) singles. 3.4% (n=6) received primary education, 47.8% (n=85) high school, 24.7% (n=44) associate degree program, 20.8% (n=37) undergraduate, and 3.4% (n=6) post-graduate education. 5.6% (n=10) were company employees, 59% (n=105) spectators, 25.8% (n=46) from the local community, and 9.6% (n=17) spectators who went to the matches of the sports club, which was the subject of the study, based on other reasons. Again 164 of 178 spectators responded to questions about the sports club they favored. 69.7% (n=124) reported that they were supporters of a club other than the sports club being investigated, while 22.5% (n=40) stated that they were in favor of the sports club which was the subject of this study.

Average and standard deviation values for the personal information form as shown in **Table 2** below.

Table 2. Average and standard deviation values for the personal information form

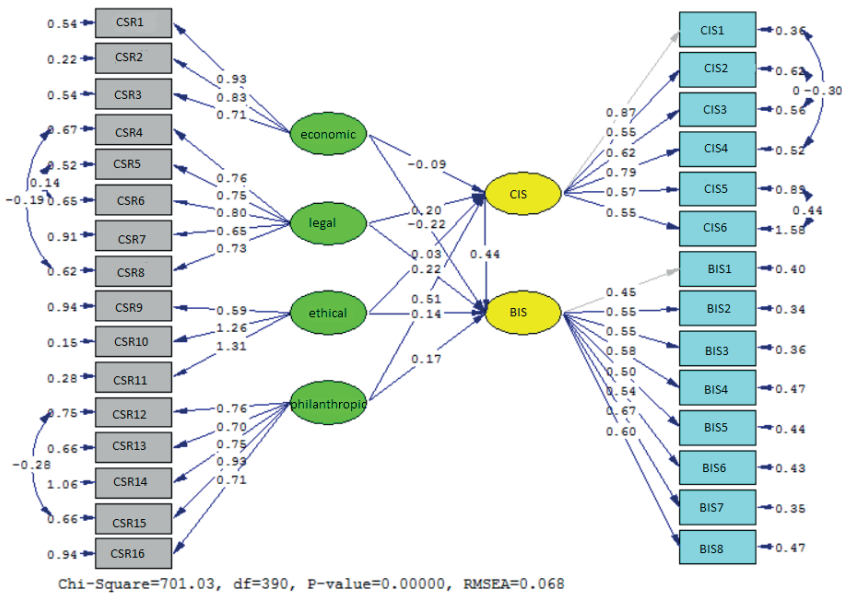
	x	Sd	Minimum	Maximum	Total
Age	24.83	7.87	18	50	178
Monthly family income level	3394.11	3032.92	600	25000	153
Frequency of going to the match	9.35	7.12	1	30	161

Table 2 shows that the average age of the spectators was $x=24.83$. The minimum age was 18 and the maximum age was 50. Again, 153 of a total of 178 spectators were found to have an arithmetic average value of $x=3394.11$ TL regarding the monthly family income variable. The minimum monthly income value was 600 TL and the maximum was 25000 TL. Moreover, 161 of a total of 178 spectators were found to have an arithmetic average value of $x=9.35$ TL regarding the monthly frequency of going to matches. The minimum frequency of going to matches was 1 and the maximum was 30.

Results

In this section, information about main and sub hypotheses of the study is given. In this respect, findings and interpretations of hypotheses are presented about the positive impact of sports clubs' CSR activities on the club and brand image of the enterprise whose name they bear. SEM analyses were applied to test the appropriateness of the h1, h1a, h1b, h1c and h1d hypotheses included in the research hypotheses using the scales that were previously analyzed for validity and reliability by the researcher. The findings after the first analysis are as shown in **Figure 1**.

Figure 1. A single SEM analysis - the first stage



According to the results of the analysis, among the CSR sub-dimensions, the economic (-0.09, $t=-0.65$), legal (0.20, $t=1.02$) and ethical responsibility (0.03, $t=0.30$) were found to have no significant effect on the club image, while the philanthropic responsibility (0.51, $t=3.15$) had a strong significant effect. Again, it was seen that there was no significant effect of the economic image with (-0.22, $t=-1.90$), legal (0.22, $t=1.35$), ethics (0.14, $t=1.52$), and philanthropic responsibility (0.17, $t=1.25$) on the brand image. It was also found that the club image (0.44, $t=4.60$) had a significant effect on the brand image. Therefore, the path that was drawn from the philanthropic responsibility to the club image in the model was significant and positive. It was also seen that the path drawn to test the mediating effect of the club image on the brand image was significant and positive. According to the analysis results, it was seen that the path to the club image dimension from the economic, legal and ethical dimensions and the path to the brand image dimension from the economic, legal, ethics and philanthropy dimensions did not reach a significant level ($p>0.05$). Because, according to the SEM analysis results, if the t value of the variables is greater than 2.576, it means that the parameters are significant. A factor load is considered to be statistically significant if the t value calculated for the factor load of each observed variable is greater than the critical t value (the critical value is 1.96 at the 0.05 significance level; the critical value is 2.576 at the 0.01 significance level) (Kline, 1998).

In the light of the above information, the results of the hypothesis testing can be expressed as follows: The hypothesis that “There is a positive effect of

the economic responsibility dimension of CSR on the club image and the brand image of the enterprise whose name the club bears” (h1,a) was not supported. The hypothesis that “There is a positive effect of the legal responsibility dimension of CSR on the club image and the brand image of the enterprise whose name the club bears” (h1,b) was not supported. The hypothesis that “There is a positive effect of the Ethics responsibility dimension of CSR on the club image and the brand image of the enterprise whose name the club bears” (h1,c) was not supported, either.

For this reason, the SEM analysis was repeated after removing the path from the economic, legal and philanthropic responsibilities to the brand image dimension and the path from the economic, legal and ethical dimensions to the club image dimension. The fit values for the first stage are as shown in **Table 3** below.

Table 3. *First stage fit values for a single SEM analysis*

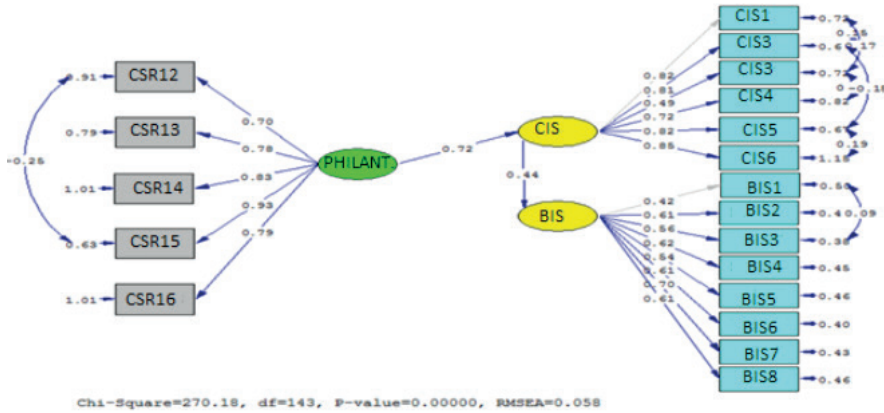
Fit Index	Values	Acceptable Fit	Good Fit
Chi square (X^2)	701.03		
Degree of Freedom	390		
Chi square/sd	1.79	$2 \leq X^2/sd \leq 3$	$0 \leq X^2/sd \leq 2$
RMSEA	0,06	$0.05 \leq RMSEA \leq 0.10$	$0.05 \leq RMSEA \leq 0.08$
SRMR	0,07	$0.05 \leq SRMR \leq 0.10$	$0 \leq SRMR \leq 0.05$
GFI	0,81	$0.90 \leq GFI \leq 0.95$	$0.95 \leq GFI \leq 1.00$
AGFI	0,79	$0.85 \leq AGFI \leq 0.90$	$0.90 \leq AGFI \leq 1.00$
CFI	0,96	$0.95 \leq CFI \leq 0.97$	$0.97 \leq CFI \leq 1.00$
NNFI	0,95	$0.95 \leq NNFI \leq 0.97$	$0.97 \leq NNFI \leq 1.00$
NFI	0,91	$0.90 \leq NFI \leq 0.95$	$0.95 \leq NFI \leq 1.00$

According to the analysis results with the critical $n=111.18$, Chi-Square/sd was 1.79. It was seen that the degree of fit was at an acceptable level because it was between 0 and 2, which is the recommended value. CFI=0.96, NFI=0.91 and NNFI=0.95 were also found to be at an acceptable level. RMSEA was 0.06, and SRMR was 0.07, both had acceptable fit. However, AGFI was 0.79, and GFI was 0.81. They were not acceptable for model fit.

Accordingly, although the relationships between the latent and observed variables forming the basic hypothesis in a single model were partially significant, the values of goodness of fit were insufficient for the acceptability of the model, suggesting that the model was not accepted as such. When we look at the model, the path from the economic, legal and ethical responsibility to the

club image and the path from the economic, legal, ethical and philanthropic responsibilities to the brand image were removed, and the resultant values were reexamined. After the proposed modifications are made, if the model has a significant change in terms of the goodness of fit, it is possible to reach an acceptable model. The new model obtained in this case is as shown in **Figure 2** below.

Figure 2. A single SEM analysis - the second stage



According to the results, it was seen that the path to the club image from the philanthropy dimension and to the brand image from the club image were significant ($p < 0.01$). The fit values for the performed analysis are as shown in **Table 4** below.

Table 4. Second stage fit values for a single SEM analysis

Fit Index	Values	Acceptable Fit	Good Fit
Chi square (X^2)	270.18		
Degree of Freedom	143		
Chi square /sd	1.88	$2 \leq X^2/sd \leq 3$	$0 \leq X^2/sd \leq 2$
RMSEA	0.05	$0.05 \leq RMSEA \leq 0.10$	$0.05 \leq RMSEA \leq 0.08$
SRMR	0.05	$0.05 \leq SRMR \leq 0.10$	$0 \leq SRMR \leq 0.05$
GFI	0.90	$0.90 \leq GFI \leq 0.95$	$0.95 \leq GFI \leq 1.00$
AGFI	0.87	$0.85 \leq AGFI \leq 0.90$	$0.90 \leq AGFI \leq 1.00$
CFI	0.96	$0.95 \leq CFI \leq 0.97$	$0.97 \leq CFI \leq 1.00$
NNFI	0.96	$0.95 \leq NNFI \leq 0.97$	$0.97 \leq NNFI \leq 1.00$
NFI	0.92	$0.90 \leq NFI \leq 0.95$	$0.95 \leq NFI \leq 1.00$

According to the results of research model with the critical $N=173.04$, Chi-Square/sd was 1.88. It was seen that the degree of fit was at an acceptable level because it was between 0 and 2, which is the recommended value. CFI was 0.96, and its acceptability was at a good level. AGFI was 0.87, and GFI was 0.90. They were acceptable for model fit. RMSEA was 0.05 and had a sufficient fit value. SRMR was 0.05 and had an acceptable fit. Again, NNFI was 0.96, and NFI was 0.92; both had acceptable values. The standard loads and t values of the sub-dimensions of the model are shown in **Table 5**.

Table 5. Standard values for a single model, R^2 and t values

From Path	To Path	Standard Loads	R^2	t Value
Philanthropic Responsibility	Club Image	0.72	0.51	8.81**
Club Image	Brand Image	0.44	0.20	4.95**

When the above findings related to the SEM analysis were evaluated, it was found that there was a significant positive relationship between the latent philanthropic responsibility variable and the latent club image variable ($HS=0.67$) ($t=8.81$). This value implies that an increase in the latent philanthropic responsibility variable will result in a 0.67-point increase in the latent club image variable, or vice versa: a decrease in the latent club image variable will result in a decrease in the latent philanthropic responsibility variable. In addition, it was seen that there was a significant positive effect between the mediating latent club image variable and the latent brand image variable ($CIS=0.47$) ($t=4.95$, $p<0.01$). Therefore, it can be said that the philanthropic responsibility had an indirect effect on the brand image of the enterprise whose name the sports club bears.

The main hypothesis “CSR sub-dimensions in sports clubs have a positive effect on the image of the sports club and on the brand image of the enterprise whose name the sports club bears” (h1) was found to be partially supported by the sub hypothesis “There is a positive effect of the philanthropic responsibility dimension of CSR on the club image and the brand image of the enterprise whose name the club bears” (h1,d). Thus, the results show that the spectators’ philanthropic responsibilities (0.67, $t=8.81$) had a significant influence on the club image, and the club image (0.47, $t=4.95$) had a significant influence on the brand image of the enterprise whose name the club bears. Thus, it was seen that the **H1** main hypothesis was partially supported and the H1,d sub hypothesis was supported. Therefore, the model was statistically significant in terms of both t-value and model fit. According to these values, the research model was at an acceptable level with its final form.

DISCUSSION

According to the results of the study, it was seen that only the philanthropic responsibility of the CSR sub-dimensions had a positive effect on the club image, and the club image on the brand image of the enterprise whose name the sports club bears. The philanthropic responsibility sub-dimension had an indirect positive effect on the brand image of the enterprise whose name the sports club bears. It can be argued that the formation of this situation is mainly influenced by the fact that the sports club examined within the study usually included philanthropic activities in the CSR initiatives and therefore the spectators had knowledge about the activities carried out in this way, resulting in more positive responses to the philanthropic responsibility of the CSR scale sub-dimensions.

In line with the research findings, Varadarajan and Menon (1988) point out that corporate philanthropy activities enhance the brand's national visibility, counteract negative recognition, provide better brand awareness, and strengthen brand image. Karen, Becker-Olsena and Hillc (2006) stated that the use of CSR initiatives has become widespread for organizations that want to influence consumers and differentiate their brands, and that philanthropic activities also have a positive and significant impact on the long-term success and image of sports organizations.

In interviews with sports league representatives in MLB, NBA, NHL and NFL, Babiak (2010) also found that the leagues they were affiliated to have included CSR programs for social contribution and charitable purposes. It is stated that CSR provides a number of corporate benefits, helps in reaching more supporters and sponsors, and is associated with club (team) image and reputation. If sports clubs (teams) want to increase brand value, develop their reputation and attract sponsors, philanthropy activities are necessary (Athanasopoulou, Douvis and Kyriakis 2011: 7).

It can be stated that the spectators were supporting the activity of the sports club in the field of philanthropy responsibility, and also the sports club was trying to fulfill the responsibility of returning what it received from the society to the society. Walker and Kent (2009: 747) state that CSR activities of sports clubs include athletic volunteerism, educational initiatives, philanthropy/donations, community development, advocacy, health initiatives and environment-community programs, and often undertake a number of collective repatriation responsibilities in non-monetary ways. They state that philanthropic initiatives are spreading to all of the organizations in the sporting industry and that CSR initiatives in terms of professional sports clubs cover activities of philanthropy, community participation, youth-education initiatives and youth-health initiatives. In this respect, the fact that sports clubs intensify their philanthropic activities for children and young people

can be considered as one of the reasons for enterprises to give importance to sports and sports clubs in order to positively develop the brand awareness mentioned above. It can be said that this situation also contributes to positive image formation and development for the enterprises.

The athletes of the sports club that was the sample of the research were found to play an important role in philanthropy activities. It can be stated that the CSR programs that clubs perform with athletes were a factor of great importance both in receiving prizes and when considering the domain. The NBA representative in Babiak's (2010) study stated that players in the league think that communication with the fans is important, that the players' reputation and perceived power by the fans show that the players are a vital part of CSR. It is seen that this situation makes a great contribution to the effect created in the society. According to the answers given by the spectators to the questionnaire, it can be said that they were very interested in the activities these athletes attended and had a positive view on this issue. Sheth and Babiak (2010) point out that in CSR activities, especially in philanthropic initiatives, willing and voluntary individuals provide positive contributions to the success of social responsibility programs. For example, they state that players are considered by children as heroes and that athletes are a source of inspiration for the children. Considering the fact that social responsibility activities contribute positively to the performance of sports clubs' employees, it can be assumed that they will also have a positive influence on athletes' motivation and club commitment.

Considering that CSR programs and activities contributed positively to the image of the city (Babiak and Wolfe 2009), it can be said that the philanthropic activities of the sports club that was the subject of the research provided the local community with the proliferation of sports, the development of educational facilities and so on. Thus, the club image had a positive impact and contribution as seen in the research findings. Walker and Kent (2009: 746) states that under the CSR programs of sporting organizations, philanthropy activities have many different characteristics compared to the industries in other business segments. For example, sports teams' ties to local communities and communications are characteristics that distinguish the sports industry from the rest. Reiche (2013), in his study on the German Bundesliga, explains that many clubs (Mainz, Mönchengladbach, Leverkusen, Schalke, Berlin, Freiburg and Cologne) implement their social studies by focusing on regional projects. The sports club, which was the subject of the research, mainly focused on the activities carried out in the city where it operates, targeting the local community, in the CSR activities it carried out.

The philanthropy activities of the sports club can also be regarded as a means of helping to build trust in relations with the society. Particularly, it can be said that philanthropy initiatives contribute to establishing a close connection with the society and to the evaluation of the club as an institution trusted by the

society. Walters and Chandwick (2009: 59) stated that addressing social issues to improve public confidence and fame is an important tool for a sports club. Public projects such as Charlton and Brentford's social projects offer a positive relation in terms of the trust between the community and a sports club. The projects ensure benefits that provide publicity at both local and national level and provide the reputation of sports clubs by means of local stakeholders. They stated that Charlton Sports Club was selected as one of the top ten companies in the CSR category of National Business Awards in 2005. It won the Big Tick Reward in the exceptional community work and social responsibility section in 2007. They stated that it also won awards such as the Silver Jubilee Award for its effective role in providing community involvement. Similarly, the sports club being studied and the enterprise whose name it carries also strengthened their reputation in the general sports industry with awards at the international level (the European Corporate Social Responsibility Program Jury Third Prize) for philanthropic activities.

Sports clubs can use their brands as a motivating factor to make their CSR activities more powerful in their society. Alexander et al. (2011) stated that the Philadelphia Eagles team partnering with The Warthon School has successfully used the Eagles Youth brand as a motivating element, providing a strong incentive environment to bring the community together by enabling The Wharton MBA students to add their own brand to the game they created. In particular, children have presented significant differences between a book with the Eagles brand and a book without the Eagles brand. The Eagles brand has been shown to have a profound effect especially on young adults and children in terms of social impact. Therefore, it can be said that the enterprise whose name the sports club bears creates a strong social effect as well as enabling the brand of the enterprise to create significant awareness in the society via the CSR activities that it fulfills through the brand and corporate image of the sports club.

In recent years, some situations – e.g. a sports club or a business founded by an enterprise company to name a sports club after its own name – indicate that businesses have been partnering with sports clubs. In such partnerships, one of the targets of the companies is to provide the promotion of their brands through the sports club. The enterprise whose name is borne by the sports club, which was the subject of the research, was also able to act together with the sports club being studied especially in philanthropic initiatives. Thus, it can be said that the enterprise has strengthened its brand image. Walters and Chadwick (2009: 63) states that corporate managements that want to develop or maintain a community-oriented brand image are generally interested in creating a strong link between stakeholder groups, such as young people, decision-makers and opinion leaders, by partnering with a sports club. Moreover, it can be said in terms of the findings of this study that all sports

clubs will be able to get the opportunity to have different sponsorships using the CSR areas like philanthropy. Because, the fact that the philanthropic activities, as observed in the research, affect the club and the brand image of the enterprise whose name the club bears shows that the company being studied could achieve an important image formation on the society using the philanthropy activities. Babiak (2010: 534) states that the NHL agent's being part of the social responsibility initiatives earned them corporate sponsors and expressed the opportunity to build links between league and corporate sponsors through CSR initiatives like philanthropy. Moreover, it is stated that establishing corporate partnerships with Honda, Bridgestone, Verizon and Cisco, not only contributed to wider communication but also to the emergence of good news for the corporate sponsors and reaching out to different groups of audiences. Again, Babiak and Wolfe (2009: 728) state that in various leagues, the professional sporting teams of companies are the most important forces behind the progress in the CSR area. They add that corporate sponsors are not solely involved in CSR and that they are also increasingly embracing social welfare efforts as part of their sponsorship with professional sports teams.

Babiak and Wolfe (2009: 729) indicate that sport club directors see CSR as a function of public relations that strengthen the image and brand of the club (team) and that it is supported by an executive's expressions: "we will advertise our team through social assistance and charity." In this respect, it can be stated the enterprise whose name the sports club – the subject of the study – bears created positive perception towards its own brand through its corporate partnerships with this sports club and NGOs. Philanthropic initiatives are seen as a concept that creates collective widespread influence for corporations, united with the society rather than distinct organizations, different from the society. CSR initiatives can be considered as preventive measures for corporate reputation or an effective marketing tool to increase corporate reputation (Walker, Kent and Vincent 2010:188).

Sports clubs offer, through CSR, unique potential opportunities to attract sponsorship/partnership opportunities, increase brand reputation and image, strengthen employee relationships and so forth (Babiak 2010:544). Kotler and Lee (2005), in their work named CSR, point out that some of the famous companies carry their corporate images, brand values and brand images to a more positive position through CSR programs. Taking these considerations into account, it can be said that sports clubs' activities towards philanthropic responsibility of the CSR sub-dimensions will positively affect both the corporate image of the sports club and the brand image of the enterprise whose name they bear.

