INTERNATIONAL STUDIES AND EVALUATIONS IN THE FIELD OF

ECONOMICS AND ADMINISTRATIVE SCIENCES

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CONTENTS

CHAPTER 1

ANALYZING THE RELATIONSHIP BETWEEN ECONOMIC GROWTH, INFLATION AND UNEMPLOYMENT

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INTRODUCTION

Interest in economic growth is on the rise, especially among development economies and industrialized countries in the context of sustainable development goals. Achieving sustainable economic growth brings with it the need to maintain environmental and social balance. Many countries are contributing to sustainability by investing in renewable energy sources and developing policies to reduce carbon emissions (UNEP, 2019). The focus on economic growth, inflation and unemployment can in some cases increase income inequalities and environmental problems. Stiglitz (2012) emphasized the importance of the quality of economic growth and stated that human development indices should be taken more into account. Inflation refers to a sustained increase in price levels and is a critical phenomenon affecting economic stability. This study was conducted to explain the relationship between inflation, unemployment and economic growth through Granger causality analysis. The study emphasizes the effects of economic growth, unemployment and inflation on individuals, businesses and the macroeconomy and proposes solutions with the support of the literature.

1.CONCEPTUAL FRAMEWORK

In this section, the concepts of economic growth, inflation and unemployment are discussed.

1.1.Economic Growth

Economic growth is generally defined as the expansion of the capacity to produce goods and services and is measured by increases in real gross domestic product, which represents the value of total output (Parasız, 2008:10). Philips defines economic growth as an increase in real net output over a period of time. This period is usually one year or consecutive periods of an expanding economy (Mustafa, 1999:39). Economic growth is calculated in three different ways; these are production, expenditure and income methods (Kurt and Yücekaya, 2019). The main factors affecting economic growth are capital, technology, labor force, entrepreneurs and natural resources (Kurt and Yücekaya, 2022):

- Capital Accumulation: Increasing capital goods through investment directly affects production capacity.
- Technological Progress: Technological innovations both increase productivity and dynamize the economy by developing new production methods (Romer, 1990).
- Labor and Productivity: The quality of human capital and labor productivity significantly affect economic growth. Better education and health services contribute to economic development by increasing labor productivity.
- Natural Resources: Natural resource wealth can support economic growth in the short run. However, the risk of "resource curse" should not be ignored in resource-dependent countries (Sachs and Warner, 2001).

1.2.Inflation

Although the concept of inflation entered the economic literature during World War I, its importance was recognized after World War II. Inflation means "inflation" in Latin. The definition of inflation commonly used in the literature can be given as follows: It is the state of increase in the general level of prices due to increases in the prices of some goods and services and the absence of stabilizing decreases in the prices of other goods and services (Dilbaz Alacahan, 2011:6). This leads to a depreciation of the currency and thus a decrease in consumer power (Samuelson and Nordhaus, 2020). Keeping inflation under control is important to ensure economic growth and stability. The causes of inflation can basically be divided into demand inflation and cost inflation:

- Demand Inflation: It can be defined as a situation in which prices increase as a result of consumer demand exceeding the available supply. When the increase in consumption demand exceeds production capacity, it pushes up price levels and demand-pull inflation emerges (Keynes, 1936). According to Keynesian economic theory, demand inflation usually occurs during periods of economic recovery (Blanchard, 2017).
- Cost Inflation: The increase in input costs causes cost inflation as producers reflect their costs to prices. This can be caused by increases in energy and raw material prices (Krugman and Wells, 2018).

The effects of inflation are multidimensional and affect all elements of the economy, from individuals to firms:

- Individual Level Effects: An increase in consumer prices reduces individuals' real incomes and raises the cost of living. Individuals on fixed incomes are disproportionately affected (Friedman, 1968).
- Macroeconomic Effects: Inflation can slow economic growth and adversely affect investment. Hyperinflation in particular can lead to financial instability (Dornbusch and Fischer, 1990).

Different policy instruments are used to control inflation:

- Monetary Policies: Central banks can reduce demand and control inflation by raising interest rates. The Taylor Rule is an approach that emphasizes the effectiveness of this strategy (Taylor, 1993).
- Fiscal Policies: Demand can be managed by regulating public expenditures and taxes. This plays a critical role especially in the management of long-term inflation expectations (Auerbach and Gorodnichenko, 2012).

Inflation is a complex phenomenon with multifaceted effects on the economy. If it is not controlled by effective policies, it can adversely affect a wide range of people, from individuals to firms. This study contributes to a better understanding of this economic problem by providing different perspectives on the causes, effects and solutions to inflation.

1.3. Unemployment

In the reference period, non-institutional people of working age who have used at least one of the job search channels to look for a job in the last four weeks and who are ready to start work within two weeks are called unemployed (TurkStat Labor Force Statistics, 2020:11). The situation of not being able to find a job despite the willingness and desire to work is also referred to as open unemployment. Unemployment is a critical problem that directly and indirectly affects economic growth. High unemployment rates can increase economic stagnation and income inequality (Blanchard and Katz, 1997). The concept of unemployment: Natural unemployment, seasonal unemployment, hidden unemployment, structural unemployment,

temporary unemployment, voluntary unemployment and youth unemployment.

- Voluntary unemployment: People in voluntary unemployment are unemployed because they do not like the current wage level and working conditions.
- Seasonal Unemployment: It is the type of unemployment that occurs due to the loss of intensity of economic activities in certain periods of the year.
- Natural Unemployment: It is the type of unemployment that is the sum of frictional and structural unemployment in the economy. Natural unemployment arising from the structural characteristics of the labor market should be at acceptable levels for long-term economic balance (Dinler, 2020:537).
- Temporary Unemployment: Temporary unemployment is defined as temporary (frictional/incidental/search unemployment) unemployment in the event that those who leave their current job and look for a new job and new entrants to the labor force look for a suitable job in line with their skills, abilities and experience (Dinler, 2020:535).
- Cyclical Unemployment: In some periods, the type of unemployment that occurs as a result of contractions in the volume of production is called cyclical unemployment (Türkay and Alkin, 2001: 163).
- Structural Unemployment: Structural (structural/structural/incompatibility) unemployment is the type of unemployment that occurs when the labor force cannot immediately adapt to the demand structure of the economy or technological developments (Dinler, 2020: 530).
- Hidden Unemployment: It is a type of unemployment that occurs when there is no decrease in production despite the fact that there are people in the economy who appear to actually work but do not contribute to production (Çelik, 2015: 191).
- Youth Unemployment: The unemployment rate among the young population indicates the extent to which the human resource potential of an economy is used effectively. High youth unemployment rates can have lasting negative effects on economic growth in the long run.

Unemployment has both social and economic impacts. Unemployment is a global problem with profound impacts on both individuals and societies. While many countries are developing various policies to reduce unemployment, it is critical to understand the origins and impacts of this problem. The increase in unemployment rates varies depending on many factors such as economic recession, technological change and inadequate education (Yılmaz, 2020). When the Economic Impacts of Unemployment are analyzed, unemployment is considered to be an important obstacle to economic development. Consumption expenditures of unemployed individuals decrease and this situation leads to a decrease in demand and negatively affects economic growth. Based on the fact that an increase in the real growth rate in an economy leads to a decrease in the unemployment rate, Okun explains that for every additional 1% that the real growth rate exceeds 2.25%, the unemployment rate of the economy decreases by half a percentage point (Okun, 1962: 135-136).

Long-term unemployment increases social assistance costs and imposes an economic burden on the state (Öztürk, 2019). Social Effects of Unemployment Unemployment, which has become a social issue rather than just an economic problem, can lead to psychological problems and social exclusion in individuals if it is long-term. As a result, social cohesion is damaged and crime rates may increase (Kaya, 2021). It has been observed that social unrest is prominent in countries with high youth unemployment rates. Technological innovations can have complex effects on unemployment rates while increasing productivity. At the same time, however, these technologies also have the potential to create new jobs. Therefore, it is critical to reorganize education policies to adapt to technology.

1.4. Literature on Variables

This section includes studies that examine the relationship between economic growth, inflation and unemployment.

Table 1. Summary of the Literature on the Relationships between Variables

Variables	Researchers/Year	Method	Conclusion
Economic Growth and Unemployment	Bağcı and Börü (2018)	Granger Causality Analysis	There is unidirectional causality between economic growth and unemployment.
	Öztürk and Sezen (2018)	Granger Causality Analysis	There is unidirectional causality between economic growth and unemployment.
	Hori (2008)	Panel Data Analysis	There is an inverse correlation between the growth rate and unemployment.
	Noor vd. (2007)	Granger Causality Analysis	There is an inverse correlation between economic growth and unemployment.
	Yüceol (2006)	VAR co-integration test	There is no causality relationship between economic growth and unemployment rates.
	Muratoğlu (2011)	Granger Causality Analysis	There is no Granger causality between employment and GDP.
Economic Growth and Inflation	Barro(1995)	Panel Data Analysis	He found that the relationship between inflation and economic growth is linear.
	Berber and Artan(2004)	Granger Causality Analysis	A unidirectional causality relationship is found from inflation to growth
	Turhan (2007)	Granger Causality Analysis	While there is a one-way negative relationship between inflation rates and growth rates, there is no causality relationship between WPI and CPI indices and growth.

	Akiş (2020)	Vector Error Correction Model	The existence of a unilateral causality relationship from inflation to unemployment has been determined.
Inflation and Unemployment	Güven and Ayvaz (2016)	Granger Causality Analysis	There is a causality from unemployment to inflation.
	Sancar and Polat (2017)	Unit root test, johansen-fisher cointegration test and causality test	It is found that there is a bilateral relationship both from inflation to unemployment and from unemployment to inflation.
	Furuoka (2007)	VECM method in Malaysia	There is a causality relationship between inflation and unemployment.

2. DATA SET, ANALYSIS AND FINDINGS

The data set of this study, which empirically analyzes the economic growth-inflation relationship, includes economic growth, inflation (CPI) and unemployment rate variables for the period 1990-2023. These data are annual and obtained from the World Bank database. The Consumer Price Index (CPI) is expressed as annual rates of change, the unemployment rate is expressed as the percentage of unemployed people in the working population, and economic growth is expressed as the annual growth rate of gross domestic product (GDP). The data are included in the analysis as percentages and percentage changes. Among these data included in the study, inflation rate is represented by "INF", economic growth by "GDP" and unemployment rate by "ISZ". In the study, the following hypotheses are formulated in order to reveal the Granger causality relationship between the inflation indicator and economic growth:

H1: There is a causal relationship between unemployment and economic growth.

H2: There is a causal relationship between inflation and economic growth.

H3: There is a causal relationship between unemployment and inflation.

Granger causality test is a very sensitive method to the lag length in terms of the accuracy and reliability of the results. This makes it critical to determine the correct lag length in the analysis process. In this study, two different test methods were applied in order to perform the analysis in a more comprehensive and robust manner. In the first method, a common lag length was determined for the data and Granger causality test was performed based on this lag length. However, since the dynamic structures of the dependent and independent variables may differ, a second method was adopted with the assumption that these variables may have different lag lengths. Within the scope of this method, different lag lengths were determined separately for the independent and dependent variables and the Granger causality test was re-applied in this framework. Thus, by adopting different approaches, it is aimed to evaluate the test results comparatively and to increase the reliability of the analysis.

Table 2: Determination of Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-171.2322	NA	86.63815	13.85347	12.12453	12.05868
1	-155.3346	11.37647	108.1358	14.30126	12.77658	11.35972
2	-145.4365	42.88531*	23.32439*	12.68552	12.63587*	12.96147
3	-143.9174	4.652348	38.01769	13.05724*	12.52447	14.47584*
4	-132.5187	8.856524	43.02154	13.04865	12.98748	15.55632

In the analysis, various criteria were used to determine the optimal lag length. The findings obtained according to these criteria are presented in Table 2. According to the table, according to the likelihood ratio (LR) and Schwarz information criterion and the final prediction error (FPE), the optimal lag length is 2. However, based on the Akaike information criterion (AIC) and Hannan-Quinn information criterion (Hannan-Quinn), the optimal lag length is 3. In light of these findings, the optimal lag length of the model is generally accepted as 2.

Table 3: ADF Unit Root Test Results

	Constant and Trend-Free				With Constant and Trend	
	Level		First Difference		Level	
	Statistic Value	Probability Value	Statistic Value	Probability Value	Statistic Value	Probability Value
GDP	-1.532623	0.1165	-16.76241	0.0001***	-17.35841	0.0000***
ENF	-0.647962	0.3183	-6.358238	0.0000***	-6.603812	0.0000***
ISZ	-0.601576	0.3372	-6.417172	0.0000***	-6.637448	0.0000***

Not: ***indicates significance at 1% level.

In this study, ADF (Augmented Dickey-Fuller) unit root test is applied in two different models. These models are the model without constant and trend and the model with constant and trend, respectively. The test results are presented in Table 3 in detail According to the analyzed data, it is observed that GDP, ENF and ISZ variables contain unit roots in the model without constant and trend, but when first differences of these variables are taken, they become stationary at 1 percent significance level. In other words, it is understood that while these variables initially contain unit root in the model without constant and trend, they become stationary over time when their differences are taken. On the other hand, in the model with constant and trend, each of the GDP, ENF and ISZ variables are stationary at the 1 percent significance level. This shows that the time series data of the variables analyzed in the model with constant and trend are stationary and exhibit a structure in which trend effects are also taken into account.

Table 4: Causality Test Results for Variables

	Independent Variables		
Dependent Variable	**GDP**	**ENF**	**ISZ**
GDP	-	6.459561** **(0.0187)**	2.631419 (0.2551)
ENF	56.75453*** **(0.0000)**	-	2.383149 (0.3212)
ISZ	4.823029** **(0.0338)**	2.312754 (0.2019)	-

**%5 significant at error level
*** %1 significant at error level

The results of the Granger causality test conducted in this study are presented in detail in Table 4. The analysis reveals that there is a bidirectional causality relationship between GDP (Gross Domestic Product) and ENF (Inflation) variables. This relationship indicates that both variables are in an interaction that affects each other. However, the significance levels of these relationships differ. While the effect of the ENF variable on the GDP variable is determined at the 5 percent significance level, the effect of the GDP variable on the ENF variable is stronger at the 1 percent significance level.

Moreover, a unidirectional causality relationship was also found between the GDP variable and the ISZ (Unemployment Rate) variable. This causality runs from GDP to ISZ and is confirmed at the 5 percent significance level. This implies that there is an interaction between economic growth and the unemployment rate, but the unemployment rate has a smaller impact on economic growth.Finally, no causality relationship was found between ENF and ISZ variables. This suggests that there is no direct interaction or causal relationship between inflation and unemployment rate.

CONCLUSION

Supporting economic growth is a critical element for both increasing the welfare of individuals and realizing society's long-term development goals. However, ensuring that growth is sustainable and balanced should be one of the primary objectives of modern economic policies. Inflation affects economic growth in a multidimensional way. While moderate inflation can stimulate the economy by supporting demand growth, high inflation rates can adversely affect economic activity by destabilizing price stability (Friedman, 1977). Inflation is a critical factor affecting consumer confidence and investment decisions.

Unemployment, as a multidimensional problem, creates social and economic impacts. In order to reduce these effects, effective policies should be developed both at national and international level. Formulating strategies against unemployment in a way to adapt to technological change and economic fluctuations is important for a more balanced and sustainable development. A holistic approach should be adopted to reduce unemployment. Retraining unemployed individuals and expanding vocational training courses can be effective in solving this problem (Yılmaz, 2020). In addition, state-sponsored employment projects and support for small businesses can reduce unemployment rates by promoting economic growth. Supporting economic growth, price stability and employment is a critical element for both increasing the welfare of individuals and realizing the long-term development goals of society. However, sustainable and balanced growth, inflation and unemployment should be one of the primary objectives of modern economic policies.

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CHAPTER 2

INTEGRATION OF INFORMATION TECHNOLOGIES INTO MARKETING STRATEGIES: THE RELATIONSHIP BETWEEN CUSTOMER SATISFACTION AND LOYALTY*

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INTRODUCTION

Advancements in information technologies play a crucial role in enabling modern businesses to gain a competitive advantage. In particular, in the current era of rapid digitalization, integrating marketing strategies with digital technologies allows businesses to better and more effectively understand customer behaviors. This integration enables the personalized delivery of products and services to customers, while simultaneously laying the foundation for a structure that enhances customer satisfaction and strengthens loyalty. The growing power of information technologies not only increases the operational efficiency of businesses but also revolutionizes marketing strategies. Data obtained through digital platforms is utilized to predict consumer trends, optimize marketing campaigns, and strengthen customer relationships.

The banking sector represents one of the most prominent examples of this digital transformation. In the highly competitive environment of the sector, the effective use of information technologies plays a significant role in managing customer relationships. Banks, through the opportunities offered by digitalization, provide new services that enhance customer satisfaction and are able to respond more quickly and accurately to customer expectations. Furthermore, these technologies allow banks to personalize the customer experience, giving them a significant advantage in ensuring long-term loyalty. With the use of various digital tools and platforms, banking services are no longer limited to branch visits but are now accessible anytime and anywhere via internet banking and mobile applications. This enables customers to perform banking transactions more easily, quickly, and securely, while also helping banks respond more swiftly to customer needs.