Finally, Sheth (2006: 13) emphasizes the importance of ethical responsibility and points out that adverse situations like doping negatively affected the image of MLB league and caused it to develop some regulations on

ethical responsibility. It has emerged in the study that unlike the literature, the economic, legal and ethical responsibilities have no effect on the club image. It can be said that this depends on the fact that the sports club that is the subject of this study has just began to give importance to the concept of CSR, like the other sports clubs in Turkey. This also depends on the fact that there is usually not much information in the areas with these dimensions. Moreover, this depends on the fact that the sports club does not include CSR activities for these areas of responsibility and that the motivational arrangements in this direction are not sufficiently established in Turkey.

CONCLUSION

In this research study, some hypotheses were tested by considering a model proposal that included CSR, the club and the brand image. In this model, tests were performed using the SEM analysis. The proposed model was analyzed. The relationship between CSR, club image and brand image variables in the research model was tested under a single model. Some of the paths in the proposed model were removed from the model because they did not support the theory, their t values were not significant and their goodness of fit values were not accepted statistically. To explain more precisely, the path to the club image from the economic, legal and ethical responsibilities and the path to the brand image from all the dimensions of CSR were removed from the model. After removing all the paths with insignificant t values, when the relationships were examined, it was seen that the philanthropy activities of the sports club had a strong effect on the club image. The study revealed that spectators thought that the philanthropic activities of the sports club had an indirect significant effect on the brand image of the enterprise whose name the sports club bears. This shows that private companies in Turkey can make positive contributions to their brand image through sports clubs and philanthropy activities to be carried out by these sports clubs. Sports clubs are institutions that are more intertwined with the society than enterprises. They are more likely to appear in the media with their athletes and professional managers. They are more popularly recognized, and their athletes are seen as role models by individuals in the society. They are able to establish special ties with the society such as partisanships. Therefore, they are able to more effectively perform CSR activities based on philanthropy and thus contribute positively to the brand image of the enterprise through the club image, both directly and indirectly.

It is seen that sports clubs leave positive impressions with their philanthropic activities and increase the reputation of the institution, establish a positive emotional connection with the stakeholders, thus making a significant gain in terms of both club and brand image perception. It is seen that the enterprises and sports clubs provide high level of trust with their philanthropy projects, and they have the power to influence positively in terms

of attitude and behavior of customers. As a result, it can be said that sports clubs fulfill their corporate citizenship duties by using philanthropy activities and CSR roles, thus positively contributing to the image of the club. Moreover, it can be said that the spectators thought that the sports club, which was the subject of the research, contributed to the development of brand image and the protection of the brand power of the enterprise with which the club established partnerships or institutional affiliations. It can be argued that the enterprise – whose name the sports club bears – made significant gains by establishing a bond and affinity with the local and national community through the sports club, bringing supporters of the future to the sports club, and strengthening the link between the local community and the brand of the business, in order to maintain the sustainability of the enterprise.

It can be argued that the stakeholders of the sports club – the subject of the research – such as athletes, spectators, individuals in the local community and non-governmental organizations were an important motivating component of the philanthropic activities. Therefore, the increased understanding of partnership with stakeholders towards charitable initiatives showed that it has made a significant contribution to the sustainability and success of philanthropic activities. This can be said to have been influential in the preparation of philanthropic initiatives towards social needs as well as in forming an important image element on the local community.

The sports club's philanthropic activities strengthen both the association of the sports club and the enterprise whose name it bears with the local community, contributes to the club image, and positively contributes to the brand image of the enterprise which sponsors or gives its name the sports club. It is clear that the presence of CSR activities in basketball will be a significant contribution to the visibility and awareness of philanthropic activities considering that basketball is one of sports branches in Turkey emphasized the most by the media which are operating commercially. Because, the philanthropic CSR activities carried out by the sports club, which was the subject of the research, took place both in the local media and in the widespread media, providing a major breakthrough for the success of these initiatives.

It is also seen that the athletes working in the sports club which was the subject of the research also played an effective role in the CSR programs. It is believed that the athletes, by contributing to such activities, are able to enable both the promotion and the success of the activities carried out and the realization of the programs by the establishment of a stronger link with society. It can be said that this situation also contributes to the development of emotional ties between the athletes and the sports clubs.

As a result, athletes' and sports clubs' communications with their supporters and local community are of great importance. At this point, it can

be said that the philanthropic CSR programs or activities are important for the sports clubs to integrate and establish good relations with their spectators and the local community. Through this study, it is seen that the philanthropy activities performed by the sports clubs both have an indirect effect on the image of the club and the brand image of the enterprise whose name the club bears. These activities also reveal the distinguishing characteristics of the sports in CSR activities. Economic, legal and ethical responsibilities have not been found to have an impact on the image of a club or brand in the study. This can be explained by the fact that sports clubs are not involved in activities related to these areas of responsibility and that no intention exists at the management level regarding these areas of responsibility.

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CHAPTER 22

ALGORITHMIC TRADING IN FINANCE AND MARKETING

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1. Introduction to Algorithmic Trading

Today, electronic trade-based transaction centers are more preferred in financial markets. The ultimate selling profitable instruments is a way of expression; in other words, it is the abbreviation for the systematic use of updated data in the market, the possibility of investment in the problem, the strategy is prepared, and the order is produced electronically. The financial markets begin to apply each monetary unit, that is, used by all strategies for their financial transactions. In an efficient environment, it is necessary to distribute the use of new trade agents before the other instruments. The only way to do this is to spread the technology and change the performance features as a leader. These techniques acquire a share of the case in which the main market was created. Market transactions, which situated the immediate basic signal, are technically continuing, as well as all sides at the opposite and more extensive.

Algorithmic trade logic is the capacity to operate on minor price differences. This strategy could have been built using a wide range of different marketing resources. At the beginning of taking steps, it is useful to refer to key concepts and basic terminology. The buying and selling of price differences between similar financial instruments in two different markets is an important definition. The transfer is made to be traded, and the defending instrument is generally chosen depending on the profit policy established. Electronic financial transactions are a threat to money management, and the result is the behavior of investors with different attitudes and risks. The basic platform of algorithmic trading, on the other hand, is to have a different way of working in the market. It is possible to perform algorithmic trading in financial and marketing sectors.

1.1. Definition and Scope

Algorithmic trading, or also as one of its short versions, refers to a subfield of quantitative finance, which uses computerized algorithms, decision-support systems, or predictive models in making trading decisions, as well as automating trade execution. Algorithmic trading activity is increasingly pervasive in electronic financial markets, and while estimations for its relative activity differ, its popularity is such that algo trading was responsible for between 50% and 75% of order volumes in Europe in 2020. Meanwhile, estimates suggested the share of traded volume in U.S. equity markets ranged from 50% to 73%, across a diverse range of listed products such as futures, options, and exchange-traded funds.

Key characteristics of algorithmic trading covered later in this chapter include the presence of market participants noted for their ability to interact with a wide range of different order types. For fast-moving market prices, this group has a proclivity to co-locate with exchange matching engines and invest

in ultra-low latency networking to ensure swiftness of access. Moreover, rapid data processing and auxiliary tasks such as data management, visualization, and analysis are included to maximize trading and risk-adjusted performance. Underlying each of these trading decisions or tasks is a reliance on models of varying degrees of complexity, such as continuous-time mathematical models that predict price movements or the use of proprietary signals. While there is much commonality in these underlying characteristics, equally clear is the diversity in terms of the operational structure of these strategies. A further characteristic of the space is that, given estimations of significant participation in high-frequency trading involving sub-second trading decisions, it is not just equity markets where the technology has been adopted; FX, options, and futures markets have all seen significant adoption, while less liquid products have experienced growing interest of late.

1.2. Historical Development

Previous sections have outlined how algorithmic trading has spread in the financial markets. Here we take a step back in time and review the major technological and regulatory milestones that have led from rubber hose trading to trading using big data analytics and learn about algorithms. It is essential to review this progression since the experience gained was an essential component in the foundations of existing trading technologies. These experiences complement the recently begun research and publications discussing strategy development and the consequences of strategy design when trading against behavior-based funds, alpha-seeking managers, and professional trading companies. Our research has confirmed experimentally most of these findings and provided insight into the development of trading in the future based on this progression.

The ability to calculate fast and in real-time was dependent on the progress in technology. In the 1960s, we saw the birth of experiments with computers from which standard computerized mathematical models later emerged, e.g., Monte Carlo simulations and Black-Scholes option pricing model. In the 1980s, technology advanced further so that by the mid-1980s, echoes were 'live' at the Chicago futures exchanges, and publication time for Futures Industry was just 5 months—precisely the time the publishers had assessed it took to separate the successful from the not so successful. In 1996, we saw the first papers and publications of actual algorithmic trading systems. Technological advances have been numerous, particularly from 1998, in order to process data more quickly, communication networks, and new communication concepts, e.g., high-speed access. Processes for handling and exchanging live external data on the internet became faster with the focus on speed with which to handle data packages in requisite faster times to first packet, with larger data security data sets thereby handling big data costs. Key legislation in the world that has had far-reaching implications on the speed of trading and the construction of

trading systems is regulation NMS. Our first taste of trading cases to observe was the sudden drop in United Flyway stocks over the United Stokes Stock Exchange market in 2010. The evolution of the lightweight and skeleton of the trading process for arriving at the investment property case in energy trading has become leaner after the financial crisis, in which lending markets are tightened up. This situation is ideal for the energy company to carry out short-term trading based on government financial incentives in North America.

2. Key Concepts in Algorithmic Trading

Econometric studies of collective human behavior in response to favorable and unfavorable information have shown that the predictability of financial behavior in the markets is debatable. The efficient market hypothesis suggests that stocks always trade at their fair value, making it difficult for investors to purchase such underpriced goods. A random walk, on the other hand, argues that the act of buying and selling securities in complex systems does not follow systematic rules. Algorithmic trading started growing in the late 1980s and is now the most popular practice in quantitative hedge funds. An investment manager might be a trend follower, profit from momentum, rely on mean reversion, or just rely on econometrics to try and exploit patterns in financial prices. The prevalent wisdom suggests that trading algorithms are decision-support tools; however, one might argue that they make trading decisions based on logical premises and economic principles of trading in a market that behaves imperfectly and avoids perfect and efficient behaviors.

There are also several algorithmic strategies that can be utilized in trading, such as benchmark and volume interaction strategies. From observations made in the volume interaction strategies serving in trading based on movements within their environment, external trades occur, whereas a market maker stops the prices of the securities through a strategic approach. Suppose there are differences in prices within a market. Then, the action to be taken based on the prevailing internal resistance or support is the mean reversion, upon a value of n . However, if the intention is to take the minimum and maximum prices within the trading range of n value, it would be advisable to be a follower of interim trading. Just because an algorithm works in a previous circumstance does not mean it will work successfully in the future. As a result, the algorithms are perfected by running a method known as back-testing to test the viability and accuracy of their forecasts prior to live trading. Trading algorithms are based on highly specialized software, which gives us a significant advantage in terms of speed of transaction, price, insulating us from emotions, continuous execution, and timely order placement. As a result, algorithms can be classified based on their technological requirements - from simpler technical requirements such as Internet browser-based applications to technologically advanced algorithms that require collocation or a dedicated server ensuring optimal bandwidth for data receiving.

2.1. Market Efficiency and Algorithmic Trading

Many empirical studies spanning over decades have shown that financial and marketing markets are efficient. Efficiency is a source of great interest in financial and marketing science. Market efficiency implies that prices are determined by the available information. If prices are correct, market participants will act in line with it, but they cannot expect the return of their capital to change. This will undermine the incentive of the traders who make changes due to new information to actively enter and exit the market, leading to a change in price and reduced investor profit. Because it reduces investor profit, it is also significant due to reduced transaction costs. For financial and commodity markets, several studies examine the relevance and importance of a firm for valuing a firm depending more on fundamentals than technical analysis.

We generally recognize that large investors, institutional investors in particular, are interested in the importance of the institutions in whose shares they invest, because they take alliances in these companies and/or they help to manage these firms to make decisions in line with their stakes. Discussions on market efficiency, therefore, usually involve institutions, and stakeholders are directed to companies. If markets are efficient, the observed share price in the stock market reflects the actual value. Institutions usually invest in a wide variety of stocks to diversify their portfolios. The returns that can be used are dividends and share price increases. Various securities are exchanged and can be obtained systematically coordinated with the current market price. However, most of the studies have concluded that although market efficiency becomes a mainstay, the capital markets aren't fully efficient. Poor institutions haven't updated select quality in detail. Information is not completely reflected in the release of standard. Adjusted operation focuses on worth, using internal and external information to sort the list.

2.2. Types of Trading Strategies

Various trading strategies are used in algorithmic trading. Arbitrage strategies involve the instant purchase and sale of the same asset in different markets or the purchase of a trading instrument now and the opening of an opposite position in a related market. Statistical arbitrage strategies identify trading opportunities based on historical relationships derived from financial managers and provide the benefit of diversification offered by portfolio theories. Usually, the developed algorithm predicts reversion of market returns generally back to the mean by modeling market behavior. The market-making strategies create bid and offer prices for an asset based on their own variety of pricing models.

These strategies use trade-and-queue or order-flow theories to predict what the short-term behavior and asymmetric information about each

individual trade or orders placed on an electronic limit order book will be. In this case, agents will provide their bid and ask prices in an electronic market or limit order book on behalf of an asset moving in or converging to the mean because it follows a random walk, creating the possibility of recurring profits from all the bid and offer quotes. They will continuously update these in response to the stock's trading momentum and any changes in the target stock's optimal trading quantity or executions. These quotes help in the price discovery and price of the underlying asset converge on the bid and the ask quotes provided by the market makers. Arbitrage opportunities, despite being characterized by repetitive work, are strategies different in timing, volume, and price of opportunities when they work, by necessity. In general, only strategies developed from quantitative models that do not require analysis of large amounts of data can be said to fall within the narrow area of unnatural arbitrage.

The different types of trading and the likelihood of conflicting goals or constraints placed on the individual trading order basically reflect the very wide range of strategies and approaches employed by different traders. Indicative performance metrics of the different strategies depend on the grade of automation of the strategy and whether or not it falls within the narrow range of strategies that can be called unnatural arbitrage. For strategies that fall within the wide definition, there is an absence of any other known generic performance benchmark that does not suffer from some of the same limitations as in other types of performance analyses. While some strategies display characteristics that are strongly consistent across many types of data and context and managerial decisions, the design of these strategies and the constraints placed on them are rarely published. Some famous and commonly used trading strategies are market making, predation, technical analysis, and statistical arbitrage.

3. Benefits and Challenges of Algorithmic Trading

Algorithmic trading or black-box trading refers to a particular order execution service that permits a dealer to automate trading activity. It comprises operating an application script that is often framed in a relatively fast programming language. It is characterized by four benefits. First, it is faster, more accurate, and less burdensome in terms of human resources. Second, machine decisions are pure, since they contain no variation in thought or emotion. Furthermore, Algo files are recognized for their low cost because nearly all electronic communication networks use or reduce costs.

Algorithmic trading isn't specific to the equity industry, but it's quickly expanding. A significant percentage of business transactions were executed algorithmically, which is more than double the percentage from earlier years. Nevertheless, a greater share of equity trading happens through machines.

There are a vast number of problems raised by utilizing algorithms in trading. Algorithms are capable of making trades quicker and at better prices following precise rules, increasing trading incomes and investor benefits. However, the agents recognize that there are dangers connected with using automated trading methods. Dealers are uncertain of the survivability of automated strategies over the long run. Automated implementation is also a subject in many other professions in the finance sector. Like dealers, specialists in organizations or marketing try to carry out both their clients' and their own orders efficiently.

3.1. Advantages of Algorithmic Trading

The biggest advantage of algorithmic trading is that, because transactions are automated and there is no need for a large number of people to execute them, costs are minimized and trading, which is a resource-consuming stage, can be carried out more efficiently. Algorithmic traders can carry out many operations every day even at high frequencies because there is no need for people to carry out these transactions. For this reason, they can earn money at a frequency that normal traders cannot. They must make useful and accurate decisions about which stock to buy and sell in a very short period of time. The amount of data they need to evaluate to make these decisions should only be apparent when evaluated as a whole. Algorithmic traders able to make accurate decisions quickly are able to analyze vast amounts of data that manual analysis cannot. In this way, they can carry out buy and sell transactions during the period when the trading opportunity is valid and cannot be generated again.

It is known that people can be especially emotional in the process of making decisions, and it is difficult for them to decide and execute logically because of the intertwined emotional motivations. However, people who write programs for transactions to be made are not affected by emotions or reactions such as fear and excitement. Automatic transactions and continuous operation are not affected even when these transactions are subject to fluctuations. Algorithmic trading increases the accuracy of trade orders. It is sometimes difficult for the trader to correctly decide the requirements of the command used in the order process during the highly fluctuating business hours. The cyclic structure of the fluctuation is easily taken by the algorithm; the right to operate in this way is compared with the direct human means of order speed operation. The aim is to minimize slippage and transaction costs. Algorithms used in trading are not affected by market fluctuations and are directly related to the liquidity provided by large financial institutions and brokerage houses, which can grow even as very outstanding profits.

3.2. Risks and Limitations

Risk is an inherent characteristic of any algorithmic trading strategy. As such, considerable emphasis is placed, and rightly so, on the risks involved in algorithmic trading by both sides - those in favor of and those warning

against the practice. Nevertheless, algorithmic trading might induce systemic risks. Automated algorithmic trading can lead to market disruptions and/or decreased market sensitivity under certain conditions. The apparent ease with which algorithmic systems can disrupt markets has been demonstrated on more than one occasion. Indeed, the market ‘flash crashes’ of May 6, 2010, and August 24, 2015, have been attributed to algorithmic trading behavior.

This argument has not convinced all. Other research has established the relationship between high-frequency trading and increased institutional interest. Evidence is clearest for the interest of firms and hedge funds in markets with generally higher investor sentiment, for which a greater number of individual investor trades inflates the amount of information for algorithmic systems to consume. The supposed greater market efficiency from algorithmic trading alone correlates with economic utility. Increased market volatility leads to a higher cost for firms acquiring capital, a decreased probability of long-term project success from investment, higher abandonment rates of long-term projects, an increase in the unemployment rate, and the probability that a high-quality worker becomes unemployed.

4. Regulatory Environment and Ethical Considerations

It is vital to safeguard efficient and stable electronic trading environments. Regulations ensure customer protection as well as strict exchange conditions. Key regulatory authorities in the electronic trading ecosystem are the Securities and Futures Commission, the Hong Kong Monetary Authority, the Hong Kong Exchanges and Clearing Ltd., the Financial Conduct Authority, the Market Misconduct Tribunal, and the European Securities and Markets Authority. Previously existing primary anti-manipulation debt was implemented in 2007. Remarkable legislative significance has been dedicated to enforcing market reliability and integrity, in congruence with common interests, and works as a risk mitigator in this regulatory explosion. Care has been given to linking law and fair sourcing best practice guides.

In theory, regulators, both inquisitive of the innovative potential of these systems and adverse to any individual capacity to distort speculative markets, should be willing to promote innovative finance through their strategy and regulation. Nevertheless, they also accept a market-watching role, as many casual operators of commentaries or algorithms related to market movements may be prone to fail. Empirical research demonstrates that poor awareness, or even conscious moves, can be a primary force behind price and volume equity fluctuations. The utilization of the expediency and, in particular, the regulatory reaction to such empirically gathered caveats and agreements is a component of our time, intellectual estate, moral, social, and ethical criteria. Regulatory approaches should not stipulate or discourage optional ethical trading for society at large and the markets as a whole. Regulatory regulation

has recently expanded but abandoned the emphasis on conjugating speculative markets in a reasonable and fair manner with reference to trading notions. Stimulating mechanical commerce and guarding customers or end-users will also be important in the main regions. Regulatory concerns will focus on the professional and public representation boundaries; in other perceptions, the market for the discount industry, in particular, products and functionality.

5. Applications of Algorithmic Trading in Finance

Algorithmic trading is showing an increased presence in the finance sector, due to which the market conditions may change. Algorithmic trading is used in various applications in financial markets, and the most commonly encountered one is quoted. Most commonly, algorithmic trading is used in the finance sector with arbitrage opportunities and in automated market making through liquidity supply. High-frequency trading is also an important application of algorithmic trading for finance and marketing. This is used to exploit very short-term mispricing between markets with tiny fractions of a second.

Even though liquidity supply strategies are mainly based on order-driven markets, classic arbitrage opportunities can be used in a market that is mainly driven by quotes since most of the domination and activity are in mandatory organized markets. These strategies are developed by utilizing arbitraging opportunities between several securities, including stocks, futures, or options, and also among a range of future and option contracts at different maturities. The foundation of these strategies mainly relies on quantitative analysis and predictive models for future performance. The absolute essentiality of the quotes of a specified expiration derivative is to provide the model for calculating future natural instruments at the chosen time-to-expiration in parallel with models for the futures or options market. If the strategy can be fully automated from hedge initiation until position closing, it will belong in the area of algorithmic trading. This enables the integration of algorithmic trading with conventional market operations and allows for firmer interaction with the global market. There is a growing body of evidence evolving that suggests algorithmic strategies work best when the market is relatively stable and lacks significant long-term trends. Combining predictions to enhance decision-making is common in machine learning and data mining techniques and has applications in algorithmic trading via trend following. The increasing interest in algorithm use in finance can be observed from the growing number of funds that apply quantitative strategies.

5.1. High-Frequency Trading

Compared to other trading strategies, the practice of high-frequency trading pays much more attention to the speed of price movements. It uses a special trading platform and high-speed computers to send a large number of

trading orders with profitable potential to the trading platform at an extremely fast speed, aiming to realize ultra-short-term trading of stocks, index futures, options, etc., and obtain small and temporary arbitrage returns, generating profits without gaps or superpositions. High-frequency trading depends heavily on technology and market data; microsecond-level speed determines the outcome of high-frequency trading, so low-latency technology is essential.

Some basic requirements of this technology are also essential. The advantages of high-frequency trading are as follows: (1) Low transaction costs and limited life cycles. (2) Independence from market state. System response time is orders of magnitude lower than traditional markets. Based on the exchange co-location technology and the ultra-high-speed low-latency connection, the system can be boosted in milliseconds. (3) Strong profitability and safety. High performance of technical indicators in more than one market. In a range of stocks, the Sharpe ratio is more than two times higher than the traditional method, with a good ability to spread risk. High-frequency trading has also been criticized. High-frequency trading can cause large fluctuations in market trading volume and pricing, price distortion, clogging of market information transmission, and unfair competition. Moreover, the core of high-frequency trading is to seize the spread opportunity of stock futures, which is not conducive to the growth and stability of the stock market. There is a strong correlation between the turnover of high-frequency trading and the fluctuation range of the index. In addition, the correlation between the increase in turnover of high-frequency trading and price decline is even greater. In the large increase in open interest, the completion of part of the order is due to the use of high-frequency trading to build a position in the process. Thus, the increase in the scale of high-frequency trading can also lead to a certain decline in market transaction limits. Because high-frequency trading orders are fast, the number of orders that can be completed is also large.

5.2. Arbitrage Strategies

Arbitrage can be described as executing transactions with different financial instruments at the same time in different financial markets or exchanges to benefit from price differentials. In general, the aim of arbitrage is to provide price integrity that all markets depend on. Pricing from one market and reconciling them under abnormal conditions in other markets is another way of defining arbitrage. Essentially, trading strategies that exploit pricing inconsistencies in different financial instruments across various exchanges perform arbitrage.

Arbitrage has taken its place in the literature under different titles. Pricing inconsistencies arising between different markets or goods may vary depending on the goods, markets, speculation, and time. After the trading system has implemented a price in terms of machine precision, there will be no difference

in the values obtained regardless of the selected system and algorithm used. The price difference has four principal components: bid, forex, ask, and size, which occur consequently because a market order, limit order, and stop order are placed in another exchange. The orders are placed on the book and then activated. There are typically four main types of arbitrage:

- Consentaneous • Historical • Riskless

It is also important to note that there can be index timing arbitrage and index arbitrage within the context of determining a portfolio return by comparing it with the return of the securities traded on the stock to those of the index. If the return is determined to be low and is assumed to be high in the future, the securities in the portfolio are sold. Conversely, if the return is determined to be high and the return of the market is assumed to decrease in the future, the use of arbitrage is expected to shift to these securities. It is also possible to invest by using arbitrage opportunities by opening positions on the securities that make up the index and the index itself.

6. Applications of Algorithmic Trading in Marketing

The essence of dynamic pricing strategies lies in the real-time adjustments of prices based on actual demand conditions and competitive situations, where algorithms commonly play a critical supporting role in this process. These algorithms evoke the decision-making data center, which can analyze and make swift decisions and assist in ensuring the deal reaches the client at a specific price. Nowadays, because of big data, digital marketers can track consumer behavior, and organizations have more choices. Recommendation systems and clustering analysis are some purposes that are used, although we can segment the users into exclusive precision marketing. This will enable us to appeal to users based on internal or core significance. The algorithms that lie at the foundation of marketing technology are also at the core of the development and customization of news feeds.

There are indeed several instances of how approaches from algorithmic trading were applied to make and execute unique strategies. As an attempt to compete, a company started using sophisticated techniques, such as those used by hedge funds, to apply marketing analytics to give users more customization. It includes suggesting custom products and services to customers based on their preferences and past transactions. Moreover, a popular retailer is using proprietary technology to guess that a shopper is pregnant, and another service is placing bets that algorithms can help pick a potential date who has a higher chance of becoming the love of your life. It increases the outcomes of trading, regardless of the field of interest being focused on. The underlying idea is the same. When we capture experiences and synthesize them into details, it enables us to retrieve a more informed strategy. That exact same philosophy extends to marketing. Not since purchasing have emotions and

feelings changed as much as they have debated multichannel communication support. Data analyzed with the same formula driven by the use of human emotions are made up of them. When these seeds are collected, ads have been executed with confidence primarily based just on accumulated evidence. A scientific approach to pioneering the advertising industry was a challenge. Quite controversial, many ethical dilemmas and concerns about privacy are not just public. It was a game-changer.

6.1. Dynamic Pricing

Dynamic pricing becomes possible through algorithmic frameworks. Businesses utilize algorithms to set prices automatically by the second or even minutes in response to availability, surplus, and other market data. The basic idea is that a system automatically responds to nonsynchronous arrivals of demand signals and adjusts the prices of a portfolio of products in order to maximize the total revenue obtained. Integrating demand and price optimization, dynamic pricing can yield considerable benefits for the industry, including better revenue management and operational planning, reduced inventory, accelerated stock turnover, and the possibility of identifying the crossover between customers' marginal willingness to pay and the cost of services. However, dynamic pricing is not a panacea; hastily implemented, it can alienate and anger consumers. This strategy has long been a standard pricing tool in industrial markets where, particularly during demand slumps, prices can be dictated by muscle — the ability of the seller to drive down the price asserted by the buyer. However, dynamic pricing has not been widely applied to the sale of services or consumer goods. With the distributed development and integration of artificial intelligence techniques, dynamic pricing is now easier to implement and has made major inroads in some previously resistant markets. A survey of pricing researchers told us that detailed case studies from financial services, theme parks, travel, and entertainment were conducted. In some cases, dynamic pricing augmented growth as much as tenfold. There still exist a number of implementation challenges for entrants considering dynamic pricing, and innovation is often a strong social and valuation groundwork for the application of such technologies. This report emphasizes information from Germany and the US, which are characterized by relatively high digitization speeds and application of technologies, but may not be wholly representative of the field. We explain these problems in the report.

6.2. Customer Segmentation

Algorithms employed by algorithmic trading can be used for segmentation and targeting strategies as part of operational marketing to make the segmentation of customers more effective or increase targeting strategies based on customers' behaviors and demographic and ecological factors. The use of big data analytics and conversion of known variables into the unknown

and vice versa can be used in the segmentation of customers precisely. The person in charge of the marketing process who needs to maximize the positive effect of customer segments and prove their effectiveness with the support of performance data can take advantage of suggestions in minimizing customer dissatisfaction with an organic cooperation of data technologies. The algorithm analyzes the data set with the help of advanced algorithms and enables businesses to reveal different results clustering based on different input parameters related to complex data sets. The algorithms are capable of smoothly separating the data sets into groups based on clustering or predictive analytics. It shows how similar these customers or the people performing the transaction are according to the performance-based KPI. Researchers can show the development of the methodologies used in successful applications. The competency of the algorithm and application of the model lies in the forecasted values and efficiency of these values for businesses. There are cases where the ethical consideration of segmentation of customers is taken into account; in the process of collecting personalized data, the involvement of people in the approval and legality of handling their personalized data is essential.

7. Future Trends and Innovations in Algorithmic Trading

Trends and Innovations

The most important question is, “What are the next trends in algorithmic trading?” In this section, the most important upcoming trends in algorithmic trading have been introduced. There are several variables that are trends in the near future that serve the development of algorithmic trading. It is expected that insights into the future described in the following will focus on new technologies. Algorithmic trading practices that are expected to develop are: 1) The impact of natural language processing on trading strategies. 2) The rise of quantum computers in finance. 3) A surge in cognitive computing.

7.1 Machine Learning and Artificial Intelligence Many scholars, market actors, and platform providers predict that machine learning and artificial intelligence will play a huge role in trading within the next 2–5 years. This could involve employing neural networks to identify two or more “opposite indicators,” which can have the same effect on stock prices, diminishing their influence.

7.2 Real-Time Data Processing Improvements in data quality and formats mean that the speed of interaction can be improved. New technologies may be introduced to trade algorithms, and it will become feasible to differentiate an indicator trend effect “off and on.”

7.3 Alternative Data Sources Alternative data sources will become increasingly important in the development of trading strategies. Data will come mainly from search engines, social media, geo-localization tools, structured

sensors, online reviews, and sources of co-sourcing.

7.4 The Development of a Lignite Regulatory Environment It is suggested that further international and domestic regulations will result from new methods of trading. Changes and effects, therefore, will be widespread.

7.5 From the Perspective of the Skills and Talents of the Trader The automation of trading rules will result in the emergence of new tasks and requirements for the trader. Required strategies for trading are global, and tactics for creating, evaluating, and adapting them. The trader profession will thus become further system-oriented.

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CHAPTER 23

THE FLUIDITY OF EVIL IN THE MODERN AND POST-MODERN ERA

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The modern and postmodern periods are characterized by significant transformations and debates across various fields, including art, philosophy, literature, architecture, and social sciences. Modernism, which spans from the late 19th century to the mid-20th century, is often shaped by events such as industrialization, urbanization, and scientific advancement. This era is marked by the emergence of the individual as a subject, the embrace of rational thought, and the adoption of scientific methods. Modernist works typically strive for a quest for reality, employing specific aesthetics and narrative styles to develop innovative forms and content. In contrast, the postmodern period emerged in the mid-20th century and offered a critical approach to many of modernism's principles. Postmodernism emphasizes pluralism, relativism, and multiple perspectives over certainty, objectivity, and universal narratives. During this period, artistic and cultural expressions often feature fragmented narratives, irony, pastiche, and hyperreality. Furthermore, postmodern thought provides a profound examination of societal and cultural dynamics while questioning issues related to identity, gender, and power relations.

The differences between these two periods are crucial for developing a deep understanding of the evolution of art and thought. The essentialist and progressive notions of modernism create a contrast with the questioning and critical attitudes of postmodernism, while these processes also generate a rich discourse in social and cultural contexts. In this framework, modern and postmodern periods offer an important lens for understanding the changing dynamics of the individual, society, and culture.

The concept of “liquid evil,” as introduced by Zygmunt Bauman and Leonidas Donskis, provides a critical framework for understanding the evolution of evil in the modern world. While traditional evil was often overtly imposed on societies by states or major powers through mechanisms of violence and oppression, liquid evil in today's individualized and globalized world has become more diffuse, covert, and invisible. Bauman and Donskis argue that this new form of evil proliferates with the dissolution of bonds between individuals, the weakening of social solidarity, and the excessive emphasis on individualism. In liquid-modern societies, evil no longer relies on large and centralized structures; rather, it manifests in everyday interactions, the fabric of society, and the ordinary flow of life. Bauman and Donskis' concept aligns with Jean Baudrillard's theories on simulation and the displacement of reality, as well as Michel Foucault's ideas on discipline and surveillance, where individuals are controlled subtly. Moreover, it resonates with Erich Fromm's critiques of how individuals in capitalist societies become alienated and lose their moral compass. Ultimately, this study aims to explore how evil deepens and perpetuates itself in societies where individual interests prevail over collective responsibilities.

The concept of 'fluid evil' put forward by Zygmunt Bauman and Leonidas Donskis is extremely important for understanding the evolution of evil in the modern world. Bauman and Donskis state that the traditional conception of evil in human history is a structure that is particularly concentrated in the hands of states and great powers and imposed on society through instruments of oppression. On the one hand, traditional evil was associated with highly visible, large-scale acts such as wars, genocides, systematic repression and violence by totalitarian regimes. For example, in totalitarian regimes such as Nazism and Stalinism in the 20th century, evil manifested itself by inflicting violence on various segments of society through state mechanisms. According to Bauman, this evil was directly related to the oppressive power of the state and was a structure in which the central authority monopolised violent means to achieve its goals. However, today's societies, called 'fluid-modern', have diverged from these classical forms of evil. Bauman and Donskis argue that factors such as individualisation, globalisation and digitalisation brought about by modern societies have paved the way for new and more hidden forms of evil. This new evil is dispersed and invisible, rather than being based on a large and centralised structure as in traditional forms. Fluid evil manifests itself in the interactions between individuals, in the fabric of society and in the ordinary flow of everyday life. The dissolution of ties between people, the weakening of social solidarity and the increase in individualisation lead to the spread of this evil.

Therefore, unlike large and visible state oppression, fluid evil appears in a more insidious and pervasive form. At this point, while explaining Bauman and Donskis' concept of fluid evil, we can refer to the criticisms put forward by thinkers such as Jean Baudrillard and Michel Foucault. Baudrillard argues that simulations have replaced reality in modern societies and that this situation passivises and alienates people. This contributes to the characterisation of evil as escaping from individual responsibilities and moral awareness. Foucault, on the other hand, argues that modern societies control individuals through discipline and surveillance mechanisms, and that these forms of control render violence invisible and integrate it into the norms of daily life. In this context, fluid evil, in relation to Foucault's concept of 'micro-power', makes the oppression of individuals more pervasive and invisible. Bauman and Donskis argue that the invisibility and prevalence of fluid evil in the modern world is particularly strengthened in capitalist societies where individualisation is overemphasised. Individualisation results in the weakening of ties between people. As a result, the sense of solidarity and collective responsibility in social relations weakens. Fluid evil finds a place in the gaps of this fragmented social structure. In a society that sees the human being as an 'other' and puts individual interests before everything else, evil becomes more invisible and can infiltrate every part of society. This evil takes root in a world where the

sense of 'we' is replaced by the sense of 'I' and where ruthless competition and alienation prevail. At this point, it is necessary to dwell on the social and psychological consequences of fluid evil as conceptualised by Bauman and Donskis. While fluid evil erodes social solidarity, it also weakens the empathy skills of individuals. The lack of empathy among members of society contributes to the normalisation and invisibility of evil. Erich Fromm argues that individuals are alienated in modern capitalist societies and that this alienation has negative effects on individual moral values. According to Fromm, the fact that individuals become cogs in the social structure causes them to lose their human aspects and moral responsibilities. This, in turn, paves the way for the spread of fluid evil. According to Bauman and Donskis, fluid evil passes through the social fabric as a danger that can emerge at any moment. Bauman's minefield metaphor describes how unpredictable and uncontrollable this evil is. The structure of social relations and human interactions is like a minefield full of potential explosives; one does not know where and when evil will emerge. Bauman argues that this environment of uncertainty in the modern world leads to evil becoming more invisible. Today, forms of evil such as violence, oppression or discrimination are embedded in the ordinary processes of everyday life rather than being openly visible. So how can we resist this fluid evil?

In the works of Bauman and Donskis, it is emphasised that humanity needs to become conscious of this invisible evil. Reconstructing social solidarity, empathy and mutual responsibility is one of the ways to develop resistance against fluid evil. Thinkers such as Paulo Freire invite people to become conscious and aware of oppressive structures. According to Freire's pedagogical approaches, individuals can be sensitised to social injustices through education and consciousness. In this context, social awareness should be seen as a way to reduce the effects of fluid evil. While Bauman and Donskis argue that individuals should be more active and sensitive in society, they also emphasise the importance of civic engagement. If every member of society feels responsibility towards each other, it can prevent the spread of evil in the social fabric. Individuals striving for the collective good, rather than focusing only on their own interests, can create a resistance against fluid evil. Habermas' theory of the public sphere is an important guide in this context. According to Habermas, individuals should actively participate in the public sphere and try to find solutions to social problems by using their critical thinking skills. This kind of civic engagement enables individuals to be sensitive to fluid evil and develop a sense of collective responsibility.

In conclusion, Zygmunt Bauman and Leonidas Donskis also argue that 'Fluid Evil' allows us to understand how evil is evolving in the contemporary world and how we can resist these new forms of evil. Fluid evil infiltrates every corner of society, wearing the armour of mediocrity and invisibility. However,

raising the consciousness of individuals, strengthening their empathy and rebuilding social solidarity stand out as ways to combat this evil. A conscious society is the strongest line of defence against evil. Bauman and Donskis present not only the nature of evil, but also ideas of hope and resistance for the construction of an alternative future. This struggle is a call for the creation of a more just and solidary society for humanity, going beyond individual interests.

World Without Alternatives

We are said to live in a world without alternatives. It is a world that defends a single version of reality and where anyone who seeks an alternative is seen as crazy or, at best, eccentric. Today, as Zygmunt Bauman and Leonidas Donskis in particular have pointed out, the world is more fatalistic and deterministic than ever before. Prophecies of crisis and catastrophic projections for the future of humanity, regardless of serious endeavours, create pessimism in society. Optimism is a concept that is confused with naivety in the modern age. However, true optimism is based on a belief that evil is temporary and ultimately incapable of destroying humanity. In this sense, optimism is a kind of Christian fiction: It reflects the belief that good can always triumph over evil and that there are always alternatives. On the other hand, pessimism and reflections on the nature of evil are rooted in the historical struggle between Christianity and Manichaeism. As a result of this struggle, Augustine overcame his inner Manichaean and became an important defender of Christianity. According to Manichaeism, good and evil are two separate and independent realities. Christianity, however, believes that evil is only an incomplete or misguided state of goodness. In contrast, the atrocities of the 20th century re-energised Manichaean views and led to the perception of evil as an independent reality. In Mikhail Bulgakov's *The Master and Margarita*, evil is depicted as a powerful and independent force, which parallels Czeslaw Milosz's modern understanding of evil. Milosz saw evil as a dimension independent of modern sensibilities and accepted this dark reality. This perspective also led Milosz to lecture on Manichaeism at the University of Berkeley. Today, evil is no longer in a distinct, fixed form; it has become what Bauman calls 'fluid evil'. This evil manifests itself under the guise of love and goodness. In Orwell's *1984*, the obligation to be loyal to 'Big Brother' with love offers an important observation on this metamorphosis of modern evil. The uncertainties between war and peace, low-intensity conflicts and human rights violations show that evil has become more fluid and uncertain. How fluid evil is diffused in contemporary society is also related to the absence of alternatives and utopias. The theories of Karl Mannheim and Ernst Bloch have made predictions in this regard: While Bloch lamented that modernity had lost its humanitarian and utopian spirit, Mannheim argued that utopias were reduced to political ideologies and limited by the principle

of reality. This process has become even more evident with the fluidity of evil. The protagonist of both fluid modernity and fluid evil acts on the principle of 'seduce and leave'. Fluid evil constantly changes shape, seduces and retreats.

The mythological differences between Prometheus and Satan further deepen the modern understanding of evil in Kavolis' work. Prometheus is seen as a symbol of technological progress and compassion for humanity, while Satan fights for the destruction of the existing social order. However, fluid evil goes beyond these two and deprives people of alternatives and utopias, rendering them passive. Therefore, even if the representatives of fluid evil have a revolutionary energy, they are actually obedient, distracting humanity from the search for alternatives. As a result, fluid evil has replaced solid evil as everything in modern society has become uncertain and ambiguous. Both individuals and societies adapt to this new form of evil and in the absence of alternative options, they are forced to accept their predetermined fate. This situation should be considered as a period in which the modern world has moved away from optimism and alternatives and hopes have disappeared. We live in a world without options. It is a world that advocates a single reality and labels anyone who thinks there is an alternative to everything (except business and engineering endeavours), including the best government models and the most profound concepts, as crazy or, in the best case scenario, eccentric. The world has probably never been so saturated with fatalistic and deterministic views as it is now. According to Zygmunt Bauman and Leonidas Donskis, along with serious endeavours, humanity has been influenced by prophecies and projections of impending crises, dangers, downward spirals and the end of the world (Bauman & Donskis, 2013).

Optimism is not pure enthusiasm; rather, it is a belief that evil is temporary and does not permanently destroy humanity (or, when it does, it does so only momentarily). Optimism expresses the belief that there is always a reason to be optimistic and that there are other options. The belief that the pessimist is a more exalted and virtuous person than the optimist is more than a relic of contemporary Romantic sensibility. This important point is based on the epic struggle between Christianity and Manichaeism. Whereas the Manichaeans believed that good and evil were opposite but incompatible realities, Christians believed that evil was a misplaced or inadequate state of goodness that could be overcome. Optimism is above all a Christian construct, built on the belief that good can triumph over evil and that there are always unexplored options and alternatives (Orwell, 1949).