This study explores in detail the integration of information technologies into marketing strategies and their effects on customer satisfaction and loyalty, providing concrete examples especially within the context of the banking sector. The integration of digital technologies into marketing strategies clearly highlights the transformation within the banking sector and examines how leading companies in the industry are benefiting from these technologies. The effects on customer satisfaction and loyalty are evaluated from both theoretical and practical perspectives, emphasizing the potential of information technologies in this area.

1. Integration of Information Technologies into Marketing Strategies

The integration of information technologies into marketing strategies deepens the customer-centric approach of modern businesses, enhancing the importance of personalized services. This integration plays a central role in increasing customer satisfaction and loyalty by enabling businesses to provide solutions tailored to individual customer needs (Chaffey and Ellis-Chadwick, 2019). With the opportunities provided by technology, businesses not only improve marketing processes but also gain the opportunity to build stronger and longer-term relationships with their customers. One of the key elements of this process is the effective implementation of data-driven marketing strategies. By collecting and analyzing customer data and segmenting it, businesses can develop marketing strategies tailored to each customer (Keller, 2013). This enables the delivery of the right message at the right time and the provision of products and services most suited to customers' needs.

Another crucial aspect is interactive marketing. Interactive marketing includes digital platforms that allow direct and real-time interaction with customers. Through digital channels such as social media, mobile applications, email campaigns, and websites, businesses maintain constant communication with customers, enabling them to identify their needs more quickly and provide personalized offers (Peppers and Rogers, 2016). This process not only enhances the effectiveness of advertisements and campaigns but also facilitates the collection of customer feedback. Customer interactions with the brand encourage them to increase their brand loyalty.

The creation of personalized customer experiences through digital intermediaries is another important aspect of integration. These tools include technologies such as artificial intelligence, chatbots, and recommendation systems. For example, recommendation algorithms used in e-commerce platforms suggest products to users based on their previous purchases and search history (Shankar and Hollis, 2015). Similarly, chatbots quickly respond to customer inquiries, increasing their satisfaction and providing a more personalized experience. These digital intermediaries not only improve customer interaction but also offer businesses valuable data to understand customer behavior. Based on this data, marketing strategies can be continuously improved, and more targeted campaigns can be created.

In conclusion, the integration of information technologies into marketing strategies not only provides businesses with a competitive advantage but also strengthens customer connections by offering deeper and more personal experiences. This process is shaped by data-driven decision-making, interactive marketing, and the personalization of customer experiences through digital tools, creating a significant transformation in the marketing world (Chiu, Hsu, and Wang, 2012).

1.1 Data-Driven Marketing

Data-driven marketing is an approach that relies on analyzing data collected by businesses to understand customer behaviors and provide more personalized solutions. This process allows businesses to manage customer relationships more efficiently and ensures that marketing strategies are more targeted. Data-driven marketing has been strengthened by digitalization, helping businesses deepen customer relationships and foster loyalty. The collection and analysis of customer data enable the development of more accurate and effective marketing strategies (Peppers and Rogers, 2016).

The banking sector is one of the most common and effective areas for the use of data-driven marketing. Banks collect various types of data, such as customers' financial habits, spending behaviors, credit histories, preferences, and complaints, and analyze this data for customer segmentation. Customer segmentation helps create groups of customers with similar characteristics and allows banks to develop specific marketing strategies for each segment. For example, a bank might offer specialized investment products for high-income customers or favorable interest rates for low-income customers, thereby tailoring offers for each group (Gummesson, 1995). Such personalized offers not only enhance customer satisfaction but also accelerate the process of building long-term customer loyalty.

Another significant advantage of data-driven marketing is the collection and analysis of customer complaints and feedback. Banks can use this data to improve their services and respond more quickly to customer expectations. Regular monitoring of customer complaints helps increase service quality and reduce customer dissatisfaction (Reichheld, 1993). Additionally, it enables banks to conduct more targeted marketing campaigns. For example, personalized email campaigns could be created for customers who are

interested in learning more about a particular product or service. Such campaigns help build a stronger connection with the customer and increase their loyalty to the brand.

The effectiveness of data-driven marketing practices in the banking sector is important not only in managing customer relationships but also in increasing operational efficiency within the organization. By leveraging the data they collect, businesses can make their marketing activities more efficient and avoid unnecessary costs. Data-driven marketing also enables banks to anticipate customer needs and demands, allowing them to be better prepared in advance (Kotler and Keller, 2016).

1.2 Interactive Marketing

Interactive marketing is an approach aimed at establishing a dynamic and continuous relationship with customers through communication channels provided by information technologies. This method enables customers to become active participants rather than passive recipients. Through digital marketing tools, interactive channels such as social media platforms, mobile applications, email campaigns, and websites facilitate continuous and two-way communication between brands and customers (Peppers and Rogers, 2016). Interactive marketing allows brands to engage in one-on-one communication with customers, understand their needs more quickly, and offer the most suitable solutions to meet those needs.

In the banking sector, interactive marketing makes it possible to collect, analyze, and optimize services based on customer feedback through digital channels. Banks quickly evaluate feedback from customers, resolve complaints, and develop their products and services according to customer demands (Grönroos, 2004a). This process not only increases customer satisfaction but also strengthens customer loyalty. When customers feel valued, they tend to increase their brand loyalty and choose the brand more frequently. Interactive marketing also plays a significant role in delivering personalized services. For example, banks can offer personalized credit or investment product offers based on customers' financial histories (Kotler and Keller, 2016).

One of the key components of interactive marketing is customer interactions through social media. Banks can directly engage with customers

through social media platforms, answer their questions, and gather feedback about their products. This process not only enhances the customer experience but also strengthens the bank's brand image. Surveys, comments, and customer feedback on digital platforms allow banks to improve their services and offer more tailored solutions to customer needs (Grönroos, 2004b).

Moreover, interactive marketing enables banks to analyze customer behavior more accurately and shape their marketing strategies in a more targeted manner. Data collected through digital channels helps banks anticipate customers' interests, payment habits, and future financial needs. Based on this information, banks can perform more effective customer segmentation and develop customized marketing strategies for each segment (Peppers and Rogers, 2016).

2. Supporting Customer Satisfaction with Information Technologies

Customer satisfaction is based not only on the delivery of quality service but also on meeting the emotional and functional expectations of customers regarding a product or service. The key contributions of information technologies in this context include the following:

2.1 Personalized Services

Information technologies enable businesses to offer tailored solutions and create unique experiences for each customer. Through digital tools and data analytics techniques, businesses can customize their services based on customer preferences, behaviors, and past interactions. These personalized services not only increase customer satisfaction but also accelerate the process of building customer loyalty and long-term commitment (Peppers and Rogers, 2016). Offers tailored to individual needs and expectations enhance trust in the brand and provide a competitive advantage.

In the banking sector, personalized services are primarily developed based on customer segmentation. Banks analyze customers' financial history, spending habits, and credit records to offer customized credit proposals for each individual. For example, a bank may offer a loan with appropriate interest rates or an investment product tailored to a specific customer. Such personalized offers are aligned with customers' needs, increasing satisfaction and strengthening their loyalty to the bank (Berry, 1995). Moreover,

personalized services foster a strong connection between the bank and the customer, as customers tend to trust a brand more when they feel valued.

Thanks to information technologies, banks can also predict customer behaviors and develop solutions for future needs. For instance, if a customer consistently tracks their credit card expenses, the bank may offer a credit limit increase or suggest higher spending limits. Additionally, financial advisory services provide personalized recommendations based on the customer's financial situation, creating a more individualized experience (Kotler and Keller, 2016). These services not only make the bank's offerings more targeted but also ensure a better experience for the customer.

Digital tools and data analytics allow banks to establish closer relationships with their customers. Data collected from online platforms, mobile applications, and other digital channels enables banks to anticipate customers' financial needs and provide timely, appropriate solutions. By offering personalized experiences, banks can enhance customer satisfaction while achieving higher profit margins and a stronger market position.

2.2 Fast and Effective Service

Digital platforms have become a significant factor in increasing customer satisfaction by enabling fast and effective service in the banking sector. Mobile and internet banking applications provide customers with 24/7 access, accelerating transaction processes and saving time. These digital services allow customers to access banking services at any time, greatly improving the overall customer experience (Kotler and Keller, 2012). Customers are free to conduct transactions whenever they wish, without the need to visit a physical branch. This is especially advantageous for individuals with time constraints or demanding work schedules.

Mobile banking applications, with their user-friendly interfaces, allow transactions to be completed quickly. For example, basic operations such as loan payments, money transfers, and account balance checks can be completed within minutes. Additionally, transactions conducted through these platforms help avoid the crowds and long wait times typically associated with physical branches. This not only increases customer satisfaction but also strengthens the interaction between the bank and the customer (Peppers and Rogers, 2016).

Another important benefit of fast services provided by digital platforms in the banking sector is the immediate response to customer requests. Customers can complete various transactions instantly, which increases their trust in the bank and reinforces their loyalty. For example, digital banking applications facilitate immediate money transfers and loan applications for customers in urgent need of cash, demonstrating the speed and effectiveness of the service (Kotler and Keller, 2012).

The fast service offered by digital platforms not only improves the customer experience but also enhances the operational efficiency of banks. Banks can monitor transactions conducted through digital channels and use this data to further optimize service processes. This results in both customer satisfaction and more efficient use of resources by the banks (Grönroos, 2004a).

2.3 Complaint Management

Information technologies play a crucial role in the effective recording and resolution of customer complaints, which is vital for improving service quality and enhancing customer satisfaction. Digital channels allow customers to quickly and easily report any issues they encounter. In the banking sector, monitoring and analyzing these complaints is a critical tool for improving customer experiences and service quality (Vavra, 1992). Through digital platforms, banks can access customer complaints in real time and respond effectively.

The digitization of the complaint management process enables banks to quickly record, classify, and track customer complaints. This process also assists banks in continuously improving their service processes and products by analyzing customer feedback. When customers submit complaints via digital channels, banks can respond immediately and adopt a solution-oriented approach. For example, complaints submitted through online banking platforms or mobile applications are automatically directed to customer service representatives, allowing for rapid resolution (Grönroos, 2004b).

Additionally, digital complaint management systems allow banks to track previous complaints, which enables them to personalize their relationships with customers. These systems help banks monitor the resolution process of

complaints and prevent similar complaints from arising in the future. The faster and more effectively a bank addresses customer complaints, the higher the level of customer satisfaction and loyalty (Vavra, 1992). Moreover, managing complaints correctly enables banks to build trust-based relationships with customers, as customers are more likely to increase their loyalty when they see their bank quickly resolving their issues.

Another advantage of digital complaint management systems is that they provide valuable data for strategic decision-making. The insights gathered from complaints allow banks to evaluate service quality, identify weaknesses, and create a roadmap for future improvements (Kotler and Keller, 2016). In this way, banks not only address existing complaints but also take proactive steps to prevent similar issues in the future.

3. Information Technologies' Contribution to Customer Loyalty

The impact of information technologies on customer loyalty is directly related to their ability to foster long-term customer engagement. The prominent effects of information technologies on loyalty can be examined as follows:

3.1 Loyalty Programs

Digital platforms enable the effective implementation of loyalty programs, helping banks strengthen their relationships with customers. These programs aim to increase customer loyalty by offering rewards and benefits based on customers' financial habits. With the help of digital tools, personalized rewards and offers can be provided based on transaction history, spending habits, and financial preferences. Such loyalty programs enhance customer loyalty by offering valuable and personalized experiences, laying the foundation for long-term customer relationships (Reichheld and Sasser, 1990).

In the banking sector, loyalty programs can be more effectively managed through digital channels. Mobile banking applications or online banking platforms can offer real-time incentives that encourage customers to complete transactions. For example, when a customer reaches a certain spending threshold, the bank may offer a special reward or advantageous credit proposal. These programs are tailored to meet the specific needs of customers, thereby ensuring high customer satisfaction (Kotler and Keller, 2016).

Digital loyalty programs allow customers to track the points or rewards they earn with each transaction. Additionally, with mobile applications, banks can store these points in a digital format, making it easy for customers to access them. This structure simplifies the customer experience while enabling the more efficient implementation of loyalty programs (Peppers and Rogers, 2016). Banks can continually update these programs and offer new rewards based on customer demands.

One more advantage of managing loyalty programs through digital platforms is the ability to reach a broader customer base. Digital loyalty programs allow banks to transcend geographic boundaries, providing services to customers in different regions. Furthermore, digital platforms enable the continuous monitoring of customer interactions, offering insights into customer behavior. Banks can use these insights to optimize their programs and deliver more targeted offers to their customers (Reichheld and Sasser, 1990).

3.2 Building Trust

The security systems provided by information technologies are among the key factors that increase customer trust in the banking sector. Banks ensure that their customers can perform financial transactions securely through digital platforms. These security measures not only protect the security of customer transactions but also play a critical role in the banks' efforts to build and maintain customer loyalty. Transparent transaction processes and data privacy are essential elements in building trust (Kotler, 1997).

The digital security systems used by banks to protect their customers' personal and financial data reinforce their trust in the bank. With the increasing use of mobile and internet banking services, strong encryption technologies, authentication systems, and secure payment infrastructures further strengthen the security offered by banks. When customers are confident that their financial transactions will be securely executed in the digital environment, their relationship with the bank is built on a more solid foundation (Grönroos, 2004b).

Additionally, transparent transaction processes emerge as another important factor that enhances trust in customer relationships. When banks clearly display every step of their services via digital platforms, it increases customers' trust in the transaction processes. For example, transactions conducted via online banking platforms are communicated to the user at each stage. This transparency reassures customers and strengthens their loyalty (Kotler, 1997).

Data privacy is another critical factor in building trust. Banks collect and process customers' personal and financial information only when necessary, and they implement various privacy policies and security measures to protect this data. These privacy policies applied in digital banking platforms demonstrate that customers' data is secure, which increases their trust in the bank. When customers are assured that their data will not be misused, they are more likely to establish long-term relationships with their banks (Peppers and Rogers, 2016).

3.3 Interaction and Feedback

Digital channels enable banks to maintain constant interaction with their customers, playing a crucial role in strengthening customer relationships. These platforms allow banks to continuously communicate with customers while also enabling quick feedback collection. Customers can easily share their experiences through digital channels, and banks can instantly receive feedback and use it to optimize their services (Grönroos and Ravald, 1996).

Interaction is not a one-way communication but a reciprocal process. Through digital platforms, banks can quickly learn about customer requests and complaints, and they can improve their services based on this feedback. Customer feedback enables banks to offer more customer-centric services. For example, surveys and evaluations conducted through mobile banking applications or online banking services are used to measure customer satisfaction levels. By analyzing this data, banks can improve service quality and respond more quickly to customer demands (Kotler and Keller, 2016).

The quick resolution of feedback collected through digital channels is an important factor in increasing customer loyalty. When customers see that their complaints or requests are addressed promptly, it strengthens their trust in the bank and enhances customer loyalty. Additionally, interactions in the digital environment lead customers to communicate more frequently with the bank and feel more connected. These interactions strengthen banks' customer-focused strategies and raise customer satisfaction levels (Peppers and Rogers, 2016).

Collecting customer feedback through digital platforms not only allows banks to solve problems but also offers an opportunity to improve services and provide more personalized experiences. This process enables banks to adopt a more dynamic and flexible service approach (Grönroos and Ravald, 1996). For example, when a customer submits an error report via the mobile app, the bank intervenes immediately, provides a solution, and responds to the customer. Such feedback processes strengthen the bond between banks and customers, allowing for the establishment of longer-lasting relationships.

CONCLUSION AND RECOMMENDATIONS

This study emphasizes the transformative impact of integrating information technologies into marketing strategies, particularly in the banking sector. The findings demonstrate that effective use of digital platforms not only enhances operational efficiency but also deepens customer relationships and provides a competitive advantage. Digitization allows for faster responses to customer demands, personalized services, and tailored solutions, which in turn strengthens banks' positions in the market. By offering 24/7 access through digital channels, banks continuously improve the customer experience.

Future research could extend beyond the banking sector to explore the effects of integrating information technologies into marketing strategies across various industries, such as retail, healthcare, and education. Such studies would help understand how digital transformation impacts customer loyalty in different sectors and guide strategy development across industries.

For banks, continued investment in technological innovations is crucial to boosting customer loyalty. Tools like artificial intelligence, data analytics, blockchain, and other digital transformation technologies can further strengthen customer-centric strategies. By leveraging these technologies, banks can better analyze customer behaviors and offer personalized offers accordingly. Additionally, digital tools used to monitor and enhance customer experience will solidify the bond between the bank and its customers, fostering the creation of a loyal customer base. It is certain that future digitalization processes will create more opportunities to build customer loyalty.