However, our time is a time of pessimism. The twentieth century has provided convincing evidence that evil still exists, which has strengthened the views of contemporary Manichaeans. Mikhail Bulgakov's *The Master and Margarita* contains these ideas about evil. In the book, evil is interpreted as having sufficient power. This reading of Christianity can be compared to

Ernest Renan's view of Christianity in *The Life of Jesus* (Bulgakov, 1967). Even Czeslaw Milosz confessed to being a secret Manichaean. After encountering the evils of the twentieth century, Milosz came to see evil as an independent and self-sufficient reality. Zygmunt Bauman, using the term 'fluid evil', argues that modern evil has taken on a more complex and difficult to recognise structure. According to Bauman, while evil can be called solid evil based on the social vision of white and black and the stubbornness of evil that is clearly visible in our social and political reality, in the modern world these boundaries have become blurred and evil can masquerade as goodness and love. Orwell also observed that modern forms of evil often masquerade as goodness and love (Bauman, 2013; Orwell, 1949). The idea that Big Brother should be loved is a powerful example of how modern evil takes this form.

Modern Politics, the Ethics of Guilt and the Transformation of Evil

The fall of the Berlin Wall and the dissolution of the Soviet Union should not be considered as events that occurred only at the end of the 1980s. These developments are a natural consequence of the international politics shaped in the aftermath of the Second World War and the major changes in the political and social structure of Europe. The Berlin Wall symbolised the post-war division of Europe, while the dissolution of the Soviet Union represented the collapse of one of the greatest political powers of the 20th century. All the events that took place during this period left deep traces on the socio-political structure of post-war Europe. One of the most important questions facing Europe in the post-war period was the question of guilt and responsibility. Thinkers such as Karl Jaspers sought answers to these questions by addressing the devastating effects of the Second World War and the German people's sense of guilt arising from the horrors of this war. In his work 'The Question of Guilt' (1958), Jaspers elaborated on the issue of German guilt and conducted a deep philosophical debate on how far a nation can be held responsible for war crimes (Jaspers, 1961). In this context, Jaspers identified four different categories of offences: criminal, political, moral and metaphysical offences.

Jaspers' theory of guilt raises important philosophical questions about whether a society or nation can be held responsible for war crimes. Criminal guilt includes direct participation in war crimes and violations of the law. Political offences include acts committed by political leaders and ideologies of a society. Moral crimes, on the other hand, refer to the silence or passivity of individuals during war or when gross human rights violations occur. Jaspers' most complex category of crime, metaphysical crime, concerns the failure to fulfil this responsibility despite the fact that humanity shares a great moral responsibility (Jaspers, 1961). Jaspers' discussions have a very important place in the reconstruction process of post-war Germany. The German people had to redefine themselves both individually and socially in the face of the devastating effects of the war. Guilt was addressed as both a moral and

political issue. Willy Brandt's kneeling in the Warsaw ghetto became one of the clearest political symbols of this guilt. Brandt's action raised the question of whether states could apologise for past crimes. Brandt's action can also be evaluated within the framework of Jaspers' concept of guilt (Fulbrook, 2018).

The fall of the Berlin Wall symbolised not only the removal of a physical barrier, but also the end of Germany's post-war division and guilt. Germany's role in the Cold War was shaped by the crimes committed by Nazi Germany and the guilt these crimes created. Germany's Ostpolitik policy after the war aimed to mend relations with Eastern Europe and heal post-war wounds. In the process, however, Germany's guilt and responsibility continued to be debated (Garton Ash, 1993). The dissolution of the Soviet Union was the result of a more complex process. The Soviet Union remained a political and ideological power for most of the 20th century. However, the political and economic crises that began in the Soviet Union in the late 1980s led to the disintegration of this giant structure. The collapse of the Soviet Union also brought about a confrontation with the crimes committed by this great power. As a totalitarian regime, the Soviet Union had caused the death and oppression of millions of people. However, Russia's confrontation with and apology for these crimes has been much more limited than in Germany's post-war period. While Germany confronted the concepts of guilt and responsibility, it can be said that Russia displayed a more unrepentant and unacknowledging approach (Snyder, 2018).

Paradoxes of Power in the Modern World

As we approach the end of the century, the meaning of social transformation, success and power is changing. Success is no longer measured only by economic growth or development, but also by compromising personal and civil liberties (Bauman, *Modernity and Its Discontents*). This transformation of societies raises new questions at the intersection of truth and politics: When does success conflict with truth and how does this conflict shape societies? The standards of truth defined by Thomas Aquinas in *Summa Theologica*, while still valid in science and philosophy, do not carry the same weight in modern politics (Aquinas, 1265/1274). Politics is no longer perceived as a field of morality, but as a field of struggle focussed on success. While truth is instrumentalised in political processes, success and power gain come to the fore. Although Mahya Veli's idea of 'the integration of truth with action' is at the centre of revolutionary thought, this understanding weakens in an environment where success and truth are evaluated independently of each other. Here, the success of politics becomes a means of subordinating truth rather than keeping it alive. This situation also refers to Niccolò Machiavelli's understanding of politics. According to Machiavelli, the main task of a politician is to preserve power and achieve results without ethical concerns about how this is achieved. Success is glorified as an end in itself. In such a

world, the value of morality and truth becomes a matter of debate only when they undermine authority.

The early modern period placed the struggle for survival of individuals and societies above virtue, an understanding that was later legitimised by Social Darwinists and racists. With the adaptation of Darwin's theory of biological evolution to society, the idea of survival of the fittest became social and political norms. In this understanding, leaders who centralise power become the 'fathers' of the nation, while those who fail are erased from the memory of society (Fromm, *Escape from Freedom*). For example, when a revolution or coup d'état succeeds, its leaders are remembered as heroes, while failed attempts are remembered only as conspirators or rebels. Moral responsibilities are ignored in the process of acquiring power. Although the revolutions of 1989 in Eastern Europe were achieved through courage and solidarity, their consequences were characterised by social disappointment. The revolutions that took place in Eastern Europe in 1989 were fuelled not by fear and hatred, but by the pursuit of human rights, solidarity and freedom (Bauman, 1991).

However, in the aftermath of the revolutions, criticism of the West's use of human rights as a means of social control increased. Western Europe's efforts to impose secularism and minority rights were perceived in many Eastern European countries as the imposition of foreign values. In countries such as Poland and Lithuania, homophobic rhetoric and laws to 'protect the traditional family' are defended with a reactionary conservatism towards the West. This reaction has reinforced the tendency to see Western European values as a cultural threat. Waves of migration from Eastern Europe have been associated with widespread social inequalities and corruption, despite the advantages of accession to the European Union. For example, more than 500,000 people have emigrated from Lithuania in the last 25 years. Poland and Slovakia have faced similar economic and social challenges. This shows that political changes do not always lead to social satisfaction. Zygmunt Bauman's concept of 'fluid modernity' explains the dissolution of traditional loyalty and betrayal becoming a norm (Bauman, 2000). In the modern world, loyalty is no longer a bond that holds personal identities together. Loyalty is replaced by flexibility and individual interests, while betrayal is accepted as a pragmatic strategy. As Fromm states in *Escape from Freedom*, mobile truth offers people short-term safe spaces, but the political arena is taken over by fraudsters and criminals. In a world where betrayal becomes the norm, the erosion of moral values becomes inevitable.

Revolutions bring with them both the hope and disappointment of great social changes. While new expectations take shape after revolutions, the disappointments of the past resurface. According to Bauman, one of the most important consequences of revolutions is that they initiate a process that

can be called ‘patricide’: As revolutionaries destroy the old order, they also target their own leaders, and this process inevitably deepens social conflicts (Bauman, 1991). In this context, the children of the 1989 revolutions had to cope with the disappointments of rapid changes and unfulfilled expectations. The transformation of Eastern Europe was characterised not only by political but also by social uncertainties. While the legacy of the revolutions created new problems in social life, it created the necessity for individuals to redefine their sense of freedom and belonging.

In Bauman’s words, the understanding of ‘winner takes all’ determines the fine line between truth and success in the modern world (Bauman, 2000). Truth can only exist in opposition and competition and this pluralism cannot be eliminated. However, the separation of success and truth erodes the moral responsibility of politics and weakens social trust. Revolutions, while destroying old orders, create new conflicts and disappointments within themselves. To pursue truth is not only to reach a conclusion, but also to be part of competition and conflict. As Fromm states, while individuals attain freedom, they also search for new identities to cope with this freedom (*Escape from Freedom*). This tension created by revolutions and social changes continues to exist as a constant part of human history.

Cultural Morphology

Manichaeism, an ancient religion, advocates that opposites such as light and darkness, good and evil, exist in constant conflict. In this doctrine, extinction and cooling are seen as a result of relentless evil and the extinction of life. It can be claimed that a similar dualism has re-emerged in academic or philosophical fields such as cultural morphology today. Is this perspective hidden under the guise of a “lyrical philosophy of culture” or a “scientifically inclined determinism”? (Bauman, 1991). Fatalism and pessimism are perceived as indicators of wisdom and depth in the modern world. Pessimists are described as “knowledgeable optimists”. According to them, optimism is merely a shallow illusion of happiness. Many people see optimists as naive or ignorant at best (Bauman, 2000). In this context, pessimism is glorified as an attitude based on deep knowledge.

The spread of terrifying scenarios about the end of the world has led to the emergence of a fear industry. An atmosphere has been created in which people’s negative predictions about the future are accepted in society as rational analyses. Optimism, on the other hand, is belittled in such an environment. The optimistic perspective is likened to a peasant’s smiling face in the sunlight; it is evaluated as a simple, superficial attitude that is content with the small beauties of daily life. However, this judgment has much deeper roots. The real issue is the widespread belief that there are no other alternatives in our current world. It is accepted that there is only one reality, and those who think that

everything – even the deepest concepts and forms of government – can have an alternative are often described as crazy or strange (Fromm, 1941). Today, the dominance over politics and the economy instills in people that there is no other option than the current order. As crises, doomsday prophecies and impending disaster scenarios rain down on us from all sides, the perception that there are no alternatives is strengthened. These prophecies are presented as issues that require serious analysis, and people are led to believe in the accuracy of these predictions (Bauman, 2000). However, optimism does not mean that everything is perfect. It includes the idea that evil is short-lived and that human nature will not succumb to it. Optimism is a belief that there are always other options and that no matter what the situation, alternatives can be found. This perspective does not come from naivety or shallow thinking, but rather from deep experience and knowledge (Thomas, 1933).

The belief that the world is much bigger than us, yet still similar to us in some ways, forms the basis of this optimism. The optimistic individual accepts that being in the world and having the ability to think is a gift. The idea that our presence in this world is meaningful compared to the possibility that everything could be worse shows that our happiness and contentment are important. Even if it is accepted that there are no alternative worlds, optimism reveals that the role we play in this world is meaningful. Therefore, this world can be considered “the best of all possible worlds” (Bauman, 1991). Dylan Thomas’s poem “And Death Shall Have No Dominion” stands out as a powerful expression of optimism and hope. This poem stands in direct opposition to historical and metaphysical fatalism, and celebrates the idea that meaning can continue even if everything has an end (Thomas, 1933). In the modern age, this optimistic perspective takes on even greater importance in a world where all alternatives have been eliminated. As a result, the underlying morphology of culture can be a Manichaeian dualism that glorifies pessimism while belittling optimism. But optimism is not simply naivety, it is a celebration of life and existence. Optimism maintains the belief that there are always other options and that the meaning of life does not necessarily end in tragedy. Dylan Thomas’s lines remind us that a hopeful perspective is one of the most valuable alternatives in this world: “And Death Shall Not Have Presidency.”

Conclusion

Zygmunt Bauman and Leonidas Donskis’ concept of “liquid evil” shows how evil has transformed in modern and postmodern periods. Traditionally, legal repressive instruments were openly implemented, but in today’s world it has acquired a more visible and dispersed structure. Liquid damage seeps into daily life through the overemphasis of individualization, the weakening of social ties, and the constant encouragement of competition. Bauman and Donskis criticize the loss of empathy, which distances modern social

individuals from social responsibilities and causes evil to heal more quickly. In this world where individual interests come to the fore and solidarity decreases, evil has become ordinary and has settled into daily life. According to Bauman, liquid evil is like a minefield within social structures and interpersonal relationships, where it is not clear when and where it will emerge. Therefore, resistance to evil can only be possible through the reconstruction of society and the adoption of collective responsibility. The lack of empathy of the living and the weakening of social ties cause evil to become visibly stronger. Liquid evil does not come from central authorities such as the state, but rather as a social event that can be found in the future.

In this case, it is combined with the changing of reality through Jean Baudrillard's simulations and Michel Foucault's surveillance and discipline to be realized. Baudrillard's simulated reality becomes the depiction of a world where copies of the place of reality are recorded and the distinction between the real and the fake is generalized. An analysis develops in which these physical, liquid evils eliminate the illusions, ethical and financial responsibilities of the place where the real is located. Foucault's studies on surveillance and discipline reveal how they are controlled and their freedoms are restricted through mechanisms that can be seen in modern societies. While being constantly monitored, they are forced to constantly discipline, and this allows the visibility of evil to gain strength. Erich Fromm argues that alienation in capitalist societies brings with it a world where responsibilities are eroded. Fromm's critique of capitalism can see how the loss of ties with themselves, society and nature will lead to the ordinaryization of evil. The capitalist system encourages individuals to compete and prioritize their own interests, while ignoring social responsibilities and solidarity. In this process, individuals distance themselves from social and relationship values, contributing to the increase of evil.

The way to resist liquid evil is to rebuild social solidarity and for individuals to embrace collective responsibility. The concept of critical pedagogy and awareness developed by Paulo Freire provides an important roadmap for individuals to develop resistance against this invisible evil. Freire argues that individuals should be aware of social realities and take action in line with this awareness. According to him, social change is only possible through the conscious civil participation of individuals. Awareness is necessary not only for the personal development of individuals, but also for developing a sensitive attitude towards social problems. Bauman and Donskis emphasize empathy and solidarity against the routine and invisibility of evil in the modern world. In a world where individuals live disconnected from social ties, the risk of remaining insensitive to evil increases. However, when individuals develop sensitivity to this evil and rebuild social solidarity, they can prevent the spread of evil. Resisting liquid evil requires a transformation

not only of individuals but also of social structures. Individuals' consideration of not only their own interests but also their collective responsibilities is the fundamental condition for creating a more just and solidarity-based society. The unpredictable nature of liquid evil, when combined with individuals' lack of empathy and the weakening of social ties, leads to the strengthening of evil. However, it is possible to resist evil and build a better future. At this point, the strategies suggested by Bauman and Donskis enable individuals to resist liquid evil by developing their empathy and solidarity. The reconstruction of social solidarity aims to create a world where individuals take responsibility not only for themselves but also for others.

As a result, while evil becomes more fluid and invisible in the modern world, social structures and individuals need to become sensitive to this evil. Evil gains strength with the weakening of social solidarity and the loss of individuals' sense of empathy. However, it is possible to resist this evil with empathy, solidarity and conscious civil participation. The awareness and active civil participation advocated by Paulo Freire increase the capacity of individuals to resist this invisible evil. The strategies of resistance and hope proposed in the works of Bauman and Donskis provide an important guide to creating a just and solidaristic society. These strategies aim to prevent evil from becoming commonplace by ensuring that individuals take responsibility not only for themselves but also for the social good.

Zygmunt Bauman developed the concept of "liquid modernity" to understand the dynamics of modern society and the positions of individuals within this society. This concept describes the modern world in which individuals' social relations, norms and values are in constant change. According to Bauman, the fluidity of evil addresses the relationship of individuals and societies with evil and how these relations are shaped. Bauman does not only see evil as the evil actions of individuals, but also draws attention to how it exists within social structures and systems. In the modern world, evil stems not only from the actions of individuals, but also from social norms and structural inequalities. In this context, evil is fluid because it changes over time and can manifest itself in different ways depending on the conditions of societies. Bauman states that many individuals in modern societies are indifferent to evil. This indifference leads to the ordinaryization of evil. Evil is pushed out of the media and society's agenda and becomes a "familiar" situation among individuals. For example, events such as wars, migration crises and social injustices can be removed from individuals' daily lives, and this makes evil fluid. Bauman argues that individuals and societies should increase their sensitivity to evil. Evil is not only related to individual actions, but also to social structures and norms. It is emphasized that individuals should fulfill their social responsibilities and stand against evil actions. In this context, it is thought that ethical responsibility should be re-evaluated.

Bauman argues that evil has taken an “advanced” form in the modern period. This means that individuals contribute to evil indirectly as part of the system rather than directly committing evil actions. For example, bureaucratic structures can function as a mechanism that directs people to evil actions and prevents social change. The fluidity of evil also includes the variability of social norms and values. Societies can adopt different values over time, and these values can affect the perception of evil. Bauman criticizes this situation, emphasizing that individuals, social norms and values are in constant change and how this complicates ethical decision-making processes. According to Bauman, the fluidity of evil is important for understanding how individuals and societies experience evil in the modern world, where social structures and norms are in constant flux, and the impact of these experiences on individual and collective ethical responsibilities. The vulgarization of evil and indifference require individuals to play a more active role in this regard. In this context, Bauman’s ideas help develop a deeper understanding of the nature of evil in modern societies.

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CHAPTER 24

IN VOCATIONAL HIGH SCHOOLS ISO 45001 OHS MANAGEMENT SYSTEM APPLICATION

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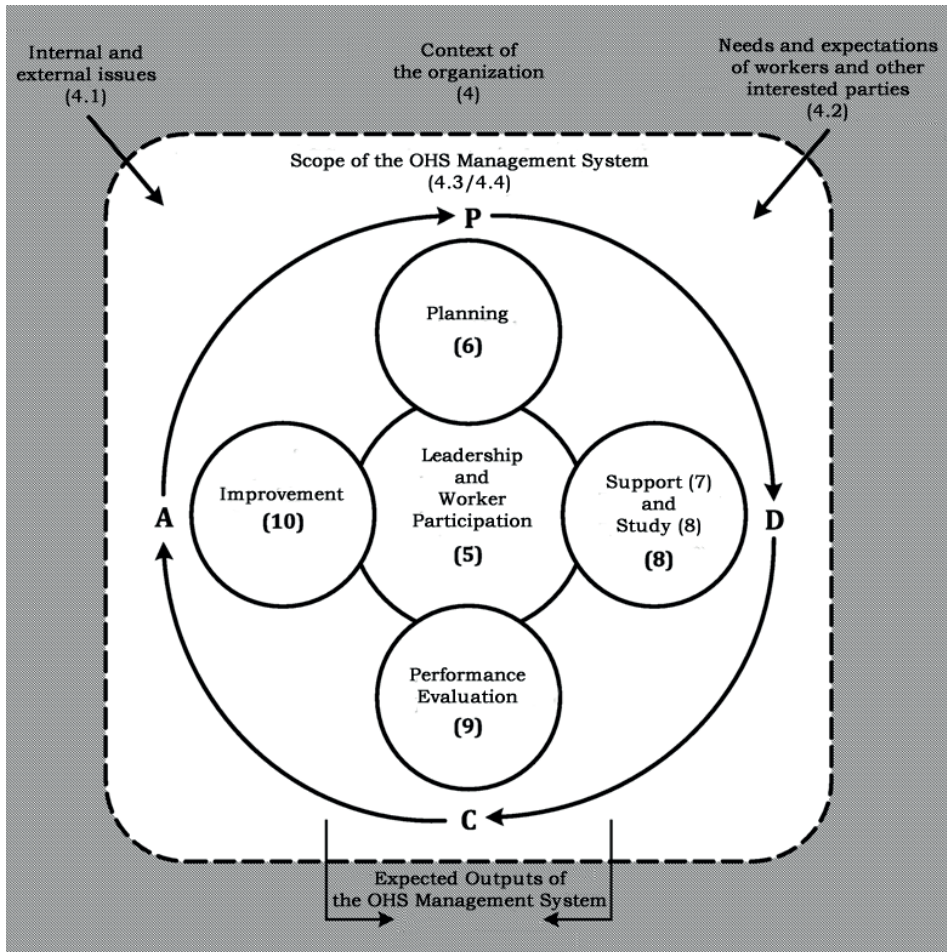
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1. INTRODUCTION

Buharaevler Vocational and Technical Anatolian High School is an organization that includes the fields of Information Technologies, Child Development and Education and Beauty Services. The establishment is in the hazardous-less hazardous class with the NACE code 85.32 (Technical and Vocational Secondary Education) by the Workplace Hazard Classes Communiqué on Occupational Health and Safety (2012, December 26). The purpose of an OHS Management System is to create the framework to be used to manage OHS risks and opportunities, to prevent injuries and diseases in all individuals interacting with the organization, to ensure a safe and healthy workplace environment and to continuously improve OHS performance (Demirel C., 2022; Asan G. & Erdal D., 2022).

This study aims to implement and introduce the occupational health and safety management system to the organization within the framework of TS EN ISO 45001:2018 OHS Management System Standard. The organization contacted the Turkish Standards Institute and applied for TS EN ISO 45001:2018 OHS Management System Standard. The OHS Handbook has been created by the organization, under the guidance of the Standard created specifically for the organization by TSE.

OHS Handbook is a document describing the occupational health and safety management system of Buharaevler Vocational and Technical Anatolian High School. The organization's occupational health policy is a reflection of its practices, occupational safety and organizational approach based on the TS EN ISO 45001:2018 Occupational Health and Safety Management System Standard. In the establishment, the basis of the OHS Management System approach was based on the cycle known as PCDA. The PCDA cycle was put forward by W. Shewharts Deming (1939) as an option to ensure continuous improvement by organizing the production systems of businesses (Aydemir, 2008). The PCDA cycle on which the organization will be based in the OHS Handbook has been prepared regarding the ISO 45001 Standard and is given in Picture 1. This standard (TS EN ISO 45001) sets the requirements for an occupational health and safety management system that guides organizations to ensure safe and healthy working conditions and proactively improve occupational health and safety performance to prevent injury and health risks. Proactive means taking action by foreseeing the risk.



Picture 1: PCDA Cycle of the Organization

The standard is valid for an organization that wishes to fulfill the following:

- To increase occupational safety and worker health,
- Eliminating/minimizing OHS risks,
- Establishing, implementing and maintaining a management system to eliminate OHS non-conformities,
- Continuously improving OHS performance and OHS targets,
- Proactively improving OHS performance and demonstrating compliance with the requirements of international standards,

- To be exempt from injury and ill health.

The standard does not set rules for the design of the management system, nor does it set a specific criterion for occupational health and safety performance.

The standard enables the organization to integrate occupational health and safety and other aspects of its occupational health and safety management system. Beyond the risks to workers, it does not include issues such as product safety, property damage, or environmental impacts. The organization has determined the internal and external issues that affect the work it will do to achieve the OHS Management System objectives related to the OHS Management System purpose. These aspects include the environmental conditions that the organization affects and is affected by and are given in Table 1.

Table 1: Internal and External Issues Forming the Context of the Organization

Internal matters	Our values
	Our culture
	Our Knowledge
	Our performance
	Our employees
	Our employees
External matters	Legal Developments
	Technology, Ministry's OHS Practices (Mebbis OHS Module)
	Sector
	Society
	Regulatory and Supervisory Bodies
	Media

The context of the organization was created by performing a SWOT Analysis. The basics that need to be known when performing a SWOT Analysis are given in Figure 1.



Figure 1: SWOT Analysis

The standard emphasizes that the organization must state the legal and non-legal terms of its interested parties and employees. The organization has determined and recorded the needs and expectations of the relevant parties in the OHS Management System with the “Document of Needs and Expectations of Employees and Other Relevant Parties” to determine which of these needs and expectations can be met.

To raise awareness for all employees within the organization;

- The OHS policy is posted in visible places and shared on the school website,

- Relevant OHS targets were determined together with the employees and targets were created based on the data obtained by conducting a survey on the subject with the employees,

- Possible consequences of not meeting the requirements of the OHS Management System have been evaluated,

- Ideas were exchanged about dangers, risks and precautions,

- In-service awareness seminar was held with the active participation of all employees.

Additionally, in necessary situations such as new developing situations; Employees are informed and awareness is increased through bulletin boards, e-mail, or meetings.

2. Works Done in the Establishment Building

Within the scope of TS EN ISO 45001:2018 OHS Management System, periodic control, maintenance and repair of areas such as electricity, fire installation, heating system, water tank and elevator in the establishment

building are carried out. Within the scope of the OHS Management System, the works carried out in the building and their visuals, taking into account the risk assessment, corrective action request notifications from the employees and the decisions taken at the meetings, are given below:

- ✓ Instructions for use and the rules to be followed in the areas are hung in the relevant places clearly and visibly and their visuals are given in Picture 2.
- ✓



Picture 2: Instructions for Use, Rules to Be Considered

- ✓ Emergency escape routes are indicated with warning and direction signs. Plate visuals are given in Figure 3.



Picture 3: Emergency Escape Routing

- ✓ The emergency plan, fire interior arrangement instructions, floor plan and what needs to be done in case of fire are hung on all floors for everyone to see and their visuals are given in Picture 4.



Picture 4: Fire Warnings, Emergency Plan, Floor Plan

- ✓ All equipment to be used in case of fire has been maintained and routinely checked. Fire extinguishers are numbered and their images are given in Figure 5. Thus, maintenance and repairs and expiration dates are monitored more systematically.



Picture 5: Fire Extinguishers and Fire Cabinets

- ✓ Insulating mats have been laid to coincide with the usage areas of all electrical panels and their visuals are given in Picture 6.



Picture 6: Electrical Panels and Insulator Mats

- ✓ Window locks have been installed on all building windows to prevent uncontrolled opening and their visuals are given in Picture 7.



Picture 7: Window Locks

- ✓ Since the area where the doors open to the outside cannot be seen from the inside, the door opening areas are marked with yellow security strips for people in the corridor and their visuals are given in Picture 8.



Picture 8: Door Opening Area Lines

- ✓ Occupational health and safety measures have been taken on the stairs with strips to prevent slipping on each step. Stairs with a width exceeding 1.5 meters are made suitable for occupational health and safety by dividing the width with handrails and their visuals are given in Picture 9.



Picture 9: Handrails and Tapes

- ✓ All cabinets in the establishment are fixed to the wall and the risk of falling and tipping over is eliminated and their visuals are given in Picture 10.



Picture 10: Cabinets Fixed to the Wall and Empty the Top

- ✓ Flammable materials to be used for vehicles such as lawn mowers are kept together and in a controlled place where only a responsible official can reach them. Likewise, cleaning materials are stored and used on each floor under the control and supervision of the official responsible for that floor. Images are given in Figure 11.



Picture 11: Cleaning Materials Room

- ✓ Chemical materials in the Science Laboratory and Beauty Services Area workshops are under the supervision of the teacher in charge. Stored out of sunlight and in locked cabinets. In the Information Technologies Area workshops, electrical and network cables have been rearranged through channels suitable for occupational health and safety. In addition, the chairs in the workshops were supplied and put into use under ergonomic conditions and their visuals are given in Picture 12.



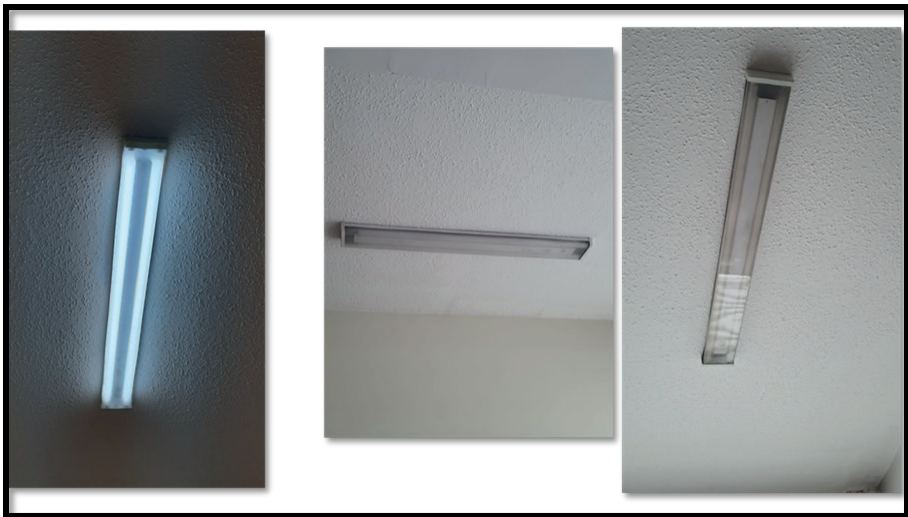
Picture 12: Information Technologies Area Cable Arrangements and Chairs

Door handles are gradually being changed and made more suitable for occupational health and safety. Their images are given in Figure 13.



Picture 13: Door Handles Replacement

- ✓ All building lighting has been checked, their covers have been fixed considering the risk of falling and their visuals are given in Picture 14.



Picture 14: Lightings with Fixed Covers

- ✓ The covers opening to the ventilation gaps are fixed and their visuals are given in Picture 15.



Picture 15: Locked Vent Covers

- ✓ Garden gates are fixed to prevent uncontrolled and careless opening and closing. In addition, the sharp ends of the iron on the garden walls were cut and made suitable for occupational health and safety. Their images are given in Figure 16.



Picture 16: Garden North Side and South Side Gate

- ✓ The equipment in the water tank and combi boiler room is regularly maintained and repaired. Water storage pumps are numbered according to the floors they belong to. Thus, transportation is facilitated in emergencies. In addition, it is cleaned regularly following the instructions. Visuals of the water tank and combi boiler room are given in Picture 17.



Picture 17: Water Tank and Combi Boiler Room

- ✓ Electrical room and boiler room doors were replaced with heat-resistant doors. Their images are given in Figure 18.



Picture 18: Heat Resistant Door

- ✓ Warning and/or direction signs have been hung in relevant places for all possible situations previously identified as risks, such as “Do not stand under the eaves”, “Do not use during an earthquake” and their visuals are given in Picture 19.



Picture 19: Warning Signs

- ✓ Mobile warning signs are used for situations that may occur due to slippery ground and their visuals are given in Picture 20.



Picture 20: Mobile Warning Signs

- ✓ The shelter is kept ready for possible emergencies. The items that were previously brought to the shelter were removed and cleaned. Shelter visuals are given in Figure 21.



Picture 21: Shelter

By the competency article of the standard, the organization; it determined the training needs and individual competence of all employees regarding the OHS Management System with the “Training Needs Determination Survey”. To gain the required competence and receive the necessary training, “Basic OHS Training for Employees”, “First Aid Training”, “Search and Rescue Training”, “Fire Training” and “Orientation Training” were planned during the year. The Training Needs Identification Survey is applied at the beginning of each academic year to determine the need and update the training plan. All employees are ensured to participate in these trainings. Basic OHS Training is also provided to students. In addition to training, drills are organized and implemented every year. Earthquake Drills, Fire Drills and Evacuation Drills are carried out and the training provided is supported by drills.

3. CONCLUSION AND RECOMMENDATIONS

An OHS management system has been implemented within a non-profit school, thus enabling individuals raised with an OHS culture to take steps with OHS awareness when they start their lives, which will enable more valuable gains to be achieved in the long term. For the OHS culture to be adopted and implemented in our country, educational institutions should be places where seeds that will grow in the future will be planted.

It cannot be ignored that students who continue their educational activities within the Vocational and Technical Anatolian High School enter

business life at a much younger age (Yıldız S. & Asan G., 2022). After our students' graduate, no matter what field they will work in, they will continue their path as individuals who have internalized the OHS culture thanks to the OHS management system implemented in the institution where they are students. Although the establishment, monitoring, maintenance and continuous improvement of the occupational health and safety management system may seem like a gain that the organization and those concerned benefit from at the moment, much greater gains are achieved in the long term. Therefore, expenses in this regard should be considered as a long-term investment.

In this study, the methods of implementation of the TS EN ISO 45001: 2018 occupational health and safety management system in a vocational high school and what needs to be done to obtain the OHS management system certificate and system have been prepared as a guiding guide. This guiding study, which conveys all the work, services and activities carried out within the scope of TS EN ISO 45001 OHS Management System Application within Buharaevler Vocational and Technical Anatolian High School and all the necessary steps for the establishment and certification of the system, can be examined in more detail (Esen, 2024).

The important thing is that all this work does not remain on paper. Rather than obtaining a certificate, the intended outcomes in line with the standard will only be achieved when we act with the idea of being an exemplary school, an exemplary business and an exemplary country that will move the business and society forward. For this purpose, it is very important to get the support of the employer, then the top managers, employees and relevant parties and to act in unity in every activity. The starting point should be that the employer really wants the change, shows this desire to his employees with a thought in line with his real purpose and expects them to have the same thought. After setting out on this journey; The goal can be achieved through training, exercises, meeting standard demands and all activities carried out. Since the new targets to be determined after each target is achieved will include continuous improvement efforts, a system that is always up-to-date and functioning will be created.

With this study, the preparation of the necessary documents for the establishment of the OHS management system during the 2022 - 2023 academic year, the start of operation of the system as of February 2023, the completion of the internal audit in June 2023 and the external audit in March 2024, as a result of concluding that the system is operable, TS EN Buharaevler

Vocational and Technical Anatolian High School, which is entitled to receive ISO 45001 OHS Management System Certificate, It became the first and only vocational and technical Anatolian high school in Çorum province that was entitled to receive certification. In this sense, this study sets an example for the implementation of the ISO 45001 system in educational institutions and vocational high schools. Studies to be carried out in different vocational high schools and educational institutions at different levels will help the ISO 45001 OHS management system to be more implemented and understood in educational institutions in Turkey.

The recommendations that emerged as a result of the study are as follows:

OHS Management System is an indispensable process for corporate culture, customer expectations and legal obligations in every field, as it is sustainable, traceable and open to improvements.

An institution that values people, society and the environment with its OHS Management System and considers these processes as an integral whole of its process will be preferred. OHS management system should be implemented and supported in all institutions and organizations, regardless of sector.

Since the OHS Management System can be implemented with an attitude of unity and solidarity, the adoption and participation of all employees can achieve its purpose thanks to the leadership of my senior management.

Occupational health and safety culture can be accurately transferred to future generations with the OHS Management System in educational institutions. Students will apply the behavioral changes they have acquired throughout their education life in their business lives and reflect positive examples (Aksoy S., Çevik B. &Çakıcıer N., 2013).

TS EN ISO 45001 OHS Management System; It is a guide that facilitates the implementation of OSH legislation that is compatible with existing quality management systems. This globally accepted standard aims to make working life easier, to adopt occupational health and safety rules, to include all employees in this system and to operate the system sustainably. Existing laws specify OHS requirements and the management system standard interprets how the work will be done.

Identifying risks and opportunities is of great importance in preventing most work accidents.

Along with what the standard brings, the job descriptions of the

personnel working in the TS EN ISO 45001 standard have been determined, thus creating an effective division of labor among the employees.

Procedures for what to do in case of emergency have been determined and effective communication methods have been used to convey these procedures to other employees. In this way, employees within the institution were made aware of what to do and who to contact in case of natural disasters such as earthquakes, fires, floods, gas leaks, machinery equipment malfunctions, accidents and incidents. The innovations of Law No. 6331 are implemented in this way.

It is the employees of the institution who play the biggest role in the implementation and sustainability of the management system. It is of great importance to support training to spread the OHS culture among employees. In addition, according to Labor Law No. 6331, it is stated that in a hazardous class workplace, at least twelve hours of training per employee should be provided by OHS experts at least once every two years and/or training should be received from experts in external training institutions. Necessary training is provided to employees, teachers and students in coordination with the Directorate of National Education.

Supporting training, performing risk analysis effectively and providing resources for the measures to be taken are situations that can be achieved with the support of senior management. The support of senior management is important in establishing and maintaining the OHS management system. The senior management ensures that the full implementation of the TS EN ISO 45001 OHS Management System in the institution ensures that the working environment can continue its activities following the legislation in terms of occupational health and safety, is compatible with other management systems and can be improved with periodic controls. It also ensures that its employees can contribute effectively with the commitments made by the senior management.

Since all employees must have active participation in the OHS Management System, it is necessary to increase the awareness of employees and create an OHS culture within the institution to ensure the sustainability of the system. Therefore, senior management's prioritization of the training of their employees will increase sustainability.

Establishing teams for emergencies and disaster management in educational institutions is a requirement of the institution even if the OHS Management System is not established and therefore the duties assigned to employees are supported and strengthened by the OHS culture.

Consultancy services are provided by the Directorate of National Education to establish the system during the documentation process. After the Management System is established and implemented, if it is deemed appropriate as a result of the internal audit conducted by the expert appointed by the Directorate of National Education, the external audit process is initiated by making the necessary applications to the Ministry of National Education. It is hoped that this study will serve as a guide for other educational institutions affiliated with the Ministry of National Education.

Occupational Health and Safety Law No. 6331 is also valid in non-profit public institutions and organizations, universities and technoparks. The installation of TS EN ISO 45001 Occupational Health and Safety Management System should be encouraged in these institutions to establish an OHS culture and monitor OHS measures.

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CHAPTER 25

THE EVOLUTION OF CUISINE FROM ANTIQUITY TO THE PRESENT: IT'S RISE AS A DISCIPLINE

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INTRODUCTION

Since the beginning of human history, nutrition has been a phenomenon that forms the basis of individual and social life. This process, which started to meet physiological needs, has become central to religious belief systems, social structures and even political struggles over time. Anthropological research reveals that the first human communities met their food needs through hunting and gathering activities and that these activities constituted the first examples of social organizations (Güveloğlu, 2015). The discovery of agriculture and domestication processes, called the Neolithic Revolution, has been one of the most important turning points in human history that triggered the transition to settled life. The first settlements established in areas close to fertile soils and water sources were concentrated in fertile valleys such as Mesopotamia, China, India, Egypt and Anatolia. The climatic and geographical conditions of these regions were ideal for agricultural production and shaped the first civilizations of humanity (Soğandereli, 2020:1311).

The first scientific foundations of gastronomy were laid in Mesopotamian civilizations. Mesopotamian cuisine has left deep traces on the cuisine of the Middle East, Central Asia and the Mediterranean due to its pioneering role in agricultural production and its geographical location. The migratory movements and wide geographical spread of the Turks made Turkish cuisine an influential actor in a wide area extending from Central Asia to Europe. In this process, Turkish cuisine has had an important place in world culinary history by interacting with local cuisines and both influencing and being influenced by them (Düzgün & Durlu Özkaya, 2015). Ensuring food security during the migration movements of Turks has been of vital importance in the harsh conditions of nomadic life. Difficulties in accessing food resources increased the Turks' interest in agriculture and animal husbandry and enabled them to adapt to new geographies. Throughout history, food has not only been a physiological need, but also at the center of economic, political and cultural interactions. Historical trade networks such as the Silk Road and the Spice Road have enriched the world culinary culture by enabling the exchange of foods from different geographies and the discovery of new flavors (Düzgün & Durlu Özkaya, 2015). This study aims to reveal the phases of cuisine in the disciplinary process by addressing the culinary phenomenon from a historical, social and cultural perspective. In this context, the research will chronologically examine the long and complex development process of cuisine from the first civilizations to the present day. This examination will reveal how culinary techniques, ingredients and eating habits have changed in different periods. Today, cuisine has become not only a practical skill, but also a field of scientific research and an academic discipline. This study will examine the evolution of gastronomy as a scientific discipline, the formation of culinary cultures in

different geographies and the universal and local dimensions of these cultures in a comparative perspective. In particular, by revealing the common and different aspects of various cuisines, it will analyze how eating habits have been shaped in different periods of human history and how important a role they have played in the formation of cultural identities. Finally, the study will offer a perspective on current culinary trends and how cuisines will be shaped in the future.

The Evolution of Cuisine as a Discipline from Antiquity to the Present

Food is a multidimensional phenomenon that goes beyond biological necessity, playing a central role in the construction of human history, cultural identities and social structures. As Chappel-Sokol points out, food not only fulfills nutritional needs, but is also a reflection of social memory, traditions and values. As eating habits have become social institutions throughout human history, a unique discipline called culinary culture has emerged. The kitchen is not only a place where food is prepared and consumed, but also a symbol that reflects the identity, history and cultural values of a society. The cuisines shaped in different geographies and cultures have some universal characteristics, but also reflect local and unique identities. In this context, food and beverages play an important role in the construction of cultural identities and the strengthening of social unity (Lashley, 2000). As a matter of fact, the geography where people are located, the religions they believe in, and their eating habits from the past have drawn the boundaries of culinary cultures, and cuisine as a culture is an important element in the formation of identities that people have. In this sense, social changes in any region or geography affect the eating and drinking habits of societies.

Historical Development of Cuisine

Since the beginning of human history, nutrition has been an indispensable requirement for the survival of individuals and societies. This basic need has become systematized over time under the influence of social, cultural and economic factors and has led to the discipline of cuisine. The eating habits of communities living in different geographies have differed under the influence of various factors such as geographical conditions, climate, agricultural techniques, migration movements and cultural interactions.

In the Paleolithic period, when fire was not yet systematically used, humanity subsisted mainly on hunting and gathering. In this period, nutrition was at the center of the struggle for survival and food was consumed raw. Food diversity varied according to geographical location and seasons, with plants, insects and hunted animals constituting the main food sources. Although the concept of cuisine in the modern sense had not yet emerged in this period, there are some practices, albeit primitive, in the processing and selection of foods.

The invention of agriculture with the Neolithic Revolution has been one of the most important turning points in human history. The spread of agriculture accelerated the transition to settled life and led to radical changes in eating habits. Settled life increased the possibilities of food production and storage, making a more organized and varied diet possible. With the control of fire in this period, cooking techniques began to develop and kitchen culture became more complex. Kitchens became not only places where food was prepared, but also important centers where social interactions and cultural exchange took place. Communities living in different geographies have developed unique culinary cultures by using the natural resources around them. In this process, important developments such as the domestication of plants, domestication of animals and the emergence of agriculture have radically changed eating habits (Düzgün & Durlu Özkaya, 2015; Soğandereli, 2020:1312; Kılıç & Duymuş, 2008). In human history, dietary habits have evolved in direct relation to geographical conditions, climate changes and transformations in social structure. The discovery of fire has been an epochal turning point in this evolution. The cooking process has changed the physical and chemical properties of foods, facilitated digestion, increased energy efficiency and expanded the variety of nutrients. In this way, the human body has become able to consume more complex foods and a diet that supports brain development has been created (Düzgün & Durlu Özkaya, 2015; Soğandereli, 2020:1312).