Acknowledge

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CHAPTER 3

BLUE ECONOMY AND MARITIME TRANSPORT EMISSIONS WITHIN THE FRAMEWORK OF CIRCULAR ECONOMY

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1.Introduction

Circular economy is a concept whose importance has been recognised more and more recently and has been the subject of scientific studies. The circular economy model has principles and objectives that are different from the linear economy model. This model can be effective in ensuring sustainability. In addition, it can be said that it has a system that contributes in many economic and environmental aspects by ensuring that products are used in a circular way. The circular economy can be seen as a model that targets the use of renewable energy sources in energy and is effective in reducing greenhouse gas emissions. In this respect, it can unite with the sustainability and greenhouse gas emission reduction goals of the blue economy.

The blue economy is an economic and environmental concept that aims to ensure sustainability for all communities in the environment. It is thought that water resources that enable various activities such as transport, tourism and fishing are used unconsciously and damaged. It can be said that there is a global struggle to reduce the emission emissions caused by maritime transport, which is among the most common activities. Türkiye can be seen as a country that intensively uses maritime transport for commercial activities. In order for the existence of marine ecosystems to continue and the goals of the blue economy to be realised, reducing emission levels can have positive effects on the country both environmentally and economically. In this context, in this study, it is aimed to address the emission emission from maritime transport in Türkiye within the framework of circular economy together with the blue economy, and it is thought that it is important for the economy as well as the environment to make an assessment of the maritime transport emission caused by increasing activities.

In the study titled 'Blue Economy and Maritime Transport Emission within the Framework of Circular Economy', firstly, a literature review is

given. In the next section, the concept of circular economy and its development process are mentioned. In the next section, the relationship between blue economy and circular economy is discussed. Then, maritime transport and emission emissions in Türkiye are given as sub-headings. The study is completed with the conclusion and evaluation section.

2.Literature Research

It is seen that the importance of circular economy and blue economy has been increasing today and has started to take place more in the scientific literature. In the literature, there are some studies that deal with circular economy and blue economy by associating them with emission emissions.

Accordingly, when we look at the studies addressing the circular economy and emission relationship; Berechet et al. (2018), in their study on circular economy, waste management and carbon footprint in Romania, argue that the use of circular economy will contribute to emission savings of 40,000 tCO_2 and above. Hailemariam and Erdiaw-Kwasie (2022) analyse the relationship between circular economy, emissions and environmental sustainability for 29 European countries, using data for the period 2000 and 2020. Accordingly, they conclude that the circular economy has a decreasing effect on CO_2 emissions and positively affects the environment. Korra (2022), in his study on circular economy and environmental footprint, states that environmental footprint should be reduced. He states that the circular economy is important for the protection of the environment.

Mongo et al. (2022) analyse the circular economy and carbon dioxide emissions in Europe, using data for the period 2000 and 2015. According to the findings obtained in the study in which the ARDL model is applied, it is suggested that the circular economy reduces carbon dioxide emissions in the long run contrary to the short run. Yang et al. (2022), in their study on circular economy, climate and environment, state that bio-based materials may pose a

problem for the land and that the technologies to be used for carbon reduction have high costs. It also suggests that circular economy is necessary for transport, industry, housing, energy and waste. Basu et al. (2024), in their study on the relationship between circular economy, economic growth and net zero carbon, state that circular economy is important for net zero carbon, economy and circularity. It also states that those who implement environmental policy practices have a positive effect on emissions compared to those who do not.

Looking at the studies on the relationship between blue economy and emissions; Pournara et al. (2019), in their study on blue economy, marine pollution and sustainability, state that maritime transport has an impact on emission emissions. In particular, it argues that ports have an important role in this regard. For this purpose, he emphasises that different price practices should be applied in ports, green ships should be treated preferentially in landing and departure, short-term waits should be made, and regulations should be made on energy and financial issues. Badircea et al. (2021) use data for the period between 2009 and 2018 in their study on blue economy, economic growth and climate change for 28 member countries of the European Union. Using FMOLS, Granger causality analysis and vector error correction model, the study suggests that the blue economy has an impact on emissions in the long run. It also concludes that there is unidirectional causality from greenhouse gas emissions to economic growth in the short run and from economic growth to greenhouse gas emissions in the long run.

Martinez-Vasquez et al. (2023) use data for the period between 2010 and 2018 in their study on the blue economy in some European countries. According to the findings obtained in the study where Granger, Panel and causality analyses are performed, it is determined that per capita income has an effect on coastal tourism and population density. It is concluded that emissions, maritime transport, inanimate resources and activities in ports

have an effect on the increase in per capita income. It also states that some improvements should be made on human development index, emission release and water resources for per capita income.

Shodrokova et al. (2024) use the ARDL model in their study on the impact of blue economy and renewable energy on carbon dioxide emissions in Indonesia. According to the findings, it is suggested that although aquaculture production has a downward effect on CO_2 emissions, it may have an inverse effect in the long run. It is also stated that the use of renewable energy has a decreasing effect on emissions, while energy intensity has an increasing effect. Therefore, he emphasises that energy efficiency should be ensured. Usluer (2024), in his study on blue economy and maritime transport, states that the continuity of maritime transport should be ensured for the blue economy. He also states that developed countries will be more attractive places for shipping in the future.

A review of the literature on the subject reveals theoretical and empirical studies that address the impact of circular economy and blue economy on emissions from different perspectives in terms of subject, time, place and method. In this study, the issue is addressed within the framework of circular economy and its relationship with the blue economy is discussed and evaluated through maritime transport emissions in Türkiye.

3. Circular Economy Concept and Development Process

From a conceptual point of view, circular economy can be defined in different ways. It is seen that the circular economy model, which is completely different from the linear economy model, has become more important especially in the economy and environment.

Linear economy refers to a non-cyclical phase. In this model, it is aimed to provide an efficient production where the cost is not high. In the linear

model, the product is taken for use and destroyed after use (Tambovceva and Titko, 2020:24). The transition to a circular economy instead of a linear economy occurs as a result of the emergence of environmental problems and the realisation of economic growth through the abundant use of resources. In this way, there are advantages in sustainable development, environmental protection, employment and competition. Therefore, circular economy has emerged as a model used instead of linear economy. In the 20th century, the circular economy has been discussed more in scientific researches depending on technological developments. In the circular economy, which can be explained in more than one way, it is agreed that the place of economy is more important in the relationship between economy and environment. On the other hand, the economy and the environment are integrated with each other. Therefore, it may not be possible to consider the benefit of only one party. This situation arises from the fact that economic growth depends more on non-renewable resources (Fuior and Zavatki, 2022:163).

The circular economy, which was first put forward conceptually by Kenneth Boulding in the mid-20th century, is completely different from the linear economy. The circular economy can be expressed as not overusing, using many times and making it usable. In this way, excessive and continuous product use is not made. With the 3R principles, the production, use and conservation of resources are ensured, and the benefits of the economy and the environment are considered (Yilong, 2016:144-145). The concept of circular economy, which became conceptually evident towards the end of the 20th century, is realised in the 21st century thanks to the Ellen MacArthur Foundation (Bugaian and Diaconu, 2020:11).

According to Yang and Feng (2008), circular economy is defined as a system that aims to minimise the use of resources, reuse and transform them into usable form, closed-loop system and reuse of energy (Yang and Feng, 2008:814). Gregson et al. (2015) defines the circular economy as a model that

enables the recycling of products and raw materials to be used economically for longer periods of time (Gregson et al., 2015:223). Geissdoerfer et al. (2017) expresses the concept of circular economy as a model that prevents the use of excess inputs by reducing, terminating and restricting the use of energy and materials, thus reducing energy use and emission emissions. In this way, the use of resources is not short-term and can be made reusable (Geissdoerfer et al., 2017). Kircherr et al. (2017) describes the circular economy as the realisation of the three dimensions of sustainable development by reducing the use of products from the time they become usable until they are used, reusing and reusing products in economic terms (Kircherr et al., 2017: 224-225).

Instead of the linear economy, which is focused on economic growth, the circular economy model is being switched to by using the same products and ensuring the use of the same input in the production of different products. The circular economy has objectives such as reducing the emergence of waste, being an input to different products, preferring renewable energies found in nature, making production with materials that will become reproducible, preventing environmental damage, ensuring efficiency in production and increasing competitiveness (Popovic and Radivojevic,2022:52). Figure 1 shows the stages of linear and circular economy.
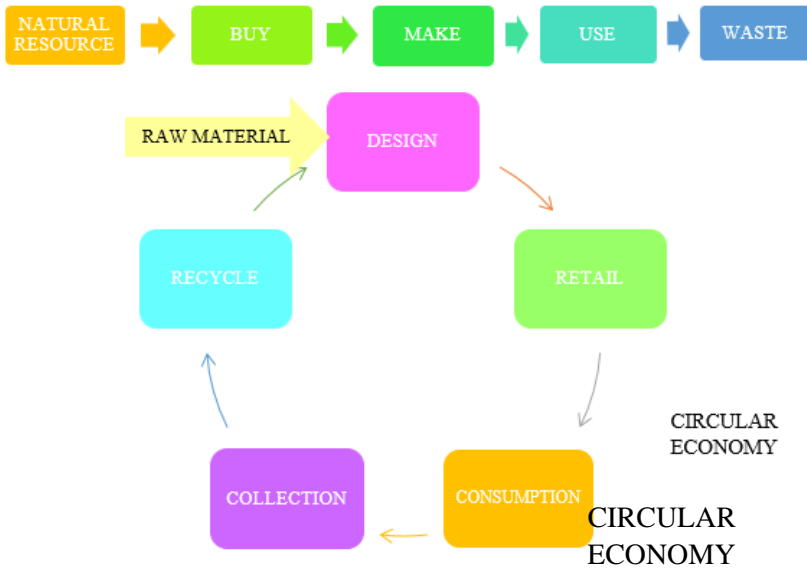
Figure 1. Linear and Circular Economy

Source: Thu,2023:322

During the design of a product, there are stages of long-lasting and efficient use of resources, elimination and development of damages, repeated use and reusability. During the production of a product, inputs are used sustainably and different industries cooperate for production. During the consumption of the product, governments play an important role on consumption habits. During the collection and reuse of products, local governments are especially responsible. This stage is seen as a step towards the circular economy, waste is reused and biological transformation is provided (Bacova et al., 2016:5).

The principles of R0, R1 and R2 in the circular economy include the circularity of the products while they are just emerging, the principles of R3, R4, R5, R6 and R7 include the long-term use of the products, and the principles of R8 and R9 include the reusability of the products (Hosseini et al., 2023:4701). Principles R3, R4, R5, R6 and R7 aim to ensure that the products

can be reused, damage can be repaired, new products can be produced again and can be used for different purposes. R8 and R9, on the other hand, ensure that waste and recycling and appropriate indicators emerge (Alivojvodic and Kokalj, 2024:8).

Due to the nature of nature, circularity ensures the continuity of the activities of individuals over a long period of time. After the Industrial Revolution, instead of circularity, the linear model, which is the source of environmental problems where products are created, used and destroyed, was used. The circular economy is an increasingly attractive model that is of high quality, does not use excess resources, provides long-lasting use and has principles that aim to contribute to the environment. The circular economy is especially recommended by the United Nations Environment Programme (UNEP) to achieve the net zero target by 2050 and to use this model to achieve sustainability. The use of raw materials plays an important role in the prosperity of an economy. Excessive and unnecessary use of products causes environmental problems and has an impact on 20 per cent or more of greenhouse gas emissions. Considering the increasing population on a global scale, it is necessary to switch to a circular economy to ensure sustainability all over the world. Especially raw materials have an important function in acting in accordance with the circular economy, preventing excessive use of resources, reducing greenhouse gas emissions and ensuring sustainability (Ramakrishna and Jose, 2022: 4097). In short, it is seen that the circular economy model is a model that is compatible with the environment and will be effective in ensuring sustainability. In addition, unlike the linear economy model, acting in accordance with the objectives and principles of this model can have a positive effect on emissions.

4. Blue Economy and Circular Economy Relationship

Although blue economy has different meanings, it can generally be seen as a concept that covers various activities, is based on sustainability and includes activities for this purpose.

Conceptually, there is no single definition of blue economy, but it is mostly expressed in two ways. One of these refers to the economic utilisation of water resources, and the other refers to the utilisation of these resources by considering economic and environmental sustainability. In this sense, it was used for the first time at the UN Sustainability Conference held in 2012 (Congressional Research Service, 2022). At the Rio+20 conference, the concept of blue economy was mentioned, and important results were obtained in terms of cleaning, ensuring that the waters are not damaged and utilised. The 2nd and 14th goals among the goals for sustainable development set after 2015 were made to ensure the sustainability of food and water resources, respectively (Ababouch, 2015:2).

Conceptually, blue economy can be defined as the continuity of living and non-living things in the seas, economy, living conditions, development of business areas and ensuring the continuity of this. The concept of blue economy, which also includes the actions taken in the seas and oceans in economic terms, considers ensuring the continuity of the resources in nature through conservationist activities (Elegbede et al., 2023:1). The blue economy has a dimension that includes economic growth and development by using the resources in the sea in production, maritime, marine biotechnology, hunting and breeding living creatures in aquatic resources, tourism activities, as well as the use of clean energy resources. In addition to this, there is a social dimension in which access to water resources is provided by everyone, and an environmental dimension that includes not harming water resources and their inhabitants. On the other hand, there is a technological dimension, which includes the technological dimension that ensures that economic activities are

not interrupted by developing in a technical sense, a cultural dimension that ensures that the remains of previous generations in water resources are not harmed, and a management dimension that refers to the management of resources in a way that will ensure their continuity (Youssef, 2023: 13-14).

Many problems are encountered in the realisation of the blue economy. Especially for water resources, where wastes have been discharged in the historical process and seen as a resource that will never come to an end, the situation is actually the opposite. Coasts are seen as attractive by many sectors and are damaged by climatic factors. Failure to manage the intense interest, economic and technical inadequacies lead to the formation of a competitive environment. Thus, this situation leads to irreparable damage to these areas and those who make a living from them (World Bank, 2016:3). In terms of sustainability, the blue economy involves ensuring that little or no greenhouse gas emissions are emitted while taking various actions, thus ensuring the continuity of the use of water resources in favour of living things (Smith-Godfrey, 2016:2).

In order to be able to carry out water-based activities and maritime transport in the economic sense, applications and regulations for transport and shipping should be made. Environmental problems such as pollution of water and air resources, waste, noise and the emergence of habitat-destroying species arise in transport using maritime transport. There is a need to invest in technical issues such as international regulations, waste, purification of water resources from pollution, emission release. Thanks to these investments, both economic and environmental advantages occur (World Bank and United Nations Department of Economic and Social Affairs, 2017:22).

To put it briefly, it is seen that the blue economy is based on continuity in many areas, including the reduction of emission levels among its targets. It

can be said that maritime transport, which is among the activities carried out by utilising water resources, is also important in this respect.

Water resources on the planet are important for the environment and are among the natural heritage. These resources have an important place in terms of the source of income, food needs and economic development of individuals on a global scale. On the other hand, these water resources are exposed to anthropogenic activities due to employment, food and economic needs, thus causing negative impacts on the environment. However, over time, individuals realise the importance of water resources and think that they should act in accordance with economic, social and environmental sustainability. In this respect, the regulations made for the realisation of the blue economy should be made not only for a specific place but also for the whole world (WWF, 2015).

Circular economy is associated with blue and green economy. The basis of the circular economy is the preservation of resources, raw materials and products within the economy. Efforts are made to reduce the emergence of waste and to ensure that products can be reused in different industries (Simpson, 2021:110). Thanks to the circular economy, sustainability, quality of life and competitiveness can be increased. It can also reduce the unconscious use of resources and various environmental problems (Khaw-ngern et al., 2021:1442). Figure 2 shows the relationship between circular and blue economy.
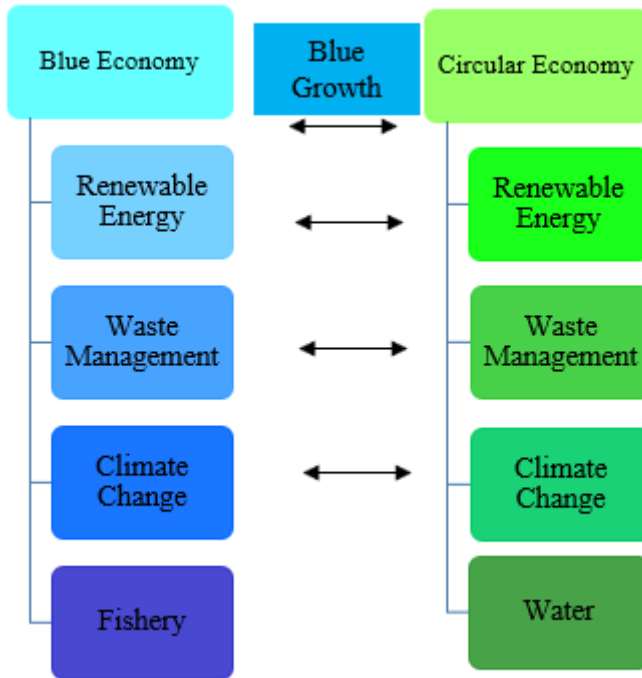
Figure 2. Circular and Blue Economy

Source: Kumari,2023:84

The blue economy is essentially linked to the circular economy in terms of environmental protection and sustainable quality of life (WWF, 2015). Sustainability ensures that individuals are in a healthy and safe environment in all periods. Sustainability, which cannot be explained in a simple way, consists of many dimensions, especially economic, social, environmental and political (Khajuria et al., 2009:15). Figure 3 shows the effects of circular economy and blue economy on some dimensions of sustainability.
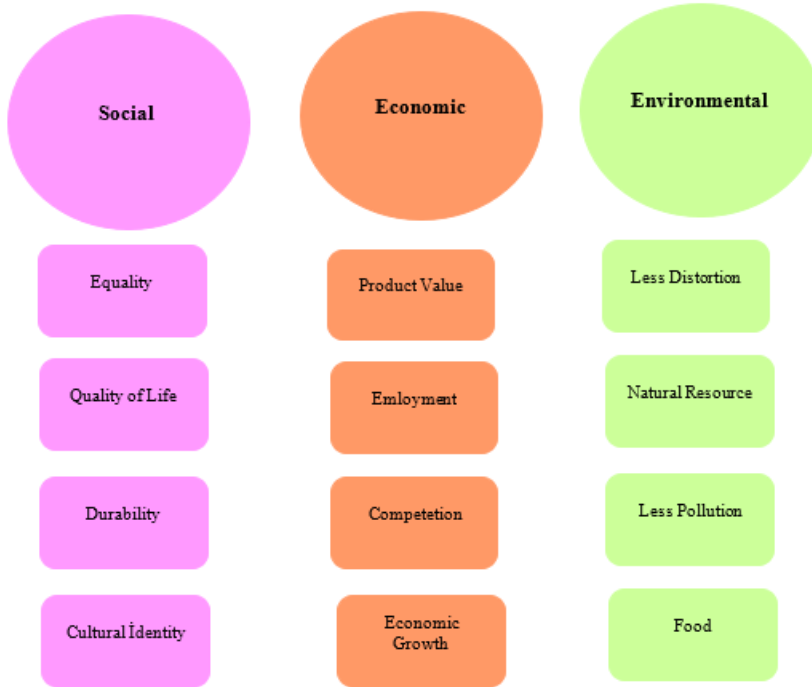
Figure 3. Impacts of Circular Economy and Blue Economy
Source: Magalhaes vd., 2024:12

To put it briefly, it is seen that there is an important connection between the circular economy model and the blue economy. Circular economy and blue economy can have an impact in different dimensions in ensuring sustainability, especially environmental sustainability.

4.1.Maritime Transport and Emissions in Türkiye

It is seen that maritime transport, which is among the types of transport, causes emission emissions depending on the activities carried out and thus environmental pollution occurs. It can be said that water resources are used intensively especially in commercial transport activities.

Transport is a sector that has been used to meet various needs throughout history and has been effective in transporting both individuals and goods. Compared to other types of transport, waterway transport, which has higher safety and economic advantages, is carried out in different water resources (Dursun and Erol, 2012:368). It is considered as an important indicator of civilisation to have maritime in a place and it is thought that they are more culturally developed. For this reason, maritime transport and maritime has an important place on these resources (Usluer, 2024:60). As a result of changes in climatic conditions, various problems arise in issues such as the decrease in fisheries, changes in water components, temperature, atmospheric conditions and changes in water level. In order to ensure sustainability, carbon emissions from these sources should be kept away. Especially in developing countries, fisheries, tourism, energy and transport have an important place for the economy (UNCTAD Trade and Development Board, 2023:1).

There is a relationship between blue economy and maritime transport. Water resources are important for the development of an economy and it is necessary to ensure sustainability in order to prevent damage to both the resources in the water and the environment. Maritime transport, which is important for commercial activities, has a key role for the blue economy (Usluer, 2024:61). Although maritime transport provides advantages in terms of carbon, especially for transport, it causes various pollution such as greenhouse gas emission emissions, especially fuel-based, on a global scale (Spalding, 2016:7).

Maritime transport mainly operates through non-public sectors and varies depending on the usage and the economic situation of those in this sector. Especially in Istanbul, Izmir and Çanakkale provinces, maritime transport is used for individuals to move to another place (T.C. Çevre, Şehircilik ve İklim Değişikliği Başkanlığı, 2024:115). Maritime transport constitutes almost all of the global trade, but it is not used sufficiently in

Türkiye. Road transport is frequently used in Türkiye, which is favourable for commercial activities to be carried out by maritime transport due to its location and resources. If maritime transport increases, the country can contribute to economic issues (Taşdelen et al., 2022:118-119).

Looking at Figure 4, which shows exports and imports according to modes of transport in Türkiye, it is seen that commercial transport is mostly carried out by maritime transport. This is followed by road, air and railway transport respectively.
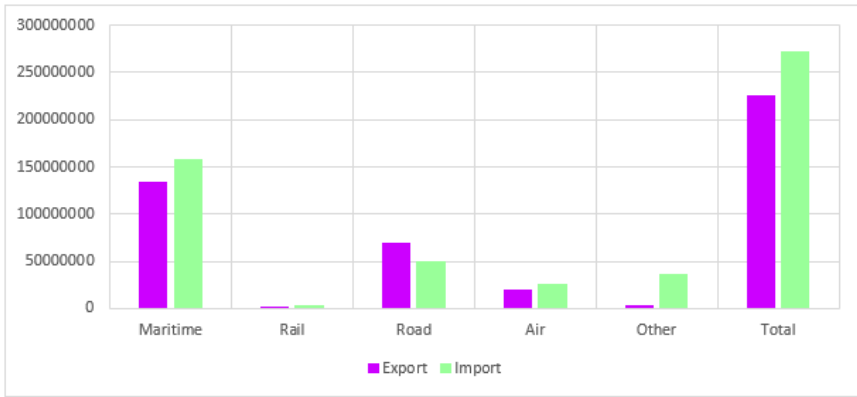
Figure 4. Exports and Imports by Mode of Transport in Türkiye in 2021 (Thousand USD)

Source: TURKSTAT

The blue economy aims to reduce or eliminate the carbon emissions of activities related to maritime transport (Le Gouvello and Simard, 2024:20). According to the International Maritime Organisation (IMO), preferring more environmentally friendly fuels has a positive effect on greenhouse gas emissions. The absence of carbon emissions depends on fuels and ships using environmentally friendly energy sources (T.C. Çevre, Şehircilik ve İklim Değişikliği Başkanlığı,2024:115). According to the International Maritime Organisation (IMO), maritime transport has a share of 2.5% in CO_2 emissions,

which is 940 mtCO_2 in a year. Although it is less harmful for the environment, there is a worldwide struggle to reduce the environmental degradation caused by emissions. (İMEAK DTO, 2021:49).

The International Maritime Organisation aims to make improvements in ships in terms of energy efficiency in 2023, to reduce CO_2 emissions from transport activities by 40% between 2008 and 2030, to use low-emitting or non-emitting technologies, and to reach net zero emission level (IMO, 2023). It is aimed to reduce carbon intensity by 40% and 70% in 2030 and 2050, respectively, and to reduce greenhouse gas emissions by half by 2050. In addition, it is aimed to follow a path in accordance with the Paris Agreement and to control the Energy Efficiency Design Index by IMO (ICCT, 2018:2).

Figure 5 shows the CO_2 emission from maritime transport according to the net zero scenario, according to which it is aimed to reduce maritime transport to 605 mtCO_2 by 2030.
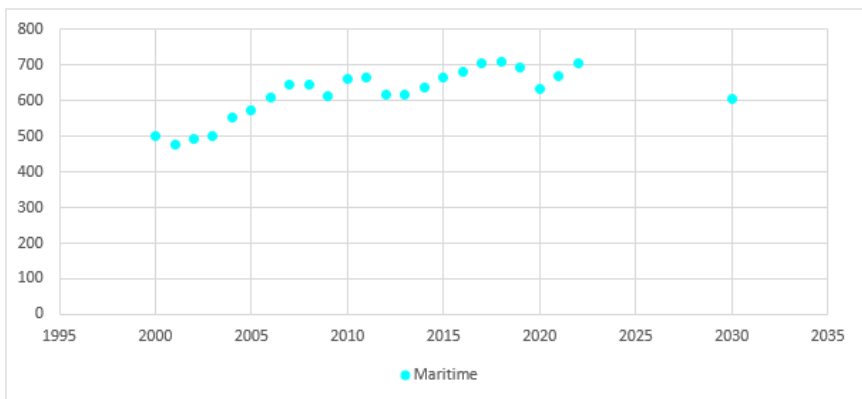
Figure 5. International Maritime Transport CO_2 Emissions under the Net Zero Scenario (mtCO_2)

Source: IEA

Figure 6, which shows the greenhouse gas emissions by transport modes in Türkiye in 2021, shows that the emissions from road transport are higher, followed by air, maritime and rail transport.
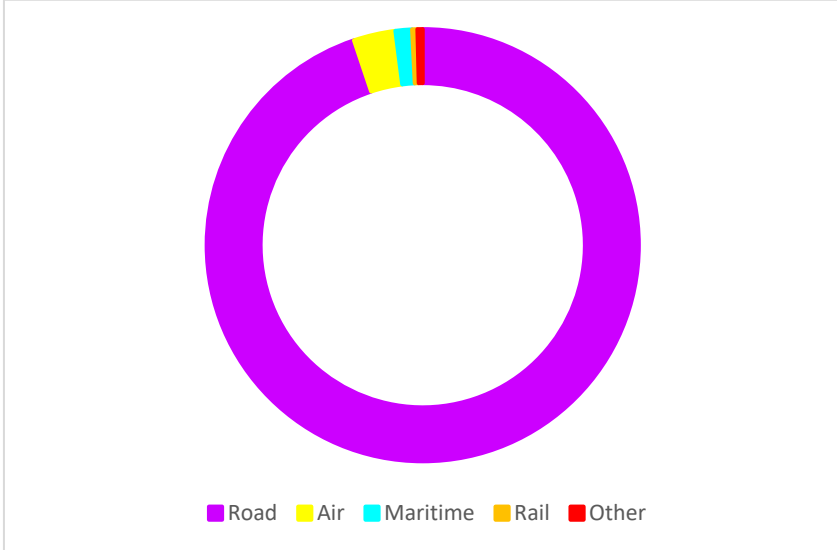
Figure 6. Greenhouse Gas Emissions by Transport Types in Türkiye in 2021
Source: TURKSTAT,2023

Figure 7, which shows the greenhouse gas emissions from maritime transport in Türkiye between 2010 and 2021, shows that emissions are in a decreasing trend. However, it can be said that the emissions, which are seen to increase in some periods, increased in 2019 compared to the previous year, this increase continued in 2020, and decreased slightly in 2021.
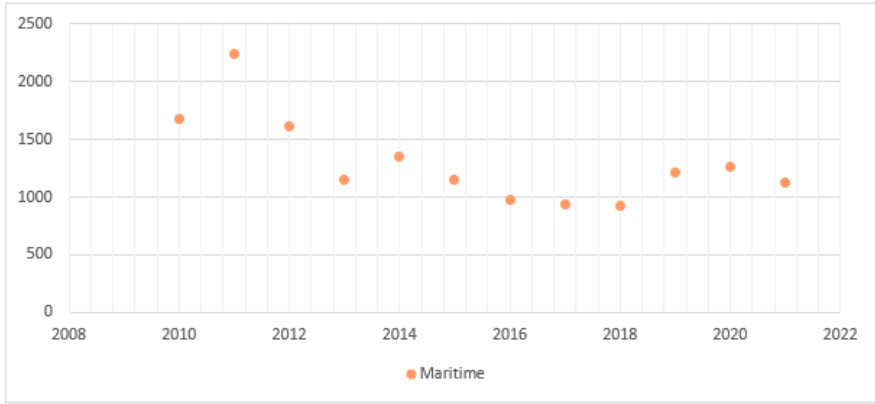
Figure 7. Greenhouse Gas Emissions from Maritime Transport in Türkiye (kt-ktCO$_2$e)

Source: TURKSTAT, 2023

In Figure 8, which shows the emissions from maritime transport in Türkiye, it is seen that CO$_2$ emission is the highest.
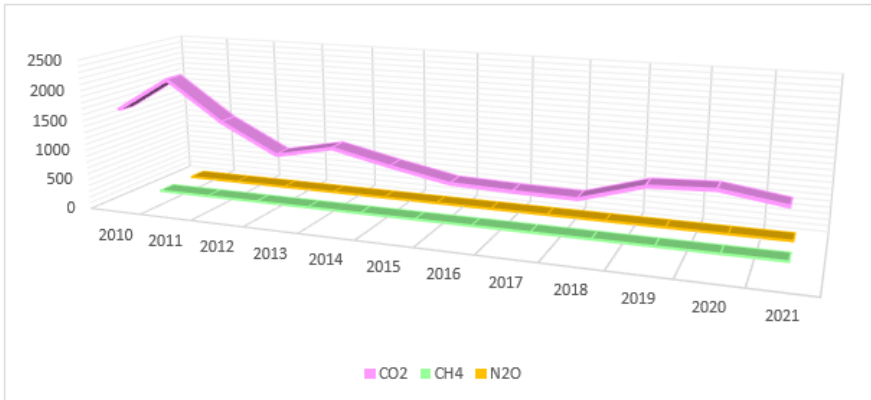
Figure 8. Emissions from Maritime Transport in Türkiye (kt-ktCO$_2$e)

Source: TURKSTAT, 2023

To put it briefly, it is seen that it is important to reduce maritime transport emissions in the blue economy. In addition, it can be said that

maritime transport is preferred more than other modes of transport in export and import activities in Türkiye, and maritime transport emissions have been in a decreasing trend but have started to increase again in recent years.

5.Conclusion and Evaluation

Circular economy and blue economy can be seen as two concepts that have common goals and are based on sustainability. Especially circular economy can contribute to ensuring sustainability and reducing emissions. It is seen that the circular economy model and the blue economy have features that are integrated with each other in economic, social and environmental terms and can affect sustainability in this direction. Especially in the fight against climate change, acting in accordance with the circular economy and blue economy targets may have a reducing effect on emission emissions in the following processes.

It is seen that the blue economy has targets to protect the marine ecosystem and it is important to reduce emission levels among these targets. It can be said that especially maritime transport is effective in emission emissions in water resources used due to various activities. It is seen that various strategies have been developed to ensure the sustainability of water resources worldwide. Especially through the International Maritime Organisation (IMO), various targets have been set to reduce emissions from maritime transport.

Although maritime transport in Türkiye is also used for passenger transport, it can be seen as the most frequently used mode of transport for commercial activities. Although it is seen that greenhouse gas emissions from maritime transport are also quite low compared to road transport, it is considered that the increase in the recent period should be taken into consideration. Although this emission release will decrease again in 2021, this decrease should be stable. For this, it is thought that various practices and

regulations will both ensure sustainability, which is among the goals of the blue economy, and that carrying out commercial activities at low emission levels will contribute economically. Therefore, it may be beneficial to improve the technical features of the ships used in transport, to select fuel types from renewable energy sources, to plan the cargo transport to carry a lot of cargo at one time, to control the safety conditions and to prefer this type of transport more.

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CHAPTER 4

FACE RECOGNITION TECHNOLOGY AND METHODS USED

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1. INTRODUCTION

The history of face recognition technology dates back to the 1960s. While the first applications examined facial features with simple measurement methods, computer-aided methods developed by Goldstein and his colleagues in the 1970s enabled the development of the first algorithmic techniques in this field (Goldstein et al., 1971). In the 1980s, a significant advance was made in technology by integrating the Principal Component Analysis (PCA) method into face recognition systems (Sirovich and Kirby, 1987). PCA allows the determination of distinctive features by reducing face images to a low-dimensional space (Turk and Pentland, 1991). Linear Discriminant Analysis (LDA), developed in the 1990s, increases the accuracy and efficiency of face recognition algorithms as a method that maximizes the separation between classes (Belhumeur et al., 1997).

Face recognition systems are divided into two main groups: feature-based and template-based. While feature-based methods perform the authentication process by examining the structural elements of the face, template-based methods perform the recognition process by comparing face images with the records in the database (Kumar et al., 2019). These two methods contribute to the use of face recognition technology in a wide range by being designed according to the needs of the application areas.

Recently, deep learning-based methods have enabled a significant transformation in this area. Convolutional Neural Networks (CNN) of these methods have reached high accuracy levels with their automatic learning capacity. On the other hand, Google's FaceNet model and Microsoft's DeepFace model also achieve high accuracy rates (Schroff et al., 2015; Taigman et al., 2014). Environmental factors such as facial expressions, lighting conditions

and aging can create some difficulties in face recognition and affect the performance of these systems. Advanced data augmentation methods such as GAN (Generative Adversarial Networks) are methods developed to cope with these difficulties (Zhu et al., 2017).