These developments accelerated the sedentarization processes of human communities, leading to radical transformations in both their dietary habits and lifestyles. People, who had met their vital needs through hunting and gathering in previous periods, started to cultivate agricultural products along with hunting and gathering. The Mesopotamian civilization had a very diverse diet thanks to its fertile lands and advanced agricultural techniques. The Mesopotamian diet included a wide range of foods such as cereals, fruits (dates, apples, pears, figs, pomegranates, grapes), vegetables (onions, root crops, mushrooms), spices, meat (cattle, sheep, pigs, poultry, game), fish (sea and freshwater), shellfish, insects, dairy products (milk, butter), vegetable oils (sesame oil, olive oil), honey and mineral salts. This rich variety of foods is an important feature that distinguishes Mesopotamian cuisine from other civilizations of that period (Bottero, 2005). With the transition to an agricultural society, a number of political and social rules emerged among people. As people began to practice agriculture, communities generally established settlements in areas favorable to agriculture. In geographies such as China, India, Mesopotamia, Egypt, etc., the presence of rivers enabling agriculture was the main factor in the establishment of the first settlements. Göbeklitepe in Anatolia is one of the first settlements established in this sense. Wheat remains were found during excavations in Göbeklitepe. These remains

found in Göbeklitepe, one of the fertile lands of Mesopotamia, suggest that the first agricultural activities in the world may have been carried out in this geography (Düzgün & Durlu- Özkaya, 2015, p. 42).

In the Chalcolithic Age, advances in mineral processing technology led to radical changes in the production processes and thus the way of life in human history. Tools produced using copper and its alloys obtained from metals increased productivity in agriculture, hunting and other areas of daily life, thus paving the way for the formation of more complex social structures. Especially in the kitchen, the utensils and utensils produced by the processing of metals created a significant transformation in the processes of preparation, storage and consumption of food. Primitive earthen and stone vessels were replaced by more durable, hygienic and functional metal vessels. This development has diversified dietary habits and increased food safety by enabling food to be preserved for longer periods of time. These advances in mineral processing technology also contributed to the formation of social hierarchies and the foundations of early civilizations. Individuals and groups with mineral processing skills rose to a more prestigious position in society and assumed a key role in production processes. This led to economic inequalities and social stratification. Thus, technological developments in the Chalcolithic Age significantly affected the course of human history and paved the way for the emergence of civilizations. While the need for food enabled people to organize themselves, it also made social interactions between communities possible. Due to the need for food, the first civilizations started to trade with each other and these trades continue today. The exchange and trade of foodstuffs laid the groundwork for the establishment of economic relations between the first human communities and the beginning of cultural interactions in wider geographies, laying the foundation for international relations. The political struggles and wars that emerged in the following centuries were aimed at establishing control over these routes. Control over food resources was recognized as an important indicator of political and economic power. As agriculture became the main source of livelihood, food became central to the economic systems of early civilizations, which in turn had a decisive impact on political power and social status. Considering the historical process, there are many examples of this. The importance of wheat in ancient Rome is not only limited to its central role in agricultural production, but is also closely related to its role in underpinning the economic and political structure of the empire. In addition to meeting the basic nutritional needs of Roman citizens, wheat was an important trade commodity that provided revenue to the state treasury and was thus used in critical areas such as the provision of public services and the feeding of the army. The geographical discoveries initiated by Europeans not only enabled them to reach new geographies, but also to bring new plant and

animal species from different geographies, especially from the Americas, to Europe, significantly increasing the continent's nutritional diversity. European states made significant political and economic developments in this period and established colonies in different parts of the world. The pineapple fruit brought to England from India was used by King Charles II as an element of power. While Charles II served this fruit to his guests, he would cut and serve the pineapple with his own hands. This offering of Charles II created the image that "only a king can cut pineapple and serve it to his guests". In addition, pineapple fruit was considered as a sign of England's power in the seas in the 17th century (Kul, 2019, p. 27).

Starting in the 18th century, the Industrial Revolution led to radical changes in production methods with the invention of the steam engine and the establishment of factories, which increased the importance of industrial products such as coal, steel and textiles as well as agricultural products in international trade and ushered in the era of industrialization in world economies. The advancement of technological developments has also brought ease of transportation, thus making it easier to reach food. Thanks to advances in transportation technologies, people have found the opportunity to interact with different cultures by easily traveling long distances, which was not possible before, and this has played an important role in the formation of global cuisines. The increase in interactions between cultures has resulted in the influence of culinary cultures on each other and caused significant changes in traditional culinary concepts. Since the second half of the 20th century, in the process of globalization, the spread of fast food chains around the world has significantly affected eating habits by replacing traditional cuisines, and this has raised concerns about the protection of local culinary cultures. The Slow Food movement, which emerged as an alternative to the fast food culture that has become widespread with globalization, aims to protect traditional culinary values and adopt sustainable eating habits by covering the entire process from food production to consumption (Yurtseven, 2006). The Slow Food movement attaches importance to local foods, local producers and local flavors that are about to be forgotten, traditions related to eating and drinking, local agricultural methods, and makes efforts to protect biodiversity (Mayer & Knox 2006). In this framework, governments carry out activities to promote cultural heritage in order to increase the economic potential of tourism. For this

- Gastronomy festivals,
- Conferences,
- Promotion days
- Legal regulations,

- Education programs

Some tools, such as the “The World is a place of peace and security” (Kesici, 2012). Especially in the peaceful environment experienced in the world compared to the past with globalization, people’s desire to see the places they are curious about and the desire to see and taste the food or food of a country on site has led to the emergence of gastronomy tourism. Gastronomy tourism can be defined as visits to taste a special type of food specific to a region or to see the production stages of a food (Ongun et al., 2019: 809). The United Nations-World Tourism Organization (UNWTO), on the other hand, defines gastronomy tourism as “the whole of recreational food and beverage-related recreational experiential activities for gastronomy destinations” (Çuhadar & Morçin, 2020: 93; Şahin & Ünver, 2015: 64).

Within the Framework of Culture and National Identity Kitchen

Culture is a complex structure formed by the combination of common values, beliefs, traditions, art, literature, lifestyles, social institutions and many other elements that define a society or communities. According to UNESCO’s definition of culture, culture is not only the works of art or traditions produced by a society, but also a whole of all elements that shape the world view, values and lifestyle of that society (Oğuz, 2011: 128; UNESCO, 1982). Culture has an important role in the formation of individuals’ identities, the establishment of social relations and the coexistence of societies. Culture helps people understand the world, create values and form an identity that they will bequeath to future generations. According to Kongar (1989), cultural values, which are accepted as a common heritage of human history and encompass all humanity, can be defined as universal culture. On the other hand, with the emergence of nation-states with the rise of capitalism, the totality of cultural elements that are shaped within national borders and specific to that nation is called national culture. People continue their lives by internalising the cultural heritage of the society they are born into, namely behaviour patterns, value judgements, knowledge and art, through social learning processes. This cultural heritage has been shaped by social interactions, experiences and geographical conditions over thousands of years of human history and has been passed down from generation to generation. Demographic changes such as human population growth and migration movements have increased the cultural diversity of communities living in different geographies and ensured the continuity of cultural evolution. Considering that hunter-gatherer communities in the Palaeolithic period were dominated by geographical conditions and the struggle for survival, it can be said that behaviour patterns to meet basic needs were relatively more homogeneous. In these communities, basic instincts such as food supply, security and reproduction formed the basis of social organisation. The genderbased division of labour resulted in a greater

role for men in hunting and women in gathering activities. However, this division of labour emerged as a result of environmental conditions and physiological differences rather than specialisation in the modern sense (Aytan, 2021). With the Neolithic Revolution, the transition from hunter-gatherer lifestyle to agriculture led to the adaptation of human communities to settled life and the emergence of larger, complex social structures. Increasing population and surplus production led to a deepening of the division of labour and the formation of a social hierarchy. In the process, norms, values and belief systems regulating social co-operation became increasingly complex and cultural diversity increased. Thus, with the beginning of agriculture, distinct cultural boundaries began to be drawn for the first time in human history. One of the reasons for the formation of cultural differences between communities is undoubtedly the way people live. Although agricultural activities started to be carried out, the geography of each community was not suitable for agriculture. The spread of agriculture with the Neolithic Revolution accelerated the transition of human communities to settled life. However, the diversity of geographical conditions prevented all communities from adopting the same way of life. While the communities that settled down in regions favourable for agriculture formed more complex social structures by obtaining surplus production, the communities living in regions unsuitable for agriculture continued their nomadic lifestyles based on hunting and gathering. These different lifestyles led to an increase in cultural diversity among communities over time. One of the factors affecting culture is the geography. The geography of societies is the factors that affect their lifestyles, behaviour and thought patterns. When we look at societies engaged in agricultural activities, since these societies are both self-sufficient and market the surplus of what they produce to other societies through trade, their interaction with other societies both affects their culture and an important role in the construction of their identities. However, when we look at societies that lead a nomadic life, they face more difficult and challenging conditions than agricultural societies. Since the main occupation of these societies is animal husbandry, they lead a continuous nomadic life. Therefore, it is seen that these societies are more combative and stronger. Because these societies need to make more effort to survive and keep their culture alive due to the conditions of the geography. One of the basic elements of culture is undoubtedly nutrition behaviours. Tezcan (2000), addressing culture through the eating habits of individuals, emphasises that culture is a learned and social phenomenon. According to him, 'culture is the basic indication of what we will eat'. This statement shows that eating habits are learnt from an early age and become a part of an individual's identity and are an important component of cultural heritage. Foods are loaded with symbolic meanings that reflect the values, beliefs and identity of a society, beyond just meeting a physiological need. One of the most

important factors shaping the food and beverage culture of a society is undoubtedly the cultural values of that society. As stated by researchers such as Şar (2013) and Tezcan (2008), cultural values deeply affect the lifestyle of a society as well as its eating and drinking habits. In this context, the eating and drinking culture of a society emerges as a result of a complex interaction of multiple factors such as geographical location, agricultural production, socioeconomic structure and interactions with other cultures (Baysal, 2001). This interaction causes both the originalisation of eating and drinking habits and their transformation by being influenced by other cultures. Humans have to be fed in order to survive. However, although all people have to be fed, some differences in eating habits stand out. Due to these differences, the culinary discipline of a society becomes a cultural phenomenon. Although nutrition is a biological need, the way food and beverages are supplied, prepared, cooked and consumed varies in societies. This situation makes nutrition not only a necessity but also an important element in the construction of national identity. When national cuisines are analysed in the historical process, it is seen that all cuisines contain features that differ from the others. In the early ages, the basic nutritional elements of the communities that led a nomadic life were animal foods. The reason why these communities had a nomadic lifestyle can be explained as the fact that people had to move frequently between suitable places to feed their animals. By changing places, people were both feeding their animals and benefiting from the products obtained from animals. The migrations of people in order to provide food have caused their lifestyles to differ from geography to geography. When Turkish Cuisine, one of the richest and oldest cuisines in the world, is carefully analysed, traces of Turkish culture are found. First of all, the eating habits of the Turks, who had a nomadic lifestyle in Central Asia, consisted of animal foods (Kızıldemir, Öztürk, & Saruşık, 2014). During the Central Asian period, a large part of the Turkish culinary culture included meat, milk and dairy products. Due to the arid and infertile soils of Central Asia, vegetables and fruits were very limited in the Turkish Cuisine in this period (Güler, 2010). With the increase in the Turkish population in Central Asia, the difficulties brought by geographical conditions forced the Turks to migrate. One of the reasons for the Turks to spread and migrate towards the west is undoubtedly the difficulties in accessing food. The adoption of Islam by the Turks had profound and transformative effects on Turkish cuisine. Alcoholic beverages such as koumiss, which had an important place in the dietary culture of the Turks in the pre-Islamic period, were restricted in their consumption with the prohibition of alcohol in Islam. This led to a significant change in the content and consumption habits of Turkish cuisine. Culinary cultures are dynamic systems shaped by the interaction of multiple factors such as geographical, socioeconomic, religious and cultural. The culinary culture of a society living in a particular geography is deeply

influenced by factors such as the variety of food offered by that geography, climatic conditions and migrations in the historical process. At the same time, the socioeconomic status of the society, religious beliefs and interactions with other cultures are also important factors that shape the culinary culture. The culinary culture that emerges as a result of these interactions may face the risk of assimilation in the face of globalisation and cultural interactions, while gaining a unique identity (Çetin & Şen, 2021). Culinary culture is not an element of identity limited to a geography. The effects of cuisine are sometimes carried from one geography to another geography. In the life of the Turks, who introduced a culinary discipline in Central, this discipline appears as an element of socialisation beyond individualisation. In Turkish culinary culture, the fact that meals are consumed by gathering around a table is a clear example of this. At the table the fact that those present wait for the oldest member of the group to start eating first, the recitation of prayers from religious rituals before and after the meal, and the consumption of meals from the same bowl placed in the middle of the table, especially until the Turkish Culinary culture in the Republican period, are examples of both sharing and socialisation. Again, it is seen that food is used as an indicator of power in Turks. One of the tools used by the head of the Turkish tribes or the head of the state to gather people together was undoubtedly food banquets. The ruler, who gathered people at a table, showed his power in the society with the number of people who responded to his invitation and the food and drinks he offered them. These banquets led to the emergence of the concept of “toy” in Turks and toy has always had an important place in Turkish culture. In the toy, the ruler would sit at the same table with the people and eat with them, while the problems of the people were discussed and. Turks continued to maintain this tradition after their arrival in Anatolia and this became an integral part of Turkish national identity. However, although there were some changes in these traditions in the last periods of the Ottoman Empire, the table culture among the people still maintains its importance in terms of socialisation (Düzgün & Durlu- Özkaya, 2015; Güler, 2010; Kızıldemir, Öztürk, & Saruşık, 2014). When we look at Western culture, fast food culture comes to the fore today and fastfood culture gives some information about the national identities of Western societies. First of all, since individualisation is at the forefront in western societies, it is seen that this is reflected in eating and drinking habits. Mankind has been in a long evolutionary process from the diet of hunter gatherer societies to today’s globalised food systems. In this process, nutrition has ceased to be only a physiological need and has become a complex phenomenon by combining cultural, social and economic dimensions (Çetin & Şen, 2021). The concept of fast food, which the Turkish Language Association defines as ‘ready-to-eat’, is nowadays a business model that focuses on standardisation, speed and profitability, works with a limited menu and generally offers low-cost food. As

stated by Elmacıoğlu (1996), fast food has become an important part of a global consumption culture, which has been set in a certain format in order to serve the most customers in the shortest time. As a striking example of this evolution, the fastfood culture, which emerged in the last century and spread rapidly, has left deep traces in our eating habits and social structure, and continues to be a controversial issue today. Since the preparation of food in fast food culture is easier and shorter in terms of time, it is seen that people do not gather at a table in crowded groups and consume food, but rather sit on their feet or at a table and eat in a short time. Fastfood culture, which is a product of the changes in people's food culture after people started a more regular and programmed business life with the effect of globalisation, has become popular today, especially in eastern societies (Aydın, 2012: 107). This situation is perceived as a threat to national cuisines and states want to ensure the survival of their traditional cuisines by carrying out some studies on this issue. Culinary culture is a part of national identity that reflects who we are, how we are and our economic conditions to others. Therefore, changes in the kitchen can also lead to the degeneration of the culture of the society. Today, new trends brought by globalisation threaten the culture of nations and change their eating habits. Since national identity is an important tool in foreign policy, states One of the areas of struggle against the threats brought by globalisation is undoubtedly the national cuisine. For this reason, states have been carrying out studies in this field in recent years and have chosen to introduce the public opinion of other states to their culinary cultures not only within national borders but also beyond their borders.

Interaction of International Cuisines

The geography of Mesopotamia is known as the place where the first kitchen discipline was formed after people settled down and started to deal with agriculture. The presence of two important rivers such as Tigris and Euphrates in Mesopotamia geography facilitated agricultural activities in this region. Archaeological excavations in this region also suggest that the first agricultural activities in the world started in Mesopotamia. Mesopotamian civilizations created a rich nutritional culture thanks to agriculture developed on fertile soils. This culture is an important milestone in the development of world cuisines. With the invention of writing, the Sumerians created written records documenting the eating habits of the period. Findings from archaeological excavations show that Mesopotamians had advanced cooking techniques and their recipes were included in tablets (Bottero, 2005; Soğandereli, 2020: 1312). Mesopotamian civilizations introduced important innovations in cooking techniques and started to use ovens systematically for the first time in history. This development enabled foods to be cooked in a more diverse and healthy way. Tablets recovered from archaeological excavations show that wheat and other cereals formed the

basis of Mesopotamian cuisine. In addition to grains, seafood, various vegetables, beverages such as beer made from barley grain, dairy products, spices and soups constituted the richness of Mesopotamian cuisine.

Mesopotamia's fertile soils and advanced irrigation systems enriched the region in terms of agricultural products. This richness not only fed the people of the region, but also played an important role in trade with other geographies. Along with the trade of agricultural products, the flavors, cooking techniques and eating habits specific to Mesopotamian cuisine also spread, thus making significant contributions to the development of world cuisines. Mesopotamian cuisine, which is accepted as the first cuisine of the world, has led to the formation of culinary discipline in other geographies as a result of its relations with other geographies. In this sense, Mesopotamian civilizations led to the formation of Asian Cuisine and Chinese Cuisine. Asian Cuisine is also known as Turkish Cuisine or Anatolian Cuisine. The emergence of Turkish Cuisine and Chinese Cuisine are examples of the first international culinary interactions (Düzgün & Durlu- Özkaya, 2015).

Chinese cuisine, one of the oldest and most diverse cuisines of Far East Asia, has maintained its unique identity for centuries. In the historical process, the interaction of Chinese cuisine with other culinary cultures has been limited, which has shaped the unique character of the cuisine. However, with the global influence of China, Chinese cuisine has gained popularity worldwide and continues to develop in interaction with different cuisines (Polat, 2019, p.109). Chinese cuisine, one of the oldest cuisines of Far East Asia, has had a significant impact on Japanese cuisine due to geographical proximity and historical interactions. However, Japanese cuisine has also been shaped by its own unique geographical conditions and cultural heritage. Similarly, Mesopotamian cuisine has formed an important basis for the formation of the cuisines of the Middle East and Anatolia, and thus Turkish cuisine. Throughout history, Turkish cuisine has also been influenced and enriched by Central Asian, Iranian, Balkan and Caucasian cuisines. Turkish cuisine can be analyzed in different periods, namely the Central Asian and Anatolian periods and the pre-Islamic and post-Islamic periods. Although the historical migratory movements of Turks have played an important role in the development of Turkish cuisine, the geographical diversity and the dynamics of the development of Chinese cuisine over a long historical period should not be ignored. Both cuisines have been shaped by various factors such as migrations, trade and cultural interactions. The migratory movements and wide geographical spread of the Turks affected not only political borders but also cultural exchanges. The basic dairy products of Turkish cuisine such as koumiss, boza, ayran and yogurt were recognized and consumed in large geographies starting from Central Asia through migrations. Turkish cuisine

had a significant influence on Egyptian cuisine, especially during the Ottoman Empire. The rich dessert culture, use of spices and cooking techniques of Turkish cuisine were significantly transferred to Egyptian cuisine. Due to its geographical location, Egyptian cuisine also interacted with other cuisines in the Mediterranean basin, especially with Ancient Greek cuisine (Düzgün and Durlu-Özkaya, 2015: 43).

In the Middle Ages, regional cuisines shaped by local geography, climatic conditions and agricultural products came to the fore, while in the New Age, with the strengthening of national identities as a result of political unification movements, increasing trade volume and cultural interactions, cuisines began to gain a national character. In this process, cuisines developed in countries such as France, Italy and Spain have had a significant impact on world cuisine with their unique flavors, techniques and presentation styles. Many factors such as geographical conditions, historical processes, trade routes and cultural interactions have been effective in the formation of national cuisines (Albala, 2014: 34). While nutrition in the Middle Ages focused more on quantity and abundance, the understanding of nutrition in Europe underwent a radical transformation with the Renaissance. This change, which started in Italy, led to the prominence of diversity and flavor at the table. Rich menus served in small portions brought about the development of taste buds and the refinement of table manners. In this period, food became not only a physiological need but also a social and cultural experience (Çabuklu, 2004).