In the coming years, face recognition technology is expected to be adopted more widely (Turan, 2017). Therefore, the way face recognition technologies work, the effective methods and techniques used are important in terms of benefiting from this technology. Scientific research and real-life applications will also contribute to this. In this section, the face recognition process, the methods and techniques used in this process, and finally the application examples where face recognition technology is used are given.

2. FACE RECOGNITION STEPS

Face recognition systems generally consist of three main stages. These are; face detection, feature extraction and face matching. These stages have been developed to optimize the performance and reliability of the system.

The first of these stages is face detection. This stage starts with the detection of human faces in an image. The techniques used in this stage include methods such as Viola-Jones algorithm, Oriented Gradient Histogram (HOG) and Principal Component Analysis (PCA) (Viola and Jones, 2001; Turk and Pentland, 1991). Thanks to these techniques, effective results are obtained despite some difficulties such as lighting problems, angular changes and facial expression variations. In addition, the preprocessing steps applied in this process contribute to the algorithms giving more successful results by ensuring that the image data is optimized (Kumar et al., 2019).

Data collection and preprocessing are actually the most important processes that determine the overall performance of face recognition systems. During the data collection phase, faces with different expressions in many lighting conditions are recorded from different angles to create various data sets. In the pre-processing process of these images, the images are purified from noise by techniques such as the Gray Level Co-occurrence Matrix (GLCM) method and average filtering, and are turned into more distinct facial regions (Jumarlis et al., 2022; Thamotharan et al., 2012).

The second stage of face recognition systems is feature extraction and representation. At this stage, it is aimed to obtain the features that belong to the individual and distinguish them from the face images. At this stage, it is expected to determine the characteristic features of the person through the geometric relations on the face. Methods such as Independent Component Analysis (ICA), HOG, Linear Discriminant Analysis (LDA), eigenfaces and Local Binary Pattern (LBP) are important techniques used at this stage (Turk and Pentland, 1991; Kumar et al., 2019). In this process, unnecessary data is eliminated by dimension reduction methods and feature vectors that increase the effectiveness of matching processes in the database are created (Chatterjee, 2022).

The last stage of face recognition is matching the faces. At this stage, the extracted features are compared with the known faces previously stored in the database and in this way, the identity verification and identification of the face are performed. Convolutional Neural Networks (CNN), Correlation Filters and K-Nearest Neighbor (K-NN) methods are the main algorithms used at this stage (Schroff et al., 2015).

3. METHODS USED IN FACE RECOGNITION TECHNOLOGY

Many methods are used in face recognition systems, including traditional methods, machine learning methods and deep learning methods.

3.1. Traditional Methods

3.1.1. PCA (Principal Component Analysis)

Principal Component Analysis (PCA) is used in face recognition systems for dimension reduction, feature extraction and data compression purposes. This analysis stands out with its effectiveness in reducing the data size in large data sets. PCA transforms the available data to reflect the most diversity and creates a new coordinate system that ranks it according to a different order. In this system, the axes are perpendicular to each other (Tamimi et al., 2015). In face recognition applications, PCA converts original face records into eigenfaces, which are basic components. Thus, the distinctive features of faces are emphasized and their more effective recognition is ensured (Turk and Pentland, 1991).

PCA, one of the pioneers of face recognition technology, forms the basis of many studies in the field (Batra and Goyal, 2015). When PCA is applied, known faces are transferred to an area called face space. As a result of this process, specific weights, which are special numerical values for each face, are calculated. The faces to be recognized are examined with a similar method and their numerical values are calculated. These values are compared with the values of recognized faces and the identity verification process of the relevant face is performed (Delac et al., 2005; Bansal and Chawla, 2013).

PCA does not require detailed content for facial geometry or lighting differences (Phillips et al., 2005). However, it also has advantages such as data compression, ease of use, efficiency and the ability to work with raw data (Kumar and Kaur, 2012). However, with the increase in the number of complex data, this method has some limitations against artificial intelligence-based approaches. For this reason, it is recommended to use this method together with deep learning methods, which are advanced algorithms (Kumar and Hussaini, 2021).

3.1.2. LDA (Linear Discriminant Analysis)

Linear Discriminant Analysis (LDA) helps in pattern recognition by highlighting the differences between groups. This method determines important features by increasing the differences between groups on the one hand and decreasing the similarities within the group on the other. However, the number of errors may increase in cases where the number of images is low and there are different lighting or positions. For this, special methods such as Fisher faces have been developed that make the best use of the differences and make more accurate classifications (Devroye et al., 1996).

The Fisherface method is a technique developed to reduce problems caused by differences such as position and lighting during face recognition. In the first step, the data is made simpler and more manageable by using PCA. Then, the Fisher criterion comes into play to select the features that can best distinguish the differences between groups. As a result of this process, features called Fisher faces are obtained. Fisher faces increase face recognition performance because they represent the different aspects of faces well. This method is frequently preferred because it both reduces the data to smaller sizes

and makes the face recognition process more sensitive (Belhumeur et al., 1997).

LDA provides an advantage by increasing the differences between groups and making more accurate classification. It also simplifies the data and allows it to work effectively with complex data structures. However, the method has errors caused by differences such as position and illumination. To solve these problems, new transformation methods optimized for data types have been developed. These methods reduce errors and enable LDA to work effectively (Belhumeur et al., 1997).

3.1.3. SIFT and SURF Algorithms

SIFT (Scale-Invariant Feature Transform) was developed by David Lowe to find remarkable points in images and define the features of these points (Lowe, 1999). In the first step, interest points are detected using a Gaussian difference filter to analyze scale differences in the image (Lowe, 2004). Then, low-contrast regions and unstable edge points are eliminated and more stable and important points are selected (Lowe, 1999). This algorithm is quite effective because it is not affected by scale and rotation changes. Therefore, it is frequently used in many applications such as image matching, object recognition and mapping. Its success in matching images of different sizes and angles increases the preferability of the method (Lowe, 1999; Lowe, 2004).

SURF (Speeded Up Robust Features) is a faster and easier method developed as an alternative to SIFT (Bay et al., 2008). This algorithm uses the Hessian matrix to find important points that are robust to image transformations. Features are calculated with Haar wavelets and expressed in a simple way (Viola and Jones, 2001). SURF

is frequently used in face recognition systems. Face recognition performance can be increased with methods that focus on comparing matching points or perform regular grid-based feature extraction (Du et al., 2009; Dreuw et al., 2009; Cao, 2011).

SIFT and SURF are important methods used in areas such as image processing and face recognition. Of these, SIFT provides more accurate results and is not affected by scale and rotation changes. However, it is a slower technique and its processing cost is higher than SURF (Lowe, 1999; Lowe, 2004). SURF is faster and its processing cost is lower. However, it does not provide as good results as SIFT in terms of sensitivity (Bay et al., 2008; Viola and Jones, 2001).

3.2. Machine Learning Methods

3.2.1. Support Vector Machines (SVM)

Support Vector Machines (SVM) is a method that tries to distinguish the difference between two classes in the best way (Vapnik, 1998). SVM determines a boundary that provides the largest difference between the training data. This boundary aims to minimize the probability of misclassification in both training and test data. SVMs provide optimum solutions for different pattern recognition problems thanks to their ability to generalize well.

SVMs used in the field of image processing provide high accuracy, especially in complex analyses such as face recognition. SVM can successfully distinguish between faces and non-faces while detecting (Osuna et al., 1997). In addition, it can successfully distinguish individuals using the features extracted with the eigenface method (Turk and Pentland, 1991). In addition, functions that can

distinguish between pairs can be learned using SVM and tests can be created with binary tree structures.

SVMs are frequently used in areas such as object and human face detection, and are also supported by various developers that are component-based or include different optimization algorithms (Platt, 1999; Heisele et al., 2007). Although SVMs, like every algorithm, have some limitations, systems developed with techniques such as gray pixel values and nonlinear kernels provide efficient results in the field of face detection and recognition.

3.2.2. K-Nearest Neighbor (KNN)

The K-Nearest Neighbor (K-NN) classifier, which is quite easy to understand and implement, is a basic algorithm widely used in the fields of machine learning and image classification. This algorithm determines the class of a data point by looking at the class of the closest K examples. Then, an unknown data point is compared with the closest K examples. The classification is made by majority vote (Wang et al., 2015). As the K value changes, the classification result also changes; because the effect of close examples differs.

This algorithm works by looking at the distance between the data points. The distance in question shows how similar the data points are to each other and the relevant class is determined accordingly. When using this algorithm, various distance measures can be used depending on the difference in the data type. For example; Chi-square distance is preferred for histograms. Another distance measure used in the K-NN algorithm is the Euclidean distance (Wang et al., 2015).

The K-NN algorithm, which is frequently used today, has many advantages, but also some disadvantages. For example; when working with large data sets, computational difficulty can be a disadvantage. Because, for each new data point, it requires calculating the distance with the entire training set, which is time-consuming. Nevertheless, the simplicity and understandability of K-NN make it an effective tool in the field of face recognition.

3.3. Deep Learning Methods

3.3.1. Convolutional Neural Networks (CNN)

Convolutional Neural Networks (CNN) is a type of artificial neural networks and is widely used especially in the field of image processing. Each neuron works with learnable weights and error terms. Then, it processes the data it receives. CNNs first use raw pixel data to classify images and eventually determine which class they belong to. These networks use loss functions. The CNN structure consists of a series of layers. Each layer processes the data and produces results. Thanks to these layers, images are classified correctly (Ergin, 2018).

CNN architecture consists of Convolution, which calculates the output of the neurons in the input, Nonlinear Activation, which performs a nonlinear operation for each element, Pooling, which performs sampling to reduce the size of the data, and Fully Connected layers, which determine the class to which the images belong and produce results. Each layer in question works with a function that enables the relevant network to learn (Tobias et al., 2016).

In CNN training, weights are learned using the gradient descent algorithm. The aim in this process is to obtain the correct class result for each image. In CNN algorithms, each layer learns different features in the images. The first layers detect edges. The next layers begin to recognize more complex points on the face. The final layer classifies the face as a whole. (Tobias et al., 2016; Guo et al., 2016).

3.3.2. Generative Adversarial Networks (GANs)

Generative Adversarial Networks (GANs) are very effective algorithms in issues such as face generation and modification of existing ones. The great feature of this method is its ability to produce faces that are very close to reality even under intense noise. People cannot distinguish these faces because they are produced in a very detailed and realistic way. This puts this method in a strong position compared to other models (Abdolahnejad and Liu, 2020; Karras et al., 2020). GANs act by learning data distributions in sample generation. Other models, on the other hand, learn more about the hidden representations of the data and the images they produce are not very clear (Ren et al., 2021; Goodfellow et al., 2014).

In parallel with the development of technology, GANs are also becoming an interesting position in the field of deep learning. The advances of GANs in face generation can be examined in three main categories. These are; Conditional GANs, where some conditions are added so that production can be done in a more controlled manner, Controlled GANs, where facial features can be arranged in the latent space, and Progressive GANs, where more successful outputs are produced by continuously improving the generator (Bansal et al., 2018).

There are many methods based on GANs and deep learning in studies in the field of face recognition and processing. However, today, the use of GANs is not limited to just increasing data. They have also made significant progress in the field of facial image processing. In particular, issues such as blur removal, different facial poses, various expressions, and face completion are issues where GANs are successful. There are also studies on three-dimensional face production (Toshpulatov et al., 2021).

3.3.3. Transformer Models

Vision Transformer (ViT) is an image classification model developed in 2020 (Dosovitskiy et al., 2020). This model has adapted the transformer architecture used for natural language processing to the field of image processing. In this way, it offers a new approach in the field of image processing. In this model, images are divided into small pieces and each piece is flattened and processed with trainable projections. Then, position information and class information are added and transmitted to the transformer encoder. The result obtained constitutes the classification output of the model.

One of the important components of ViT is the multi-header self-attention layer, which allows the model to focus on different image parts at the same time. It also includes components such as layer normalization and feedforward network; these elements make the model work better. It is important to set the number of heads correctly. ViT has various architectures. Of these, the CaiT architecture combines the self-attention module and the class attention module (Touvron et al., 2021). Models such as T2T-ViT perform the segmentation process iteratively (Wang et al., 2021). These provide better performance for the model.

Another architecture, Hybrid Vision Transformer architectures, combine convolutional neural networks and transformer models to enable effective capture of local features. In these designs, ViT's ability to learn long-distance relationships and its ability to effectively use spatial information in the image are combined. On the other hand, in models such as LeViT (Graham et al., 2021), better results are obtained in tasks such as object recognition and segmentation by combining CNN and ViT encoders.

4. APPLICATION AREAS AND EXAMPLES

Looksery enabled users to have video chats with filters that changed their faces. Snapchat, on the other hand, acquired Looksery in 2015 and integrated Looksery technology into its own filters. It started using 3D masks with face detection technology. It created a great impact among social media users with face filters and eye-catching masks were designed.

Facebook, on the other hand, provided high accuracy rates in face recognition technology with DeepFace. This method has become a reliable tool for identification in photos. On the other hand, TikTok was able to detect demographic information such as age, gender and ethnicity of its users with face recognition technology in 2021.

One of the areas where face recognition is used most intensively is identity verification systems. The Android 4.0 operating system performed identity verification using face recognition algorithms. Microsoft Kinect verified users' identities with face recognition. At the same time, Apple Face ID technology recognizes users using more than 30,000 infrared points.

However, FDNA has announced that it can detect more than 1,500 genetic diseases using facial recognition algorithms. Taylor Swift identified her followers using facial recognition technology at a concert and increased security measures in this way. Again, casinos and stadiums install facial recognition systems for security purposes to quickly verify the identities of visitors and provide high-level security.

5. CONCLUSION

Face recognition technology initially started by examining facial features with simple measurement methods and over time, it has reached the capacity to examine more complex images in detail with different algorithms. While the first applications analyzed the basic features of the face, today, with the development of technology, deep learning and artificial intelligence-based systems have made the face recognition process more sensitive and accurate. These advances have brought about significant transformations not only in the social media and entertainment sectors, but also in critical areas such as health, security and biometric verification. In particular, face recognition technologies have accelerated and made identity verification processes more secure in the areas of security and biometric verification.

It is expected that face recognition technology will be adopted more widely in the coming years. With technological developments and increasing data security demands, it will be possible to use this technology more widely in daily life. New algorithms and techniques that increase the effectiveness of face recognition systems will further expand the scope of applications in this area. Therefore, the way face recognition technologies work, the effective methods and techniques used are important in terms of benefiting from this technology. In

addition, scientific research and real-life applications will contribute to making facial recognition technologies more efficient and increasing their societal benefits.

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CHAPTER 5

ANALYSIS OF WORKING CONDITIONS OF LABOUR PARTICIPATING IN INTERNATIONAL LABOUR MOBILITY IN THE CONTEXT OF DECENT WORK*

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1.INTRODUCTION

Decent work is characterized by an environment where social dialogue is fostered, occupational health and safety are prioritized, child and forced labor are eliminated, and provisions for social security and fair wage policies are ensured (ILO, 1999: 3).

International labour mobility is a movement that is intensely experienced due to reasons such as increasing globalization, the formation of regional unions, changing economic structures and constant economic crises, and the political environments that countries are in. In addition to these factors, international labour movements are also increasing due to the opening of borders and markets, cheaper transportation, and increasing international relations (Peleg, 2011: 161). The labour mobility from underdeveloped or developing countries to developed countries has become an important component of international economic relations (Kar and Marjit, 2004: 1). The economic development difference between countries is the primary driving force behind these movements, although political violence, oppression, war and natural disasters can also play a significant role (Kar & Marjit, 2004: 1). Low population growth in developed countries and the need for labour of these countries, and rapid population growth and economic problems in underdeveloped countries are among the factors that accelerate this formation. Western European countries and the United States, which are considered as developed economies, solve the labour problem thanks to the labour mobility coming from Southern European and South American countries (Abraham, 1965: 77).

Labour mobility presents both opportunities and challenges for sending and receiving countries. Labour mobility can lead to

problems for receiving countries, such as insufficient infrastructure in the case of uncontrolled migration, lowering wage rates due to the perception of migrant workers as cheap labour, social exclusion, disruption of public order, and threats to public health. For sending countries, the most significant negative impact is the loss of skilled and educated labour.

International labour mobility is directly linked to the search for decent work. However, the outcomes of this mobility do not always meet the expectations of the labour force participating in it. Workers who engage in mobility in hopes of better job and life opportunities often fail to benefit from decent work opportunities in destination countries, and may even face negative impacts on their current situation. For this reason, in the United Nations 2030 Sustainable Development Goals Outcome Document, set one of the targets as "protecting the rights of migrant workers, including women migrants and those in precarious employment, and promoting safe and secure working environments" (Target 8.8.) (UN, 2015; ILO, 2015).

In this study, the situation of the labour participating in international labour mobility was analyzed in terms of the fundamental rights and principles of decent work, employment, social security and social dialogue dimensions.

2. The Relationship Between Decent Work and International Labour Mobility

Decent work is related to fundamental labour rights, such as adequate earnings, occupational safety and a healthy workplace, access to social protection, the opportunity to express opinions and concerns through social dialogue mechanisms, and the prohibition of discrimination (ILO, 2020:11). International labour mobility is

an important factor for the labour market. Labour mobility can serve as a tool to respond effectively and timely to the needs and changes of the labour market, promote innovation and development, and facilitate the transfer and enhancement of skills.

International labour mobility is directly linked to the search for decent work opportunities, both at the national and international levels. However, places that offer decent work opportunities are not always those with sufficient labour supply, and this discrepancy provides the strongest incentives for labour mobility. In source countries, simply providing employment has little impact on halting migration. Many individuals prefer to work in another country even when opportunities exist in their own. In fact, in these countries, even if people have a job, there may be significant deficiencies in the quality of work. This situation demonstrates that creating employment alone is not enough and that workers are also in search of "decent work" (Piper et al., 2017: 1089). Economic conditions continue to be a primary driving force for mobility alongside the search for decent work (ILO, 2014: 181). Migration rates tend to be higher in regions with poor general economic conditions, especially in areas with unfavorable working conditions and low social protection (G20 Labour and Employment Ministers' Meeting Report, 2015: 1-2).

Challenges in labour mobility are more pronounced for unskilled or low-skilled workers. These workers often lack education and language proficiency, making them more vulnerable. Domestically, they typically move from rural areas; internationally, they migrate from less developed countries. They are unfamiliar with regular employment environments or have limited exposure to formal work settings. Additionally, they are frequently employed in hazardous industries, particularly agriculture, exposing them to

significant occupational safety risks (OECD Watch, 2008: 5). In addition, the low education and qualification levels of immigrants increase their risk of facing social exclusion (Selek Öz, 2021: 150).

According to the ILO's 2018 Global Estimates on International Migrant Workers, there were 277 million migrants worldwide in 2017, of which 164 million were migrant workers. Men accounted for 58.4% and women 41.6% of this labour (ILO, 2018a). McKinsey Global Institute's 2015 data showed that migrant workers contributed 9.4% to the global GDP in 2015 and sent $600 billion to their home countries in 2017. The United Nations' 2030 Sustainable Development Goals encompass 17 objectives, including Goal 8, which aims to "promote inclusive and sustainable economic growth, employment, and decent work for all." Within this framework, Sub-goal 8.8 emphasizes the protection of workers' rights and the promotion of safe working environments for all, particularly for migrant workers and those in precarious employment. Beyond the UN's goals, the ILO also provides recommendations on labour migration. At the 2014 International Labour Conference, the ILO established the Fair Migration Agenda, which outlined decisions to:

• Create decent work opportunities in source countries, making migration a choice rather than a necessity.
• Respect the human rights of all migrants, including labour rights.
• Ensure fair recruitment and equal treatment for migrant workers to prevent labour exploitation.
• Strengthen the link between employment and labour migration policies.
• Involve labour ministries, trade unions, and employer organizations in migration policymaking.

- Promote cooperation between countries and regions.

These decisions aim to make economically driven migration a preference rather than an obligation. They emphasize the need for decent work opportunities in source countries and the protection of migrant labour in host countries.

3. Evaluation of Labour Mobility Through the Dimensions of Decent Work

Although the concepts of labour mobility and migrant workers differ, they face similar challenges and experiences in foreign countries. Therefore, this section analyzes the conditions of workers involved in labour mobility, as well as all migrant workers, under four dimensions of decent work: "fundamental rights and principles," "employment," "social security," and "social dialogue."

3.1. Evaluation within the Scope of Fundamental Rights and Principles

Fundamental rights and principles in the workplace include the prohibition of forced labour and child labour, protection against all forms of discrimination, and the right to organize and bargain collectively.

Factors hindering international migrants' access to the labour market include labour market discrimination, barriers to employment, insufficient language skills, and limited recognition of their qualifications in host countries (ILO, 2021). Among employed migrants, gender discrimination is a common issue. Women face barriers such as lower wages, societal norms, violence, harassment, and limited access to decent working conditions. Women are also predominantly employed in labour-intensive sectors (ILO, 2018).

Migrant workers often work in difficult to access or legally unprotected sectors, making them more vulnerable. Many foreign workers are subjected to restricted working and living conditions by employers or recruitment agencies, leading to forced labour under conditions that severely limit their freedom (David et al., 2019: 10). A 2005 study on migrant workers in Thailand revealed that 7% of manufacturing workers experienced physical violence, and one in three faced psychological violence from employers or senior staff. A migrant domestic worker described their experience as follows:

"I worked for two years without pay. I had to work all day, go to bed at 2 a.m., and wake up at 5 a.m. My employer not only withheld my wages but also physically abused me. Their spouse and children also mistreated me." (ILO-TICW, 2006).

While migration can offer children better living opportunities, they often face serious challenges during and after migration. Irregular or unaccompanied migrations pose significant risks, especially in countries lacking legal protections or access to basic services. Migrant children are highly vulnerable to exploitation and child labour. Many are forced to work in agriculture or domestic services, enduring isolation, violence, poor working conditions, and threats from employers. Compared to local child laborers, migrant children are paid less, work longer hours, and face higher mortality rates (ILO, 2020a). The Hague Global Child Labour Conference in 2010 emphasized the need to address the vulnerabilities of migrant children to the worst forms of child labour, urging governments to take specific measures (ILO, 2010: 35).

3.2. Evaluation within the Scope of Employment Dimension

The employment dimension is one of the dimensions of decent work, which includes employment opportunities, wages and

working conditions. In this dimension, unemployment rate, labour force participation, wage earners' participation in employment and working conditions indicators are used (Selek Öz & Bulut, 2014: 103).

Employment dimension is an area that is given importance by the conventions published by the ILO and the United Nations. These conventions also include regulations regarding migrant workers. Article 7 of the United Nations International Covenant on Economic, Social and Cultural Rights, which was adopted in 1966 and entered into force in 1976, emphasizes the need for equal pay for equal work:

- Fair and equal wages for all, rest, free time and reasonable working hours for all
- Fair and favorable working conditions that will ensure payment of wages on official holidays,
- Everyone should be given the opportunity to advance in their jobs, apart from seniority and competence, and
- Safe and healthy working conditions should be provided for all.

In addition, Article 25/1 of the International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families states that all migrant workers have the same rights as nationals of the destination countries regarding wages and employment and that they cannot be deprived of access to these rights. Similarly, in the ILO Migrant Workers Convention No. 143, states are responsible for providing equal opportunities in employment and occupation to migrant workers or their families who are legally in their countries and for determining and

maintaining policies in accordance with national conditions (ILO, 2024).

In the United States, regarding employment discrimination, the Civil Rights Act of 1964 includes migrant workers within the scope of the prohibition of discrimination based on national origin. In working life, it is considered illegal to reject job applications because they are migrant workers. In relation to the problems experienced, migrant workers with regular and irregular status have the right to apply to all legal remedies that citizens are entitled to (ILO, 2006: 62-63).

The definition of worker in the European Union has a common definition due to EU legislation. EU member states cannot go beyond this common definition. The movement of workers in the EU is free for the purpose of working and residing. In addition, each country cannot discriminate against workers participating in labour mobility in terms of employment, wages and other working conditions, unlike citizens of its own country, according to Article 45 of the Treaty of Rome. Every worker is subject to the legal regulations of the country in which they work. EU citizens have the right to seek employment in another member state and receive the same assistance from the same national employment office as citizens of that member state. In addition, the European Employment Service (EURES) acts as a guide for the free movement of workers within the European Economic Area and acts in harmony with the employment offices of member states (European Commission, 2010: 4). However, the same does not apply to citizens of third countries that are not members of the EU.

The employment rate for the working-age population (20-64) in the EU was 76.2% for EU citizens and 63.3% for non-EU citizens

in 2022. While 11.4% of employed immigrants are employed in cleaning and auxiliary jobs, it is seen that immigrant workers are concentrated in areas such as construction and electrical works, mining and patient care. (home-affairs.ec.europa.eu/, 27. 10. 2024)

According to the ILO 2014/15 Global Wage Report, migrant workers in Europe receive 17.5% less wages than domestic workers for the same job. Germany is the country with the smallest wage differentials among European Union countries. 46.64% of Moldovan citizens, 19.76% of Armenian citizens and 20.22% of Georgian citizens who returned to their countries stated that they had to work for little or no wages in the countries they went to (UN 13th Coordination Meeting on International Migration, 2015).

While migrant workers are under legal protection among the member states of the European Union, the same is not true for third-country nationals. Third-country nationals, including citizens of the Eastern Bloc European Union member states, are employed more in unskilled and dangerous jobs, especially in small-scale firms. In France, they are preferred in sectors such as babysitting, cleaning, and agriculture; in Italy, construction, agriculture, home services, hotels and restaurants, cleaning, and other unskilled service jobs; in Germany, they are preferred in unskilled or semi-skilled jobs in the industrial sector; and in England, they are preferred in sectors such as factory work, food, and agriculture, which also do not require qualifications (Reyneri, 2001: 43-49).

In Germany, foreign seasonal agricultural workers, the majority of whom are Polish agricultural workers, are allowed to be employed for up to 90 days. The precondition for this work permit is that there are no local workers available. Employers sign employment contracts with local labour offices that include specific

wages and working conditions, including work, meal and travel arrangements. Employers pay fees to these offices, but no wages are charged to the worker. Although employers provide migrant agricultural workers with adequate housing, it has been reported that living conditions are substandard (ILO, 2006: 54).

Migrant workers are generally employed at low wages. However, the implementation of the minimum wage has prevented this in some countries. For example, in Switzerland, migrant workers must be employed in a way that is suitable for wages and employment conditions in accordance with the country's conditions. However, in some countries, differences have been observed between national and migrant workers in determining the minimum wage. In Cyprus, where the minimum wage is determined by collective agreements covering a specific sector, there is no minimum wage for the agricultural sector, and in this sector, wages of migrant workers are significantly lower than wages applied in other sectors. In the Seychelles, migrant workers in the tourism and construction sectors were excluded from the minimum wage applied by a decision taken in 2008, this decision was rescinded in 2010, but the increase in the minimum wage was higher for national workers. In Jordan, the minimum wage was last increased in 2011, but the minimum wage applied to migrant workers was fixed at the amount applied in 2008 (ILO, 2014: 95).

Occupational health and safety also poses a significant problem for migrant workers. In particular, working in precarious and dangerous jobs increases the risk of occupational accidents. Data on this is not available in many countries. While there is an occupational accident in every 23 workers among Italian citizens, this figure has increased to 1 in 16 among migrant workers. Occupational accidents mostly occur in the metal industry,

transport and construction sectors. The living conditions of migrant miners are also inadequate in many countries. Living and working conditions make miners vulnerable to diseases such as tuberculosis, silicosis and HIV. In addition, many do not have access to social benefits and programmes, including pensions, compensation and basic integration support (European Commission, 2020).

3.3. Evaluation within the Scope of Social Security Dimension

Migrant workers face many disadvantages in their working conditions, including discrimination, social exclusion, limited legal rights and lack of social security. Perhaps the most important of these is the risk of being deprived of social protection.

The ILO Maintenance of Migrants' Pension Rights Convention (No. 48), published in 1935, is considered the first important tool for the protection of social security rights. This convention proposed an international mechanism for the coordination of international legislation and access to pensions for the elderly, disabled and disadvantaged. The need to further expand and develop this coordination was revised in 1982 with the Maintenance of Social Security Rights Convention (No. 157). The Equality of Treatment (Social Security) Convention (No. 118) of 1962 was enacted specifically to address the social issues of migrant workers. The convention states that national and non-national workers and their family members have the right to equal treatment (ILO, 2024).

The first regulations regarding workers participating in labour mobility in the field of social security in the European Union were included in Article 48 of the Treaty of Rome. Regulation (EEC) No. 1408/71 was enacted in 1971, Regulation (EC) No. 883/2004 in

2004, Regulation (EC) No. 988/2009 and (EC) No. 987/2009 in 2009 and finally Regulation (EU) No. 1231/2010 (EUR-Lex (2024). With the last regulation made in 2010, the scope of social security was expanded to include third-country nationals and family members residing in the EU. Every worker employed in the European Union has the same social rights as other national workers from the moment they start working. The scope of social assistance also covers all family members, including spouses and children, even if they are not legally married. In addition, if foreign workers leave their jobs due to health problems, their worker status is preserved and they continue to benefit from assistance.

In many countries, the payment of benefits and social protection, except for work-related accidents, is dependent on the duration of employment or residence. Due to these criteria, the vast majority of migrant workers cannot meet the required durations. As a result, they cannot benefit from these rights in any of the countries of employment and are at risk of losing the existing social protection rights they have in their home countries. In addition, the more a worker moves from one country of employment to another, i.e. the more the mobility of the labour increases, the more vulnerable he becomes (Hirose et al., 2011: 2).

Countries can sign bilateral social security agreements in order to ensure the social security of migrant workers, to regulate, facilitate migration for employment purposes and to ensure that migrant workers exercise their rights. For example, according to the 2005 agreement signed between Egypt and Italy, "Migrant workers shall enjoy the same rights and the same protection, including social security, as workers who are nationals of the receiving State, in accordance with the regulations of the receiving State". Similarly, the agreement between the Republic of India and the Kingdom of

Denmark, the Republic of Argentina and Ukraine also refers to a separate agreement on the principle of equality of treatment and social insurance (ILO, 2021: 106-107).

Since the vast majority of migrant workers are employed informally, they cannot benefit from any social protection. Only registered migrant workers are considered within the scope of social security. However, in some countries, there are conditions for benefiting from social protection even if they are in registered employment. For example, foreign nationals can access the German Social Security System. They can benefit from unemployment and disability support. However, while some benefits are applied immediately, some benefits such as unemployment insurance are applied after a certain period of work (www.bmas.de, 12.05.2019).

In Canada, all migrant workers are considered to be in the same scope as Canadian citizens under Canadian law. Canada has bilateral agreements with other countries on social security. Under these agreements, workers are allowed to change employers. Temporary workers who lose their jobs through no fault of their own may continue to look for other work (ILO, 2006: 61). They can submit complaints about health, safety and employment conditions to the Ministry of Labour. However, in practice, many workers are unaware of their rights or are afraid to exercise them due to concerns about losing income and work permits (www.migrantworkerhealth.ca, 06/09/2021).

French Labour Law states that all migrant workers, including those with irregular status, are entitled to receive wages in accordance with the legal and contractual provisions applying to national workers (ILO, 2006: 61).

3.4. Evaluation within the Scope of Social Dialogue Dimension

Social dialogue is the process of mutual consultation and negotiation between worker and employer organizations, which are the social partners of working life, and other groups in society to determine socio-economic policies (Görmüş, 2007: 117).

The ILO has highlighted the importance of social dialogue in its Migrant Workers Recommendation No. 151. According to this recommendation, countries must exchange ideas with other partners in the world of work on international labour migration and services to be provided to migrant workers.

Unionization is a significant issue for both EU and third-country national workers. Penninx and Roosblad (2000) argue that unions face a dilemma regarding immigrants: whether to resist or accept immigrants, whether to make efforts to recruit them, and to what extent to adopt specific strategies for their integration. Migrant workers are generally employed more in sectors with low unionization rates within the current structure. Migrant workers working in these sectors or firms where there is no unionization have difficulty in obtaining and accessing information about their labour rights (Clary & Hardy, 2011: 13). Nevertheless, migrant workers always tend to occupy the most precarious, unstable and marginal sectors of the labour market (Gorodzeisky & Richards, 2013: 241).

The main reasons for the low unionization rates of migrant workers can be classified as language and cultural differences as communication problems, employers' obstacles to unions' access to work sites and worker accommodation, unions' failure to focus on areas where migrants work intensively, such as agriculture and

domestic services, female migrant workers' inadequate representation and exclusion by male-dominated union practices, many migrant workers being employed temporarily by subcontractors or agencies, and union membership being seen as a cost element for migrant workers (IHRB Briefing 2019, www.ihrb.org, 15.06.2021).

The Norwegian Confederation of Trade Unions approved temporary regulations in 2004 that restrict access to the labour market for citizens of countries that have recently joined the European Union. The Norwegian Confederation of Trade Unions is concerned that wages will be driven down and collective agreements will lose their effectiveness in Norway, where there is no legal wage system, due to the influx of foreign workers. According to the temporary regulations, work permits are granted to immigrants only if applicants can prove that their wage levels meet Norwegian standards and that they have full-time employment (Hardy et al., 2012).

The change of government in Norway in 2006 also caused changes in the policies of the unions. The new government launched an action plan against social dumping with the strong support of the unions. The Norwegian Confederation of Trade Unions adopted the slogan "yes to labour migration, no to social collapse!" for immigrants, on the condition that foreigners work under the same conditions as Norwegians. The union, which does not want a minimum wage regulation in the country, has adopted the approach to the issue of immigrant workers to support efforts to employ immigrant workers and to ensure the legal extension of collective agreements in selected areas. In 2009, the regulations applied to countries that became EU members in 2004 were repealed (Hardy et al., 2012: 349-350).