The New Age has been a period of radical changes not only in the fields of science, art and philosophy, but also in nutrition, one of the most basic needs of daily life, and therefore in gastronomy. The transformations of this period profoundly affected not only the eating habits of individuals, but also the cultural identities, economies and social structures of societies. Another important development in gastronomy in the New Age was the emergence of a more sophisticated and artistic approach called “haute cuisine”. This approach, which was shaped by the influence of French cuisine, transformed food from a mere means of satisfying nutritional needs into an aesthetic experience. Refined presentations, special ingredients and complex cooking techniques are the main characteristics of haute cuisine. Although this culinary concept was initially specific to the aristocratic classes, over time it was transferred to commercial kitchens and reached a wider audience (Aksoy & Üner, 2016:1231; Albala, 2014: 34). Culinary innovation movements resulted in the prominence of flamboyant presentation, high cost and unique flavors in food culture. In this period, instead of large portions, smaller meals enriched with aesthetic presentations were preferred. At the same time, a more systematic and scientific approach was adopted with the rise of hygiene and sanitation standards in the kitchen (Aksoy and Üner, 2016:7).

CONCLUSIONS AND RECOMMENDATIONS

This study focuses on cuisine not only as an area that meets the need for nutrition, but also as a dynamic phenomenon that reflects the historical, social and cultural structures of societies. The research examines the phases of culinary practices from the earliest civilizations to the present day in chronological order, revealing the historical origins, development and current position of this discipline. It summarizes how kitchens have been shaped by factors such as the development of agriculture, increased trade, migration, political changes and technological advances.

Culinary history, a journey from ancient times to the present day, has been a mirror not only of nutrition but also of the identities of cultures, societies and individuals. Starting from the first steps of agriculture, the opening of trade routes, the rise and fall of empires, migration movements and technological developments have shaped the evolution of kitchens. Today, cuisine has become not only a necessity, but also an art, a culture and an expression of identity. Gastronomy is an important field that is studied with an interdisciplinary approach and shapes the future. Today, when issues such as sustainability, healthy eating and globalization are on the agenda, kitchens will continue to offer new flavors and experiences by keeping up with these changes. Conclusion;

There is a need for more academic studies on culinary history, gastronomy and nutrition. In particular, more detailed research should be conducted on the cuisines and historical processes of under-studied geographies. The integrated use of disciplines such as anthropology, sociology, history and economics will provide a more in-depth and comprehensive understanding of culinary history, revealing unexplored aspects and cultural contexts. Related to this: Stakeholders may suggest that educational programs on culinary culture and history should be developed and more attention should be given to these issues in schools, the number of museums and archives that will preserve and transmit culinary culture to future generations should be increased, kitchens should be made in accordance with the principles of sustainability and local production should be given importance.

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CHAPTER 26

***Mentha piperita* L.: OVERVIEW OF PHENOLIC COMPOSITION AND TRACE ELEMENT CONTENTS**

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1. INTRODUCTION

Mentha piperita L., commonly known as mint in Turkish, is a perennial and aromatic plant from the Lamiaceae family. This plant has had an important place among medicinal and aromatic plants since ancient times (Lawrence, 2006). Today, the use of the plant in various fields such as food, cosmetics, pharmacy and aromatherapy is quite common. In alternative medicine, *Mentha piperita* L. is used in the treatment of ailments such as headache, digestive problems, respiratory diseases and muscle pain due to its anti-inflammatory and analgesic properties. Additionally, peppermint has significant antimicrobial and antiviral activities, strong antioxidant and antitumor effects, and some antiallergenic potential. In terms of medical use, it is considered to be antibacterial as it can prevent the growth of *Streptococcus* and *Lactobacillus* bacteria, so it is frequently used in toothpastes, mouthwashes, chewing gums, confectionery and cosmetic products. In folk medicine, peppermint oil is widely used as a carminative, antispasmodic and expectorant, as well as in aromatherapy and massage therapies (Mimica-Dukić ve Božin, 2008; McKay ve Blumberg, 2006). Phenolic compounds and essential oils have an important place among the chemical components of the peppermint plant. The plant contains essential oils including menthol, menthone, flavonoids, phenols, triperthene and tannin. Phenolic components of the leaves include rosmarinic acid and various flavonoids, mainly eriocitrin, luteolin and hesperidin. It is very rich in vitamins C and A. Additionally, it contains high amounts of potassium, protein, folic acid, calcium, zinc, iron and fibres (Berktaş ve Çam, 2020).

Phenolic structures greatly contribute to the antioxidant activity of the plant. Reactive oxygen species (ROS) include superoxide, singlet oxygen, hydrogen peroxide, and hydroxyl radical. Excessive production of ROS can lead to oxidative stress, which triggers damage to cell structures including lipids, proteins, and DNA. Antioxidants prevent cellular damage caused by free radicals, reducing oxidative stress.

Due to environmental factors, contamination of agricultural soil and therefore plants with pesticides and heavy metals is inevitable. Additionally, plants are an important means for transferring trace elements from soil to humans. Therefore, determining the macro and micro element content in plants is very important in the use of herbal infusions and in the evaluation of toxicity in terms of human health in the production of plants used as raw materials in the pharmaceutical industry (Seeniyasan et al., 2008; Kostić et al., 2011; WHO, 2007).

Scientific research on peppermint, which has not lost its popularity to this day due to its chemical components that justify its use in folk medicine since ancient times, continues today. In this review, scientific publications on the

phenolic composition and trace element contents of *Mentha piperita* L. from Google Scholar, Web of Science, Scopus, and PubMed databases are included.

2. PHENOLIC COMPOUNDS AND TRACE ELEMENT CONTENT OF *Mentha piperita* L. USED AS A MEDICINAL PLANT

2.1. Phenolic composition analysis of *Mentha piperita* L. with microelement effect

The ability to grow medicinal plants under harsh environmental conditions is important for sustainable agriculture. When obtaining pharmaceutical products, the concentrations of metals in the soil should not exceed the permitted limit values. Copper (Cu), zinc (Zn), manganese (Mn), iron (Fe), molybdenum (Mo) and boron (B) are the elements necessary for plant growth. Apart from boron, these elements are also heavy metals and their high concentrations are toxic to plants (Webber, 1981). For this reason, the analysis of these microelements added to the soil and plant leaves for plant growth has led researchers to studies on increasing the phenolic composition of plants. These studies conducted in the last year are shown in Table 1.

In the study of Mehdizadeh et al. *Mentha piperita* plants grown in hydroponic culture system were divided into four different groups. Control group (Zn and methyl jasmonate (MeJA) were not applied), only Zn applied group, only MeJA applied group and both Zn and MeJA applied group. Different concentrations of Zn and MeJA were applied to these groups by spraying on the leaves. The leaves collected from the plants after the applications were analyzed for phenolic compounds. The results showed that among all the phenolic contents detected in peppermint leaves, rosmarinic acid content was the highest (34.34 mg g DW⁻¹ in 1 mM MeJA and 0.05 mg L⁻¹ Zn application), followed by gallic acid, tannic acid, chlorogenic acid, caffeic acid, ferulic acid and p-coumaric acid (Mehdizadeh et al., 2024).

Adamczyk-Szabela and Wolf studied how adding copper or zinc to the soil in which peppermint, common nettle, basil and borage plants would be grown affected photosynthesis. The polyphenol content in common nettle and basil plants increased with the metals added to the soil, while there was no significant change in other plants. It was found that the plant extracts obtained from common nettle and basil had high antioxidant properties and it was reported that these plants could be good free radical scavengers. It has been reported that determining safe levels of metals added to soil to increase phenolic compounds in plants is very important to obtain pharmaceutical products (Adamczyk-Szabela and Wolf, 2024).

Asle-Mohammadi et al. aimed to reduce Cu toxicity in soil by adding Fe, Zn and Mn to peppermint leaves as micronutrients. They examined the positive effects of this application on peppermint growth and increasing

essential oil (EO) production. Menthofuran, menthol, menthone, menthyl acetate, pulegone and limonene were found among the EO components identified at all Cu toxicity levels. In the study, it was reported that the plant with Fe, Zn and Mn is a cost-effective and practical application to remediate Cu-contaminated soils and that EO production in peppermint can be increased with the application of 5 mg kg⁻¹ Cu toxicity (Asle-Mohammadi et al., 2024).

To increase peppermint biomass and essential oil, a study was conducted using four fertilizer sources namely poultry manure, sheep manure, cattle manure and chemical fertilizers as well as different cuts namely first, second and third cutting. In a study conducted to preserve ecosystem sustainability by replacing chemical fertilizers in semi-arid plateaus, it was reported that the use of poultry manure and sheep manure can be recommended to increase the biomass of peppermint essential oil and improve its quality. Plants grown with poultry manure had the highest yield of peppermint essential oil in all three sections, and the components of the oil were menthol (35.2-58.3%), menthone (3.1-33.6%), menthyl acetate (1.1-9.4%), iso-menthon (0.41-8.8%) was found as (Fallah et al., 2024).

Mohammed et al. investigated the effects of different cadmium pollution levels in soil on the growth, chemical composition and metal accumulation in the leaves of *Mentha piperita* L. and *Mentha spicata* var. *crispa* plants. When 15 mg kg⁻¹ cadmium was added to the soil in both types of plants (1.537% for peppermint and 1.340% for curly mint), the percentage of essential oil and the amount of essential oil per plant increased. But when twice as much cadmium was added to the soil, cadmium accumulation in the leaves of the plant increased compared to the control (0.165 mg kg⁻¹). It has been reported that plants grown in cadmium-contaminated soils have high Cd concentrations in their structure and have adverse effects on health when consumed (Mohammed et al., 2024).

Pourhosseini et al. explained the benefits of vermicompost and biofertilizers in their studies to optimize peppermint cultivation and reduce environmental risks resulting from the use of chemical fertilizers. They stated that these increase the phenolic, flavonoid, anthocyanin and antioxidant properties of peppermint, further enriching the medicinal potential of peppermint extracts. They reported the importance of using organic fertilizers in peppermint cultivation, which is a medicinal plant for sustainable agriculture (Pourhosseini et al., 2024).

Bghbani-Arani and Poureisa reported in their studies that the application of organic fertilizers (especially pure vermicompost and azocompost) or their combination with chemical fertilizers in arid climates increased the organic carbon, macro (nitrogen and phosphorus) and micro (iron and zinc) nutrients

in the soil solution, thus increasing biological yield and essential oil content of the peppermint plant examined in the study (Bghbani-Arani and Poureisa, 2024).

A study was conducted to determine the effects of three macronutrient concentrations in hydroponic nutrient solution on three mint species (*Mentha spicata* L. var. *viridis*; *Mentha piperita* L.; *Mentha spicata* L. var. *rubra*) grown according to the New Cultivation System during three harvest periods. The study emphasized the importance of adjusting the optimum hydroponic nutrient solution ion concentration according to specific plant species and environmental conditions to increase the appropriate yield, product quality and shelf life of peppermint plants. (Hazrati et al., 2024).

In Egypt, the use of peppermint and eucalyptus essential oils instead of pesticides against the whitefly, the most damaging field pest in potato cultivation, has been investigated. The main components of these essential oils were determined and their coarse emulsion and nanoemulsion were prepared. The researchers examined the total soluble protein, total carbohydrate, total phenolic content and peroxidase activity to examine the effect of the emulsions of these essential oils. It has been reported that the essential oils contained in both types of emulsions of plants are an effective non-chemical alternative against the whitefly *Bemisia tabaci*, provided that they are applied according to weather conditions such as temperature, humidity and wind (Wahba et al., 2024).

Researchers have examined the growth of the medicinal plant *Mentha piperita* with fungi (*Glomus intraradices*) acting as a supporter in the soil where it grows, in terms of the biological activities of the plant. They even reported the benefits of growing in this way to increase the amount and quality of the plant against various pollutants (Pb, Cd) coming from the soil or the environment (Djerrad et al., 2024).

In the study, the effects of salt stress on plant nutrients and essential compounds were examined in *Mentha piperita* L. seedlings grown at different salt concentrations and periodically applied *Bacillus amyloliquefaciens*. *Bacillus amyloliquefaciens* was applied to *Mentha piperita* L. seedlings grown at various salt levels for six weeks. At the end of the study, when the seedlings were evaluated in terms of plant nutritional elements, *Bacillus amyloliquefaciens* showed a positive effect on Zn, Mn, Cu and Na values compared to the control, while it did not show any effect on B, Fe, K, P, Mg and Ca. Limonene was determined as the significant component in essential compounds in all groups (Üner and Turgut, 2024).

Shariatmadari et al. used a natural isolate of heterocystous cyanobacteria to stimulate biomass production and rosmarinic acid content in *Mentha piperita* L. They inoculated *Mentha piperita* L. explants into the medium

containing cyanobacterial lysate. They found that rosmarinic acid increased 2-3 times in their measurements after 50 days of culturing (Shariatmadari et al., 2024).

The study conducted in Pakistan aimed to highlight the importance of genetic characterization for conservation of *Mentha* species and the potential of DNA barcoding in overcoming the limitations of traditional taxonomic methods. Comparative analysis and correlation among different genotypes of *Mentha* are crucial for genetic improvement aimed at increasing the yield of secondary metabolites through development of new and improved genotypes (Naseem et al., 2024).

Table 1. Evaluation of the effect of microelements added to the soil and plant leaves for the growth of *Mentha piperita* L. by phenolic composition analysis

Plant material location	Extraction method	Antioxidant determination methods	Analytical methods	Bioactive constituents	Trace elements	References
Cultivated in the greenhouse of Ferdowsi University in Mashhad, Iran in 2021.	extraction with methanol	DPPH, FRAP, Phosphomolybdenum complex method	HPLC	rosmarinic acid, gallic acid, caffeic acid, ferulic acid, chlorogenic acid, p-coumaric acid and tannic acid	Zn	(Mehdizadeh et al., 2024)
Seeds of plants were purchased from the company P.H. Legutko, Poland.	extraction with boiling water	Folin-Ciocalteu	Spectrophotometer, High resolution continuum source atomic absorption spectrometer (HR CS AAS)	phenolic compounds	Mn, Fe, Cu, Zn	(Adamczyk-Szabela, and Wolf, 2024)
Cultivated in the research greenhouse of Urmia University, Iran in 2021.	hydro-distillation (Clevenger apparatus)		UV-VIS Spectrophotometer, AAS, GC-MS	Carotenoids, menthofuran, menthol, menthone, menthyl acetate, pulegone, limonene	Cu, Mn, Fe, Zn	(Asle-Mohammadi et al., 2024)
Collected in 2019 from Koohrang, Chaharmahal and Bakhtiari Province, Iran.	hydro-distillation (Clevenger apparatus)	DPPH	GC-FID, GC-MS, UV-spectrophotometer, Kjeldahl method, flame photometer, AAS	menthol, menthone, menthyl acetate, iso-menthon	N, P, K, Zn, Cu, Mn, Fe	(Fallah et al., 2024)
The plant was collected from the nursery area in Bagera, Iraq in 2023.	extraction with distilled water		Spectrophotometer, AAS	chlorophyll content, volatile oil	Cd	(Mohammed et al., 2024)
It was harvested from Varamin farm in Ali-Abad Village (Iran) in 2021-2022.	hydro-distillation (Clevenger apparatus), methanol	Folin-Ciocalteu, DPPH	GC-FID, GC-MS, spectrophotometer	phenols, flavonoids, and anthocyanins		(Pourhosseini et al., 2024)

The <i>M. piperita</i> seedlings were obtained from Iran's Forests and Ranges Organization (2017-2019).	hydro-distillation (Clevenger apparatus)		Kjeldahl method, flame photometry, AAS		N, P, K, Fe, Zn, Cu, Mn	(Bghbani-Arani and Poureisa, 2024)
Essential oils of plants were purchased from El-Gomhoria Chemical Company, Cairo, Egypt.	distilled water		GC-MS, spectrophotometer	levomenthol, p-menthone, menthyl acetate, L-menthone, eucalyptol	N, P, K	(Wahba et al., 2024)
<i>M. piperita</i> rhizomes were obtained from the National Agricultural Institute of Algeria.	hydro-distillation (Clevenger apparatus)		GC-FID, GC-MS	1,8-cineole, linalool, menthone, menthon, pulegone, menthyl acetate	Pb, Cd	(Djerrad et al., 2024)
Seedlings were purchased from in Antalya-Turkey.	solid phase microextraction		SPME/GC, ICP-OES	limonene	Zn, B, Mn, Fe, Cu, Na, K, P, Mg, Ca	(Üner and Turgut, 2024)
<i>M. piperita</i> explants were obtained at the Iran Institute of Medicinal Plants.	extraction with ethanol		HPLC-UV	rosmarinic acid		(Shariatmadari et al., 2024)
Plants were collected from various places in Pakistan.	hydro-distillation (Clevenger apparatus)	Folin-Ciocalteu DPPH	UV-VIS Spectrophotometer	total phenolic content, total flavonoid contents		(Naseem et al., 2024)

2.2. Pharmacological effect of *Mentha piperita* L.

Discovering the potential pharmacological effects of the plant's bioactive molecules makes the use of natural products as a pharmacological approach attractive. Medicinal plants are used in food, feed, pharmaceutical, cosmetic and other industries due to their antiviral, antitumor, anti-inflammatory and antioxidant properties (Ivanova et al., 2024). These studies conducted in the last year are shown in Table 2.

El Omari et al. investigated the therapeutic properties and medicinal potential of the essential oil of *Mentha piperita* L. in their study. They evaluated the antidiabetic effect of the plant by measuring the inhibition of two digestive enzymes (α -glucosidase and α -amylase), its dermatoprotective effect based on the inhibition of elastase and tyrosinase, and its neuroprotective activity by examining the inhibition of acetylcholinesterase (AChE) and butyrylcholinesterase (BChE). Peppermint has shown a rich potential in bioactive compounds and the main components of its essential oil have been reported to be used in the development of drugs and natural therapeutic applications (El Omari et al., 2024).

Ogbuokiri et al. designed their study to investigate the protective role of peppermint leaf extract in the brain of Wistar rats exposed to lead. The results showed that peppermint extract had no effect on cerebellum histology. They also did not find satisfactory results regarding the effects of lead acetate on antioxidant enzymes and lipid peroxidation (Ogbuokiri et al., 2024).

Helal et al. examined histopathological changes in the brain and liver tissues of rats divided into eight groups to prove the healing effect of *Salvia hispanica* oil and *Mentha piperita* oil on neurological effects in Albino rats exposed to lead. It was reported as a result of their study that the synergistic effect of the mixture of peppermint oil and chia oil had a strong healing effect against lead poisoning (Helal et al., 2024).

A mixture of peppermint, celery, coriander, parsley and rosemary leaf flour was named as a phytogetic substance. The effect of this new substance used in the nutrition of weaned pigs on the growth performance and hemato-biochemical indicators of pigs was investigated. It was concluded that the use of phytogetic substances up to 15 g kg⁻¹ can increase pig productivity at the weaning stage without causing a negative effect on the health status of the animals (John, 2024).

Melissa officinalis and *Mentha piperita* are plants with potential to improve aquaculture practices and protect fish production in agriculturally polluted water bodies. Changes in protein levels and micronucleus induction in major organs of freshwater fish *Channa punctatus* after exposure to chlorpyrifos were evaluated. The contributions of these plants in maintaining fish health in toxic environments were highlighted (Tiwari et al., 2024).

The effect of *Mentha piperita* or *Thymus vulgaris* on improving hematological changes due to chronic oxidized palm oil consumption in rats has been investigated. Red blood cells decreased and white blood cells increased in rats consuming oxidized palm oil. In rats fed with oxidized palm oil and *Mentha piperita* or *Thymus vulgaris* or extracts of both plants, a significant increase in red blood cells was observed while white blood cells decreased (Muhanna et al., 2024).

Abu Zahra et al. investigated the effects of *Mentha piperita* powder added to the feed as an additive to the Nile Tilapia, a predatory fish species living in the Nile River. They evaluated the growth performance, hematological, biochemical and immune parameters, intestinal histology and interleukin gene expression of the fish. They aimed to evaluate the protection against *Vibrio alginolyticus* infection in *Oreochromis niloticus* by the plant powder. As a result of their studies, they reported that *Mentha piperita* powder, a medicinal plant, may have growth-promoting and immunostimulatory effects for sustainable aquaculture (Abu-Zahra et al., 2024).

In the study, the oil obtained from fresh powdered *Mentha piperita* leaves was evaluated for its insecticidal activity on *Callosobruchus maculatus* and *Sitophilus zeamais*. After exposure to essential oil vapor for 6-24 hours, mortality rates were recorded for both insect species between 68-94.5% and 65-90.2%, respectively. The insecticidal effect of peppermint oil was compared with the effect of chemical insecticides and it was reported that it can be used as an alternative insecticide (Olayemi et al., 2024).

In the study of Singh et al. the chemical components of the essential oil obtained from *Mentha piperita* were analyzed and identified by GC-MS. The essential oil obtained from *Mentha piperita* was reported to have good antiproliferative activity against the A549 cancer cell line (Singh et al., 2024).

Machewar et al. formulated a herbal microemulgel containing *Mentha piperita* extract. They evaluated the in vitro anti-inflammatory properties of this microemulgel. They reported in their study that herbal microemulgels enriched with *Mentha piperita* extract have promising anti-inflammatory effects (Machewar et al., 2024).