In the UK, the Trades Union Confederation (TUC) and affiliated unions have been more prepared for the increasing number of migrant workers in the UK than in other countries. Services have been developed to meet the needs of migrant workers in order to ensure equal treatment of migrant workers through agreements with employers. As a result of these efforts, there has been an increase in the representation of migrant workers in unions in the UK (www.tuc.org.uk, 21.11.2020).

In the Syrian refugee crisis, the Danish government and the social partners signed an agreement in 2016 on the flexible integration of refugees into the labour market. In Germany, the social partners were involved in the development of the Integration Act in 2016 to accelerate the integration of refugees into the labour market. In Norway, a tripartite agreement was signed with the social partners in 2016 on the rapid access of refugees with in-demand skills to the labour market. In Brazil, a national tripartite committee reached an agreement on granting residence and work permits to foreigners, and approximately 85,000 refugees from Haiti were accepted between 2011 and 2016 (Hardy et al., 2012).

In the United States, unions had a negative approach towards migrant workers. However, the decline in unionization rates towards the end of the 20th century required unions to change their approach. In order to prevent the decline in unionization rates and to replace the local workers who left their membership, unions turned to migrant workers (Kahmann, 2002: 8).

Mexico established the Institute for Mexicans Abroad under the Ministry of Foreign Affairs to meet the needs of its citizens abroad. The Institute for Mexicans Abroad determines policies by holding meetings with an advisory council consisting of migrant

worker representatives. It brings together the structures related to Mexicans working abroad (ILO, 2006: 57).

CONCLUSION

The study evaluates international labour mobility and the foreign labour participating in this mobility within the scope of decent work. Most of the studies in this field have been carried out sectorally and have focused on basic working conditions such as wages, working hours, occupational health and safety rather than decent work standards. In this study, these studies have been analyzed within the context of decent work dimensions.

Of migrant workers, 66.2% work in the service sector, 26.7% in industry and 7.1% in agriculture. Many migrant workers are concentrated in specific economic sectors, such as domestic work, manufacturing, construction and agriculture. Special attention should be paid to domestic workers, who are among the most vulnerable groups of workers. In Europe, especially in Spain and Italy, the majority of migrant women work in the domestic and home care sectors (Gallotti and Mertens, 2013). Migrant workers often work in these areas on a temporary, informal or unprotected basis, putting them at greater risk of precariousness, dismissal and deteriorating working conditions. Furthermore, the impacts of COVID-19 on women migrant workers appear to have intensified their already existing vulnerabilities, as they are overrepresented in low-paid and low-skilled jobs, and have limited access to support services and fewer options. They may face gender discrimination in the labour market and a lack of social networks, making it difficult to reconcile work and family life in a foreign country. These are all possible factors that reduce the representation of women among migrant workers (ILO, 2021: 11-13).

Discrimination in working life is basically based on discrimination in the social sphere. Immigrants who are discriminated against in social life due to their religion and culture experience discrimination in accessing employment, and even if they do, they experience discrimination in working life due to their religion and cultural characteristics. Even children of immigrant families who want to participate in vocational training experience this discrimination (ÇSGB, 2018).

Planned labour mobility is important in terms of meeting labour needs. Labour mobility is especially prominent in agricultural production and labour-intensive sectors. However, the fact that they are seen as cheap labour by employers and preferred can increase unemployment in the local population. Although countries conduct studies and cooperation to control labour mobility, informal daily work with tourist visas is common between the two countries, especially in border regions. Intensive informal labour mobility can negatively affect social security systems. The easy cross-border movement of foreign workers can also cause the country's foreign exchange resources to flow out of the country in an easy and uncontrolled manner. The increasing visibility of foreign workers in the labour market and social life can increase discrimination in the social sphere, racist and ultra-nationalist incidents.

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CHAPTER 6

AN ANALYSIS OF TRADE BETWEEN TURKEY AND THE WESTERN BALKAN COUNTRIES: A GRAVITY MODEL APPROACH

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1. Introduction

Turkey shares a cultural connection with the Western Balkan countries. Additionally, the strategic significance of both Turkey and the Western Balkan countries enhances the importance of trade between these regions for both sides. At this point, examining Turkey's foreign trade with the Western Balkan countries is crucial to understanding the current state of this trade potential. Figure 1 displays the export volumes of Turkey to the Western Balkan countries, expressed in millions of dollars.

Figure 1: Turkey's Export Volume to Western Balkan Countries (Million USD)
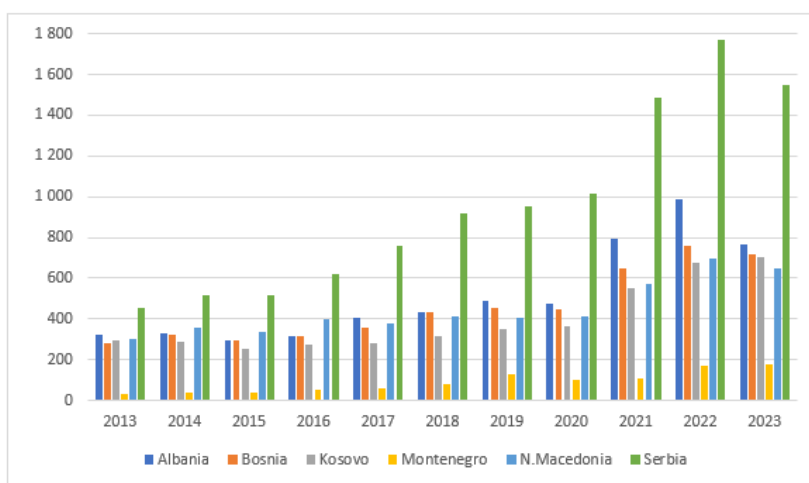
Source: TURKSTAT (2024)

Accordingly, Turkey's exports to the Western Balkan countries remained at a relatively low level in 2013. In the same year, Turkey exported goods worth $322 million to Albania, $279 million to Bosnia, $293 million to Kosovo, $33 million to Montenegro, $303

million to North Macedonia, and $452 million to Serbia. Over the years, Turkey's exports to the Western Balkan countries have increased significantly. By 2023, Turkey's exports to Albania reached $763 million, to Bosnia $716 million, to Kosovo $703 million, to Montenegro $181 million, and to North Macedonia $647 million. In the same year, exports to Serbia reached $1.5 billion.

From this perspective, it is evident that Turkey has significantly increased its exports to the Western Balkan countries over the years. The export figures to Serbia, in particular, are noteworthy as they highlight Turkey's export potential in this region.

When examining Turkey's imports from the countries in the region, it is observed that these figures are significantly lower than the export volumes. Figure 2 shows Turkey's import volumes from the Western Balkan countries, expressed in millions of dollars.

Figure : Turkey's Import Volume to Western Balkan Countries (Million USD)
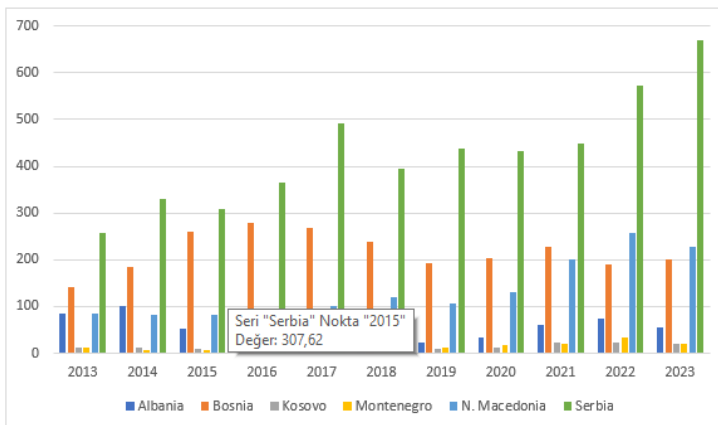
Source: TURKSTAT (2024)

In 2013, Turkey imported goods worth $83 million from Albania, $141 million from Bosnia, $11 million from Kosovo, $11 million from Montenegro, $85 million from North Macedonia, and $257 million from Serbia. By 2023, these figures increased except for Albania. Specifically, in 2023, Turkey imported $201 million from Bosnia, $20 million from Kosovo, $19 million from Montenegro, $227 million from North Macedonia, and $670 million from Serbia.

From this perspective, between 2013 and 2023, Turkey significantly increased its imports from North Macedonia and Serbia. On the other hand, import volumes from Kosovo and Montenegro remained very low. This can primarily be attributed to the inability of these two countries to export goods and services with high added value. However, considering Kosovo's potential in agriculture, it can be argued that Turkey has a high but unrealized potential for agricultural imports from Kosovo.

In conclusion, while Turkey exports a significant amount of goods to the region, imports remain far behind exports. Although this indicates a positive trade balance, increasing imports could benefit both Turkey and the countries in the region. Products produced in the region generally have relatively low prices, which could offer Turkey a cost advantage.

Considering these points, it can be said that Turkey and the Western Balkan countries are significant trade partners, with a high potential for further trade growth. Based on this, the study examines the factors determining trade between Turkey and the Western Balkan countries using the Gravity model framework.

The first section of the study presents the theoretical framework of the Gravity model. The second section reviews the

literature, and the third section develops an econometric model in which trade volume is the dependent variable. In this model, Turkey's GDP, the GDPs of the Western Balkan countries, Turkey's population, the populations of the Western Balkan countries, and distance are identified as independent variables.

In the next phase of the study, the series were made stationary, and the model was constructed. Then, diagnostic tests were performed to select the most suitable estimator, and it was determined that the Driscoll-Kraay estimator was the most appropriate. Consequently, the results of the Driscoll-Kraay estimation were evaluated.

2. Theoretical Framework

In economics, the Gravity Model was independently developed by Tinbergen and Pöyhönen. In its early years, the Gravity Model considered only GDP and geographical distances between two countries (Yamarik & Ghosh, 2005).

$$trade_{ij} = A \frac{(GDP_i GDP_j)^{b1}}{(distance_{ij})^{b2}}$$

where $trade_{ij}$ is the value of bilateral trade between country i and j, GDP_i and GDP_j are country i and j's GDP, $distance_{ij}$ is distance between the two countries and A is a constant.

In later periods, researchers found that this model is consistent with models of imperfect competition and the Heckscher-Ohlin framework. More recently, Deardorff (1998) derived the gravity model equation from two extreme cases of the Heckscher-Ohlin model. Deardorff (1998), along with Feenstra, Markusen, and Rose

(2001), provided recent contributions and references to the theoretical foundations of the gravity model (Yamarik & Ghosh, 2005).

$$\log(trade_{ij}) = A + \beta_1 \log(GDP_i GDP_J) + \beta_2 LOG(distance_{iJ}) + \varepsilon_{it}$$

where A, β_1 and β_2 are coefficients to be estimated. The error term, ε_{it} captures anyother chance events or shocks that may affect bilateral tradebetween the two nations.

Researchers have continued to develop the model, adding various control variables. Indeed, geographical factors, cultural ties, exchange rates, and trade policies have been widely used as control variables in this field.

3.Literature Review

When reviewing the literature, it becomes evident that in analyses based on the Gravity model, there is a noticeable negative effect between trade and distance. Additionally, the strength of the relationship between GDP and trade stands out in many studies. At this point, it would be useful to examine studies that explore the Balkan countries using the Gravity model. Some of these studies are presented in Table 1.

Table 1: Literature Review

Research	Country/Region and Period	Conclusion
Nuroglu & Dreca (2011)	Bosnia and Herzegovina and 32 trade partner countries (2005-2009)	-GDP is an important determinant of trade. -Distance has a negative effect on trade.
Trivić & Klimczak (2015)	Western Balkan Countries (1995-2012)	-The strongest influence on trade is direct communication ease and religious similarities.
Braha et al. (2017)	Albania and 46 import partners	-Low transportation costs, proximity, and language similarities

	(1996-2013)	positively affect exports. -Distance negatively affects exports.
Yaşar & Korkmaz (2017)	Turkey and 10 Western Balkan Countries (2006-2016)	-There is a positive and strong relationship between GDP and foreign trade. -Distance has a negative effect on trade.
Ninka & Pere (2017)	Western Balkan Countries (1995-2014)	-Proximity, common language, and economic ties with large industrialized countries positively affect trade flows.
Jusufi & Ukaj (2021)	Turkey and Western Balkan Countries (2009-2019)	-Economic size, distance, population, language, and historical ties affect trade.
Kikerkova et al. (2021)	North Macedonia and 40 trade partner countries (2005-2019)	-GDP and population variables have a positive effect on trade. -Distance has a negative effect on trade.
Demirci & Sevüktekin (2022)	Turkey, Black Sea Economic Cooperation (BSEC) countries, the Balkans, and selected countries (1996-2019)	-The gravity model is suitable to explain Turkey's imports from the Balkans and exports to selected countries.
Bjelic et al. (2023)	Western Balkan Countries (2013-2019)	-GDP, geographical distance, language, and historical similarities affect travel services.
Zeneli, Benga & Hoti (2024)	Albania and 43 trade partners (2008-2022)	-Transportation costs, economic size, economic power, and exchange rates affect foreign trade.

Nuroglu and Dreca (2011) analyzed Bosnia and Herzegovina's trade relations with 32 countries using the gravity model, covering the years 2005-2009. The study found that higher GDP per capita leads to higher trade, distance negatively affects trade, and being part of the same country in the past (former Yugoslavia) results in more trade compared to other similar countries.

Trivic & Klimczak (2015) examined bilateral trade flows among Western Balkan countries from 1995-2012. Unlike other

studies, they found that the most influential factors on trade were not economic variables but rather direct communication ease and religious similarities.

Braha et al. (2017) analyzed Albania's agricultural trade using the gravity model, covering 1996-2013. They concluded that low transportation costs, proximity, and language similarities positively impacted exports, while institutional distance had a negative effect.

Yaşar and Korkmaz (2017) investigated trade relations between Turkey and 10 Balkan countries from 2006-2016, using the gravity model. They found a positive and strong relationship between GDPs of Turkey and the Balkan countries, and a negative effect of distance on trade.

Ninka & Pere (2017) analyzed international trade in the Western Balkans from 1995-2014 using the gravity model. They concluded that proximity, common language, and economic ties with large industrialized countries positively affected trade flows.

Jusufi and Ukaj (2021) examined trade relations between Turkey and Western Balkan countries using the gravity model, covering 2009-2019. The analysis showed a positive relationship between GDP and trade, while distance and an increasing population in Turkey negatively impacted trade. They concluded that economic size, distance, population, language, and historical ties are key factors in Turkey's trade with the Western Balkans.

Kikerkova et al. (2021) analyzed trade relations between North Macedonia and 40 countries from 2005-2019 using the gravity model. They found that GDP and population positively affected trade, while distance had a negative effect.

Demirci and Sevüktekin (2022) examined Turkey's exports and imports with Black Sea Economic Cooperation (BSEC) countries, the Balkans, and selected countries from 1996-2019 using the gravity model. They concluded that the gravity model effectively explains Turkey's imports from the Balkans and exports to selected countries.

Bjelic et al. (2023) analyzed export of travel services in the Western Balkans using the gravity model, covering 2013-2019. They found that GDP, geographic distance, language, and historical similarities affected travel services exports.

Zeneli, Benga, and Hoti (2024) analyzed Albania's trade relations using the gravity model, covering 2008-2022. The study showed that transport costs, economic size, economic power, and exchange rate variables had a significant impact on trade relations.

4.Data and Analysis

In this study, Turkey's trade relations with the Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia) were analyzed by Gravity method. In this study, covering the years 2013-2023, the dependent variable is trade volume, while the independent variables are Turkey's GDP, the GDP of Western Balkan countries, the population of the countries, and distance. The trade volume data was obtained from TURKSTAT, and the GDP and population data were obtained from the World Bank.

Table 2: Variables

Dependent Variable	Trade Volume	(TURKSTAT, 2024)
Independent variables	Turkey's GDP	World Bank (World Bank, 2024a)
	GDP of Western Balkan Countries	World Bank (World Bank, 2024a)
	Turkey's population	World Bank (World Bank, 2024b)
	Population of the Western Balkan Countries	World Bank (World Bank, 2024b)
	Distance	(Distance, 2024)

First of all, in order to avoid the spurious regression problem, it is aimed to use stationary series in the model. Accordingly, the logarithmized series were analyzed for stationarity. The results of the stationarity analysis are shown in Table 3.