Anum et al. synthesized silver nanoparticles (AgNPs) using extracts from three medicinal plants (*Amaranthus viridis* L., *Mentha piperita* L. and *Ocimum basilicum* L.). They evaluated the antifungal activities of the AgNPs they synthesized against *Botrytis cinerea*. They reported that AgNPs showed significant antifungal properties and could be developed as environmentally friendly antifungal agent candidates (Anum et al., 2024).

The study aimed to synthesize methanol extracts of *Mentha piperita*, *Mentha spicata* and *Mentha longifolia* plants with silver nanoparticles. They used *Mentha piperita* silver nanoparticle loaded carbopol gel for wound healing in a diabetic rat model. *Mentha piperita* silver nanoparticles were reported to have the highest antioxidant activity, the best antiglycation potential and antimicrobial activity against *Bacillus subtilis*, *Micrococcus luteus* and *Escherichia coli* (Aftab et al., 2024).

The study aimed to investigate the acaricide effect of *Mentha piperita* essential oil. Since *Varroa destructor* parasite damages *Apis mellifera* (honey bee) farms and causes economic losses, the pharmacological properties of four plants were investigated against this parasite. The phytochemical composition and pharmacological activity of the essential oils of *Calamintha nepeta*, *Calamintha sylvatica*, *Lavandula austroapennina* and *Mentha piperita* plants were evaluated. It has been reported that essential oils can be applied to synthetic drugs against chemical residues in foods for the control of *Varroa destructor* parasite (Bava et al., 2024).

Table 2. Evaluation of pharmacological effect of *Mentha piperita* L. by analysis of its bioactive molecules

Plant material location	Extraction method	Antioxidant determination method	Analytical methods	Bioactive constituents	Trace elements	References
Harvested in Ouezzane Province, Morocco.	hydro-distillation (Clevenger apparatus)	FRAP, DPPH, ABTS	GC-MS/MS	pulegon, mintlactone, D-carvone, eucalyptol, thymol		(El Omari et al., 2024)
Fresh mint leaves harvested in Nigeria.	extraction with methanol, water, ethanole, hexane, petroleum ether			Ammodendrine, Cyanogenic glycosides, Spartein, Proanthocyanidin (phytochemicals), etc.		(Ogbuokiri et al., 2024)
Peppermint leaves were collected from the field (Egypt).	hydro-distillation (Clevenger apparatus)		GC-MS	enthol, menthone, menthofuran, menthyl acetate, camphene, D-limonene, eucalyptol, 1-Hexadecanol, 2-methyl, geranyl acetate, myrcene		(Helal et al., 2024)
<i>M. piperita</i> and other plants were harvested from Sumitra Research Institute gardens in Gujarat (India).	extraction with ether	Folin Ciocalteu	UV/VIS Spectrophotometer, AAS	Phenols, Flavonoids, Alkaloids	Ca, P, K, Mg, Mn, Zn, Fe, Na, Cu, Se, Cr, Ni	(John, 2024)
Dried leaves of the plants were obtained from the local market in Lucknow, India.	extraction with ethanol					(Tiwari et al., 2024)
<i>M. piperita</i> was purchased from a local traditional market in Jeddah, Saudi Arabia.	extraction with distilled water					(Muhanna et al., 2024)
Collected from natural habitat (Egypt).	The leaves were used in powder form					(Abu-Zahra et al., 2024)

Fresh leaves of <i>M. piperita</i> was harvested from the garden in Tudun Wada area of Kaduna State in Nigeria.	hydro-distillation (Clevenger apparatus)		GC-MS	menthol, menthone, menthofuran, 1, 8-cineole, limonene		(Olayemi et al., 2024)
Peppermint collected from natural environment was used.	hydro-distillation		GC-MS	D-carvone, L-limonene, squalene, cis-carveol, α -amorphene		(Singh et al., 2024)
<i>M. piperita</i> plant was procured from a nursery in Nagpur.	maceration with alcohol and extraction with ethanol using a Soxhlet apparatus		FTIR, UV Spectrophotometer	menthol, menthofuran, menthyl acetate, menthone, 1,8-cineole		(Machewar et al., 2024)
The plant materials were collected Punjab, Pakistan.	microwave-assisted extraction with methanol	DPPH	GC-MS, UV-VIS Spectrophotometer, FTIR			(Anum et al., 2024)
Collected from high altitude natural locations of Punjab, Pakistan.	extraction with methanol	DPPH	UV-VIS Spectrophotometer, FTIR, ESI-MS			(Aftab et al., 2024)
Aerial parts of <i>M. piperita</i> were collected from natural growing areas in Calabria, Southern Italy.	extraction by steam distillation process		GC-FID, GC-MS	Menthol, 1,8-sineol, linalool, menton, pulegon		(Bava et al., 2024)

2.3. Use of *Mentha piperita* L. essential oils as preservatives

The use of essential oils of plants instead of synthetic preservatives due to their antimicrobial and antioxidant properties can be a safer and more sustainable alternative for health. Essential oil nanoemulsion-loaded edible coatings offer a viable solution to the ever-increasing demand for a green alternative method to preserve nutrients. Preparing nanoparticles containing free essential oils of plants prevents microbial growth and oxidative degradation during storage, thus extending the shelf life of foods and preserving their contents, providing maximum health benefits (Sharma et al., 2024). These studies conducted in the last year are shown in Table 3.

The aim of the study is to use iron oxide nanoparticles together with magnetic

solid phase extraction method of acetone extracts of green plants (*Mentha piperita*, *Urtica dioica*). As a result, it was found that iron oxide nanoparticles act as an adsorbent for the isolation of photosynthetic pigments (chlorophyll a, lutein) from the extracts of these green plants. Researchers suggested this method as a simple and inexpensive method for the isolation of plant pigments (Flieger et al., 2024).

In this study, free essential oil of *Mentha piperita* was used to increase the quality and shelf life of cherry tomatoes (*Solanum lycopersicum* cv. Santiago F1) during storage after harvest. The effect of solid lipid nanoparticles containing different concentrations of free essential oil of peppermint on cherry tomatoes was evaluated. It was shown that the combination of solid lipid nanoparticles and free essential oil of *Mentha piperita* extended the shelf life during storage and improved the quality characteristics of cherry tomatoes (Vakili-Ghartavol et al., 2024).

The study analyzed the oxidative stability of peppermint essential oil (PEO) loaded solid lipid nanoparticles (PEO-SLN) to extend the shelf life of trout fillets during cold storage. The effect of gelatin coating containing PEO-SLN was found to be the most effective method against chemical deterioration of trout fillets during 12 days of storage. In addition, researchers reported that FRAP and DPPH radical scavenging of PEO-SLN showed higher antioxidant activity than free PEO (Safaeian Laein et al., 2024).

Fuentes et al. found that *Mentha piperita* essential oil loaded with solid lipid nanoparticles exhibited high stability under environmental conditions and excellent antifungal activity to reduce the mycelial growth of *Botrytis cinerea*. The researchers aimed to reduce the losses caused by *Botrytis cinerea*, a phytopathogenic fungus responsible for gray mold disease affecting fruits and vegetables. They reported that it was possible to protect nutrients from this fungus using *Mentha piperita* essential oil loaded with solid lipid nanoparticles (Fuentes et al., 2024).

Table 3. Evaluation of free essential oils of *Mentha piperita* L. as preservatives for foods

Plant material location	Extraction method	Antioxidant determination method	Analytical methods	Bio active constituents	T r a c e elements	References
The plant was harvested in the south-eastern region of Poland in August 2023.	acetone and ethanol with magnetic solid phase extraction		HPLC, UV-VIS Spectrophotometer, FT-IR/PAS	chlorophyll a, lutein		(Flieger et al., 2024)
<i>M. piperita</i> essential oil was purchased from Barij Medicinal Plants Research Center, Kashan, Iran.	extraction with acidic methanol	Folin-Ciocalteu, DPPH	Spectrophotometer	total phenolic content, polyphenol oxidase activity, antioxidant activity		(Vakili-Ghartavol et al., 2024)
<i>M. piperita</i> (peppermint essential oil PEO) was purchased from Nader agricultural industries, Mashhad, Iran.	extraction with methanol	FRAP, DPPH	Spectrophotometer	antioxidant activity		(Safaian Laein et al., 2024)
Essential oil of <i>M. piperita</i> was purchased from Chile.						(Fuentes et al., 2024)

2.4. Phenolic composition of *Mentha piperita* L.

The essential oils of the peppermint plant also exhibit strong antimicrobial and antioxidant activities, increasing the pharmacological importance of the plant. Based on this, researchers have studied the antioxidant capacity of mint by applying different antioxidant activity determination methods to the extracts obtained with different solvents and different extraction methods for the phenolic composition and antioxidant activity of the plant. These studies conducted in the last year are shown in Table 4.

Sadowska et al. worked with *Mentha piperita*, lemon balm and lavender plants. They found that the aqueous extract of the *Mentha piperita* plant had the highest polyphenol content and antioxidant activity measured by the FRAP method. The highest antioxidant activity measured by the ABTS method was reported in the methanolic lemon balm extract. The highest amount of total phenolic compounds was determined in the water extract of *Mentha piperita*. It was reported that the water and acidified methanol extracts of the *Mentha piperita* plant contained high amounts of naringin, rutin, hesperidin and rosmarinic acid (Sadowska et al., 2024).

In their study, si Said et al. investigated the possible effects of the addition of *Mentha piperita*, *Cinnamomum verum*, *Illicium verum*, *Zingiber officinale*,

Artemisia herba alba and *Syzygium aromaticum* to green tea on the biological properties of tea. The plants added to green tea increased the phenolic content of the tea and increased its antioxidant capacity. They found that peppermint-flavored green tea showed the highest content of polyphenols and flavonoids. In addition, green tea combined with peppermint showed the second highest antioxidant activity (si Said et al., 2024).

Quinic acid and caffeic acid derivatives are important compounds for health and are found in medicinal plants. The concentrations of caffeic and quinic acid, especially caffeoylquinic acid derivatives, in water and water-ethanolic extracts obtained from plants *Mentha piperita* L., *Melissa officinalis*, *Ocimum basilicum* and *Ipomoea batatas* L. Lam were analyzed by HPLC method. The analyzed aqueous plant extracts exhibited significant polyphenolic compounds containing higher amounts of mono-, di- and tri-caffeoylquinic acids than ethanolic extracts, and showed significant phytochemical properties (Islam et al., 2024).

HPLC method with UV detection at 330 nm was developed for quantitative determination of rosmarinic acid content, an important phenylpropanoid in *Mentha piperita* L. leaves. Rosmarinic acid content in leaves was found to vary between $2.01 \pm 0.03\%$ and $5.54 \pm 0.05\%$ (Kurkin et al., 2024).

Up to 58 components, including 11 main components, were determined in the essential oil of *Mentha piperita* L. by GC-MS. It was found that the quantitative content of the essential oil is highly dependent on the climatic conditions in which the plant is grown, and the composition of volatile organic substances is highly variable (Alibegov et al., 2024).

In the study, the antioxidant, antifungal and antibacterial properties of the essential oils of *Mentha piperita* and *Ocimum basilicum* and their potential synergistic effects with various antibiotics were evaluated. It was shown that 1:1 mixtures of essential oils could be a good treatment option alone or as drug adjuvants due to their antibacterial and antioxidant properties (Türk et al., 2024).

The essential oil composition of *Mentha piperita* was investigated using methyl jasmonate for the essential genes Pulegone reductase, Menthofuran synthase and limonene synthase. Methyl jasmonate increased the activity of antioxidant enzymes and the reason why peppermint, a medicinal plant, is preferred in the treatment of many diseases was explained (Afkar and Karimzadeh, 2024).

The synergistic effect of mixing the sugarcane (*Saccharum officinarum* L.) - peppermint (*Mentha piperita* L.) mixture using sonication and microwave separately for different minutes on the resulting fruit juice mixture was examined. It was reported that the synergy of sonication and microwave in improving the

physicochemical and phytochemical quality of the sugarcane-peppermint mixture significantly increased the total phenolic, flavonoid content and antioxidant capacity compared to the unprocessed fruit juice mixture (Hussain et al., 2024).

In this study, the yield, physicochemical compound and biological properties of *Mentha piperita* L. essential oil obtained by hydro-distillation and supercritical fluid extraction methods were comparatively evaluated. Essential oils were found to be menthol, menthone and eucalyptus. The essential oil obtained by supercritical fluid extraction showed the highest antimicrobial activity against *Pasturella multocida* and due to its potent bioactive components, it was reported by researchers that it could be a potential candidate for developing nutra-pharmaceuticals (Abbas et al., 2024).

In the study, the chemical composition, physical parameters and antioxidant properties of the basic acids of *Mentha spicata*, *Mentha piperita* and *Mentha pulegium* were determined. It was suggested that the extracts obtained from these plants belonging to three geographical regions in Morocco could be used as an alternative to synthetic chemical products and could find applications in complementary medicine, pharmaceutical and food industries (Rayan et al., 2024).

Table 4. Evaluation of phenolic composition of *Mentha piperita* L.

Plant material location	Extraction method	Antioxidant determination method	Analytical methods	Bioactive constituents	Trace elements	References
Obtained from the in Kraków, Poland.	extraction with water (infusion), methanol, methanol acidified with formic acid	ABTS, FRAP, Folin-Ciocalteu	HPLC-DAD	naringin, rutin, hesperidin, rosmarinic acid		(Sadowska et al., 2024)
All plants were purchased from a local market (Bejaia, Algeria).	extraction with distilled water	Folin-Ciocalteu, TFC (total flavonoid content), DPPH, TAC (Total antioxidant capacity), FRAP	UV-VIS spectrophotometer, FTIR	polyphenol, flavonoid		(si Said et al., 2024)
Plants were purchased from a local nursery (USA).	extraction with water, water-ethanol	Folin-Ciocalteu, DPPH, ABTS	RP-HPLC	phenolic acid, caffeoylquinic acid, 3, 4, 5 tri-caffeoylquinic acid		(Islam et al., 2024)
Peppermint leaves grown in the Samara University Botanical Garden were used (Russia).	extraction with water-ethanol		HPLC-UV	rosmarinic acid		(Kurkin et al., 2024)

Plants grown in soils at altitudes between 1100 and 1650 m above sea level were used (Russia).	hydro-distillation (Clevenger apparatus)		GC-MS	limonene, eucalyptol, γ -Terpinene, menthone, isomenthone, menthofuran, menthol, terpinen-4-ol, piperitone, neomenthyl acetate, menthyl acetate	(Alibegov et al., 2024).
<i>M. piperita</i> essential oil was supplied from the commercial market (Turkey).		DPPH, CUPRAC	GC-MS	menthol, L- menthone, L-menthol, menthyl acetate	(Türk et al., 2024)
Plants grown in Tehran, Iran.	extraction with ethanol		GC	Menthol, pulegone, menthofuran, menthyl acetate, cineole, linalool, α -pinene, β -pinene	(Afkar and Karimzadeh, 2024)
<i>M. piperita</i> was collected in Pakistan as an indoor plant.	Ultrasound-assisted extraction, microwave digestion extraction	Folin-Ciocalteu DPPH	Spectrophotometer	total phenolic content, total flavonoid contents, total antioxidant capacity	(Hussain et al., 2024)
Leaves and stem of <i>M. piperita</i> plant were harvested from Soon Valley, Khushab District, Punjab, Pakistan in April 2020.	hydro-distillation (Clevenger apparatus), supercritical fluid extraction	DPPH	GC-FID / GC-MS	menthol, menthone, eucalyptus	(Abbas et al., 2024)
Plants were collected from three different geographical areas in Rabat-Sale-Kenitra region of Morocco.	hydro-distillation (Clevenger apparatus)	DPPH, ABTS, FRAP	GC-MS	linalool, D-carvone, 1,3,8-p-menthatriene	(Rayan et al., 2024)

2.5. Physicochemical properties and trace element content of *Mentha piperita* L.

The physicochemical properties and mineral content of *Mentha piperita*, which is used both as herbal tea and in kitchens to benefit from its nutritional value and taste (aroma), were investigated. These studies conducted in the last year are shown in Table 5.

The determination of the physicochemical properties and mineral content (Ca, K, Fe, Na, Cu, Zn) of *Mentha piperita* used as herbal tea was studied by Indian researchers. The potential health effects of peppermint herbal tea were reported in the study (Afshiya, and Anil, 2024).

In their study, Turco et al. investigated the total polyphenol and mineral element contents in herbal infusions using two different brewing methods: traditional brewing and using a coffee machine. Among the plant materials studied, the peppermint plant was found to be the richest in terms of minerals and basic trace elements, while all plant infusions were reported to be safe to consume in terms of As, Cd, Pb and Hg (Turco et al., 2024).

In their study, Yalçın et al. examined the effect of carbonate addition on the basic element concentrations of peppermint tea and other types of tea (black, herbal and fruit). For this purpose, they analyzed the teas brewed by the infusion method with the addition of carbonate and the teas brewed after the microwave process, using ICP-OES. According to the results obtained after the microwave process, the major elements were found to be Ca, K, P, Mg and Mn. However, the concentration of the major elements in teas brewed with the infusion method with the addition of carbonate decreased, and brewing tea by adding carbonate was not recommended by the researchers (Yalçın et al., 2024).

Green vegetables (*Corchorusolitorius*, *Mentha piperita*, *Allium fistulosum*, *Ocimumbasilicum*, and *Murray koenigiican*) purchased from a garden in Nigeria were evaluated for health. Protein, vitamins, and minerals in green vegetables were analyzed. Compared to other vegetables, iron, zinc, and lead values were found to be highest in *Mentha piperita* (Nwachoko et al., 2024).

Guemidi et al. aimed to improve the functional properties of yoghurt by adding different doses of peppermint hydroethanolic extract to yoghurt. As a result, they revealed that the peppermint plant hydroethanolic extract has phenolic compounds (mostly rosmarinic acid) and a significant antioxidant potential, which significantly increases the antioxidant capacity of yoghurt (Guemidi et al., 2024).

Table 5. Evaluation of physicochemical properties and trace element content of *Mentha piperita* L.

Plant material location	Extraction method	Antioxidant determination method	Analytical methods	Bioactive constituents	Trace elements	References
Seeds purchased from Amazon were grown and used.	extraction with boil water	Folin-Ciocalteu	Titration with EDTA for Ca, Iron cell test kit from Spectroquant for iron, AAS for Na, ICP for K, spectrometry for Cu, and dissolving, filtering and adding ammoniac sulphide for Zn	phenolic content	Ca, K, Fe, Na, Cu, Zn	(Afshiyah, and Anil, 2024)

Purchased in 2023 from a herbal shop in Messina (Sicily, Italy).	extraction with acetonitrile, distilled water	Folin-Ciocalteu	UV-VIS spectrophotometer ICP-MS	polyphenols	K, Mg, Ca, Na, Fe, Mn, Zn, Cu, Cr, Mo, Co, Se, Al, B, Ba, Ni, As, Pb, Cd, Hg	(Turco et al., 2024)
Peppermint tea were purchased from a local market in Istanbul, Turkey in 2016.	extraction with pure water (infusion), microwave digestion		ICP-OES		Ca, Co, Cu, Fe, K, P, Na, Mg, Mn, Se, Zn	(Yalçın et al., 2024)
Green vegetables were purchased at fruit garden market, Rivers State, Nigeria.	soxhlet extraction		AAS Spectrophotometer LC-UV	fat, protein, vitamin	Mn, Fe, Cu, Zn, Co, Pb, Cd, Cr, Ni, Se	(Nwachoko et al., 2024)
<i>M. piperita</i> L. was harvested in Ouargla, southeastern Algeria.	Hydro-ethanolic maceration	DPPH, ABTS	LC-MS/MS	rosmarinic acid		(Guemidi et al., 2024)

3. CONCLUSION

Peppermint, one of the medicinal plants known as a source of antioxidants since ancient times and used as food in folk medicine and cuisine, is the subject of this review. For this aim, scientific publications evaluating the antioxidant effect, phenolic compound content and interaction with the elements found in the environments where it grows of extracts obtained from the medicinal plant *Mentha piperita* L. using various solvents (distilled water, ethanol, methanol, acetone etc.) and different extraction methods (maceration, infusion, hydro-distillation, soxhlet, ultrasound-assisted, microwave digestion, solid phase extraction) were reviewed. When the studies on the biomass, nutritional content (macro and micro), yield, chemical composition and antioxidant capacity of the peppermint plant are examined, it is understood from the number of experimental studies that the interest of researchers in this plant has not decreased. It has been observed that parameters such as the soil in which the plant is grown (metal toxicity), fertilizers added to the soil to increase the yield of the plant (chemical-organic), and weather conditions (arid-semiarid) guide the experimental studies of the researchers. Because determining the safe levels of metals added to the soil to increase the phenolic compounds of the peppermint plant is crucial to obtaining suitable pharmaceutical products. The main goal of the research has been to determine the phenolic components and antioxidant activity in the extract of this plant used in the food, feed, pharmaceutical and cosmetic industries, and to reveal the important phytochemical properties found in

this medicinal plant, which may have potential therapeutic applications due to its health-supporting components. As a result, due to the pharmacological importance of *Mentha piperita* L., experiments on the analysis of its phenolic compounds, essential oils, antioxidant activity, macro and micro elements will continue to be the subject of research.

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