Table 3: Unit Root Tests

	Levin-Lin-Chu (LLC) Test	Im-Pesaran-Shin (IPS) Test	Hadri Test
log_trade	0.0354	2.7761	12.2162
log_gdpturkey	3.0111	2.4981	6.6060
log_gdpother	3.8795	5.1659	10.9241
log_pop_tur	-5.2132***	-3.5101***	13.8228
log_pop_other	-0.3169	7.1949	13.0691
d_log_trade	-6.7681***	-2.5536***	-0.7510***
d_log_gdpturkey	4.9094	1.8730	5.9700
d_log_gdpother	-5.5997***	-2.6739***	0.9520***
d_log_pop_other	-2.3051**	0.6310*	3.1054
d2_log_gdpturkey	-1.0259	-3.7139***	-0.2977***

In this study, the Levin-Lin-Chu (LLC) test, Im-Pesaran-Shin (IPS) test, and Hadri tests were used to analyze the stationarity of the series. According to the results of these tests, the variables trade, gdpturkey, gdpother, and pop_other are not stationary at the level for all three tests. The pop_tur variable is stationary at the level according to the Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) tests but has a unit root according to the Hadri test. When examining the first differences of the series, trade and gdpother are stationary for all three tests. The pop_other variable is stationary according to the Levin-Lin-Chu (LLC) test but has a unit root according to the other tests. The first difference of gdpTurkey has a unit root according to all three tests. The second difference of gdpTurkey is stationary according to the Im-Pesaran-Shin (IPS) and Hadri tests but has a unit root according to the Levin-Lin-Chu (LLC) test.

The considered tests in this study are the Levin-Lin-Chu (LLC) test and the Im-Pesaran-Shin (IPS) test. The Hadri test is considered when the results of the other tests are inconsistent. Based on the results of the unit root tests conducted in this study, the model uses the first difference of trade volume, the first difference of the GDP of the Western Balkan countries, the second difference of Turkey's GDP, the level of Turkey's population variable, and the first differences of the populations of the Western Balkan countries. The constructed model is shown in the equation below.

$$\Delta\log(trade_{it}) = \beta_0 + \beta_1\Delta^2\log(gdp\_turkey_{it}) \\ + \beta_2\Delta\log(gdp\_other_{it}) + \beta_3\log(pop\_turky_{it}) \\ + \beta_4\Delta\log(pop\_other_{it}) + \beta_5) + \varepsilon_{it}$$

Where:

- $\Delta trade_{it}$: The first difference of trade (dependent variable).
- $\Delta^2 gdp\_tukey_{it}$: The second difference of Turkey's GDP.
- Δgdp_other_{it}: The first difference of other countries' GDP.
- pop_turkey_{it}: The level form of Turkey's population.
- Δpop_other_{it}: The first difference of other countries' population.
- $distance_{it}$: The level form of the distance variable.

4.1. Diagnostic tests

Before proceeding to coefficient estimation, diognastic tests (autocorrelation, heteroskedasticity and cross-section dependence) should be applied to the model to identify the appropriate estimator.

In order to test the presence of heteroskedasticity in the model, the Levene, Brown and Forsythe (Brown & Forsythe, 1974) test was applied to the model and the results of the test are shown in the table 4.

Table 4: Heteroskedastisite Test (Levene, Brown ve Forsythe)

Chi-Square	P-Value
68.92	0.0000

As a result of the test, the probability value is less than 0.05. In this sense, the Ho hypothesis of the test, that the error terms have constant variance, cannot be rejected. Therefore, there is heteroskedasticity in the model.

The presence of autocorrelation in the model is tested with the Wald (1943) tests. The results of this test are shown in the table 5.

Table 5: Autocorrelation Tests (Modified Wald Tests)

Improved Durbin-Watson	Baltagi-Wu LBI
1.8695082	2.1039951

As a result of the autocorrelation tests, the Improved Durbin-Watson value for the model is 1.869 and the Baltagi-Wu LBI test is 2.103. Since the Baltagi-Wu LBI value is greater than 2 and the Improved Durbin-Watson test is close to 2, it is concluded that there is no autocorrelation in the model.

To test for the presence of cross-sectional dependence in the models, the Pesaran CD (Pesaran, 2014) test was used, and the results of these tests are presented in Table 6.

Table 6: Cross-sectional Dependence Tests (Peseran CD Tests)

Mean Absolute Differences	Pesaran Test Statistic	P-Value
0.397	3.456	0.0005

According to Pesaran's test, since the p-value is significant, there is cross-sectional dependence in the model. As a result, considering the results of the diagnostic tests, the model exhibits heteroskedasticity and cross-sectional dependence, while there is no issue with autocorrelation. To address the issues of heteroskedasticity

and cross-sectional dependence in the model, regression should be performed using the Driscoll-Kraay standard errors method.

4.2.Driscoll-Kraay Estimation Results

The results of the Driscoll-Kraay standard errors method estimator are shown in Table 7.

Table 7: Regression Results with Driscoll-Kraay Standard Errors Method

	Coefficient	Standard Error	P-Value
d2_log_gdpturkey	0.5201248	0.1307683	0.011
d_log_gdpother	0.6279021	0.1558082	0.010
log_Pop_türkiey	21.53499	8.455775	0.051
d_log_pop_other	-5.979761	3.899759	0.186
Log_distance	-0.0331697	0.0148008	0.075

The estimation results show that a 1% increase in Turkey 's GDP increases Turkey 's trade with the Western Balkan countries by 0.52%. A 1% increase in the GDP of the Western Balkan countries increases their trade with Turkey by 0.63%. In this sense, it can be concluded that both Turkey's and Western Balkan countries' GDP are effective in Turkey's trade with Western Balkan countries.

When examining the effect of population growth on trade, a 1% increase in Turkey's population results in a 21.5% increase in trade. In this sense, it can be said that one of the important determinants of Turkey's trade with the Western Balkan countries is Turkey's population. However, since the p-value is 0.051, which is slightly greater than 0.05, this relationship is marginally significant. Therefore, while Turkey's population increase may have an impact on trade, it

should not be considered definitively significant. In the model, the population of the Western Balkan countries was found to be insignificant.

When examining the effect of the distance variable on trade, it is observed that this parameter is marginally significant and has a negative effect. However, this effect is very small.

Looking at the model, it can be said that the most important factor affecting Turkey's trade with the Western Balkan countries is Turkey's population. Another significant factor influencing trade is the GDPs of both Turkey and the Western Balkan countries. Distance also negatively affects trade.

5.Conclusion

In this study, the factors determining trade between Turkey and the Western Balkan countries were analyzed within the framework of the Gravity model, considering both the strategic positioning of these regions and Turkey's cultural ties with the Western Balkans. The empirical analysis revealed that one of the most significant determinants of trade is Turkey's population. Additionally, both Turkey's GDP and the GDPs of the Western Balkan countries were found to substantially increase trade between the regions. The relationship between distance and trade was found to be negative, consistent with the theoretical expectations of the Gravity model.

Turkey presents significant trade opportunities with these nations. Turkey has the potential to export industrial goods and technology that these countries need. On the other hand, Turkey can benefit from the agricultural production of the Western Balkan countries, especially those with strong agricultural sectors like Kosovo

and North Macedonia. These countries can supply Turkey with agricultural products at competitive prices, which would give Turkey a cost advantage.

The lower production costs in the region could allow Turkey to increase imports from these countries, while potentially reducing imports from more developed countries. This shift could improve Turkey's trade balance and optimize resource use. Furthermore, the increase in mutual trade would contribute to the economic growth of both regions and strengthen regional integration. By capitalizing on the agricultural and production potential of the Western Balkans, Turkey can establish a more balanced and sustainable trade framework. This would create significant long-term economic benefits for both regions, highlighting the considerable trade potential between them.

In conclusion, enhancing strategic partnerships and diversifying trade between Turkey and the Western Balkans, along with continued investments in infrastructure, are key to realizing the significant trade potential that exists. Expanding trade in this way will provide economic benefits for both regions and promote regional development.

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CHAPTER 7

THE EVALUATION OF ARTIFICIAL INTELLIGENCE'S IMPACT ON AUDITING PROCESSES AND AUDITORS' DECISION-MAKING

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Introduction

Digital transformation and technology play a crucial role in enhancing the operational efficiency and productivity of today's businesses (Köse et al., 2022:33). Businesses that fail to adapt to this transformation risk losing their competitive edge or struggling to maintain their presence (Öztemel, 2020:99). With the acceleration of digitalization, technological innovations such as Artificial Intelligence (AI), cloud technology, the Internet of Things, data analytics, big data, and blockchain have emerged. In particular, cloud computing and big data concepts have gained significance, leading all segments of society to recognize the importance of data-driven decision-making processes (Güngör Karyağdı, 2022:14; Öztemel, 2020:100). The scope of data usage in modern businesses has expanded beyond traditional data to include unstructured data, such as emails, videos, photos, and social media content. Big data technology offers unique opportunities to optimize business operations through auditing functions and enables auditors to derive meaningful patterns from complex data sets (Onay, 2020:128). Additionally, the use of AI in accounting and auditing accelerates processes like examining journal entries, analyzing contracts, and standardizing accounts, thus enhancing efficiency. Furthermore, these systems enable the detection of inaccuracies and risks through automated control mechanisms (Gusai, 2019:59).

Digital transformation, while increasing auditing needs, has also paved the way for the development of new techniques and methodologies (Güngör Karyağdı, 2022:14). Seen as the most critical tool of modern digital transformation, artificial intelligence stands out as a technical innovation based on simulating human intelligence (Ayyayla, 2024:114). As automation in auditing processes increases, traditional audit tasks are transformed into concurrent routines. Recent technological advancements have necessitated a shift from

traditional auditing approaches to risk-based and digital auditing methodologies. Auditing has become one of the fields most affected by this change (Bircan, 2020:69). Although the pace of technological development makes it harder to predict risk factors, innovative technologies have set a new standard of efficiency and accuracy in the auditing profession (Ayyayla, 2024:115). Companies increasingly recognize that performance success depends on the collaboration between humans and machines (Ayyayla, 2024:116). The expansion of business activities and the rise in fraudulent cases have broadened the scope of auditing, transforming it into a structure that supports risk-based governance, corporate governance, and consultancy services. Recently, robotic processes, AI applications, and cyber risks have necessitated a profound transformation in auditing (Bircan, 2020:69).

This study aims to examine the impact of AI on auditing processes and the role it plays in auditors' decision-making. Specifically, it will explore the influence of next-generation technologies like AI, big data, cloud computing, and robotic processes on the auditing profession. The study will also assess the transition from traditional audit approaches to risk-based and digital auditing methodologies, discussing the opportunities and challenges brought by this transformation. Additionally, the study will evaluate the role and importance of human-machine collaboration in auditing processes, the future of the auditing profession in the face of growing data volumes and diversity, and the effects of cyber risks on auditing. The study is expected to illuminate the technological transformation of modern auditing practices and contribute to the literature.

Artificial Intelligence

In the literature, AI, which is increasingly integrated into people's daily lives and has the potential to both imitate and enhance human

intelligence, is defined as cognitive abilities aimed at augmenting or simulating human thought (Alina et al., 2018:441). Another definition highlights that AI is not only a technological product but also encompasses activities aimed at making machines intelligent, with an emphasis on environmental adaptation and predictive capabilities (Etzioni and Etzioni, 2017:32). Generally, AI can be described as computer systems capable of efficiently and effectively replicating human cognition through information technology products (Köse et al., 2022:34). AI, by mimicking human intelligence through technological tools, exhibits features such as learning, making intelligent predictions, decision-making, solving complex problems, adapting to variable conditions, integrating with different languages and experiences, and fostering creativity. Thus, AI enhances efficiency. The purpose of AI, within this scope, is to produce meaningful insights from data across different scenarios and develop self-learning systems (Arslan, 2020:71).

Examining the historical development of AI reveals that its first concrete steps date back to the 17th century (Coşkun and Gülleroğlu, 2021:948; Keskin and Sevli, 2024:40). During this period, there was a notable trend, particularly among aristocratic circles, toward developing automata that imitated human and animal behaviors, which also influenced the philosophical thought of the era (Coşkun and Gülleroğlu, 2021:948). For instance, Descartes (1596-1650) depicted humans as mechanical constructs akin to clocks, representing the most prominent example of this thought. Later, Charles Babbage's (1792-1871) "Difference Engine" marked a new dimension in AI, presenting a system that went beyond simple mathematical operations to include memory and game-playing capabilities (Coşkun and Gülleroğlu, 2021:948; Keskin and Sevli, 2024:40). However, the real breakthrough in AI occurred during World War II. By 1940, Alan

Turing's automated code-breaking machine "Bombe" and his 1950 publication "Computing Machinery and Intelligence" laid the theoretical foundations of the field (Muggleton, 2014:4). Additionally, in 1943, Warren McCulloch and Walter Pitts published "A Logical Calculus of Ideas Immanent in Nervous Activity," introducing the first artificial neural network model to the scientific community, a pioneering development in AI (Kayıran, 2020:58). Ultimately, in 1956, at a workshop held at Dartmouth College led by John McCarthy, the term "artificial intelligence" was coined, and research in this field was formally established as an academic discipline (Karaduman, 2019:4; Kayıran, 2020:58).

The 1960s saw significant advancements in AI, in parallel with progress in computer technology. The "General Problem Solver" (GPS) program, developed by Newell and Simon in 1957, measured and classified differences between current and target states (Uysal, 2009:48). Another notable development in natural language processing during this period was the ELIZA program by Weizenbaum (Weizenbaum, 1966:36).

The 1980s can be described as a period when AI research took on a new dimension. Edward Feigenbaum's work on "expert systems" provided a fresh perspective on practical AI applications by modeling human experts' decision-making processes (Feigenbaum, 1981:2). Concurrently, studies by John Hopfield and David Rumelhart laid the foundation for the concept of "deep learning," which enhances computers' capacity for experiential learning and transferring this learning to new situations (Hopfield, 1982:2554; Rumelhart et al., 1986:533).

In the 1990s, artificial neural network research gained momentum. One notable work was "Intelligent Signal Processing" by

Haykin, which modeled the neural structure of the human brain. These systems stood out due to their ability to learn from data without requiring prior programming (Haykin, 1994:1-2).

Since the 2000s, AI applications have increasingly been integrated into daily life. Projects such as Kismet, a robot developed at MIT capable of mimicking human expressions and learning through social interactions, opened new horizons in human-machine interaction (Breazeal, 2004:5). Today, AI is widely regarded as a technology with cognitive capabilities that enhance and simulate human thought, and its impact on everyday life continues to grow (Alina et al., 2018:441). In summary, AI, with its continuous development and growing influence across nearly all aspects of life, has become an indispensable technology.

Artificial Intelligence and Auditing

In today's rapidly globalizing world, AI stands out as a technology that generates value. AI systems, equipped with mechanical intelligence capable of performing routine and repetitive tasks, utilize human and environmental interactions to enhance their learning capacities and data processing volumes. These systems can reach analytical intelligence levels, adapt autonomously to various scenarios, and operate without human intervention. AI systems contribute significantly to decision-making and implementation processes across various sectors, including education, healthcare, economy, transportation, and tourism (PWC, 2017:5-6). The auditing sector also emerges as one area where the application of AI systems is essential. When examining the historical development of AI in auditing, initial initiatives date back to the 1980s. Abdolmohammadi (1987) argued that various computer-based applications of AI, such as decision support systems and knowledge-based expert systems, could

be used in auditing to enhance decision-making effectiveness and audit quality. Similarly, Borthick and Weat (1987) suggested that an AI system based on the principle of "plan the audit, collect evidence, evaluate, and form opinions" could provide significant improvements in audit quality, efficiency, cost-effectiveness, and time management. They also emphasized that AI could determine the materiality of audit processes and assess the effectiveness of internal control systems (Zemankova, 2019:149).

Technological developments in the auditing field have significantly altered the dynamics of the sector. Factors such as the emergence of new audit types, expansion of audit scope, revisions to auditing standards, increasing competition among audit firms, and diversification of services offered to clients have made the auditing profession more competitive than ever. In this context, for auditors, utilizing AI tools and methods has become indispensable to accelerate decision-making processes, save time and costs, and gain a competitive advantage (Al-Sayyed et al., 2021:283). A 2015 study by the World Economic Forum projected that by 2025, AI would perform 30% of audit activities. Current developments in AI and auditing seem to align with this prediction (Cahyadi, 2020:32-33). The repetitive nature of audit activities, the presence of automatable processes, and the abundance of rich data sources have accelerated the adoption of AI in auditing. The primary purpose of AI systems used in both external and internal audits is to help auditors make more objective and accurate decisions by minimizing potential biases and deficiencies that may arise in manual decision-making processes (Köse et al., 2022:34). In light of these advancements, the widespread use of AI systems in auditing has necessitated that audit firms invest in the latest technological innovations (Alles and Gray, 2019:112).

The AI investments made by global audit firms are noteworthy. For instance, the development of software applications such as KPMG's Watson AI, PwC's Halo AI, Deloitte's Argus, and Optix for data analytics exemplifies the increasing interest in AI technology within the auditing sector (Kokina and Davenport, 2017:116). Deloitte has been one of the pioneering companies to integrate AI systems into audit processes. By incorporating AI into audit workflows, techniques, and workpaper creation, the company ensures that all data from the audited firm, along with automatically structured data for auditing requirements, is obtained. This innovative approach enables auditors to detect errors, fraud, or suspicious activities more quickly and accurately, providing more reliable reports (Bai, 2017:246). AI systems offer auditors various capabilities, such as automatically collecting and consolidating inventory data and counts through online portals, creating automated workpapers with AI programs on smart devices, generating visual documentation for physical inventory, and capturing text through voice analysis. Beyond executing audit activities, these systems play a significant role in facilitating digital access to audit evidence and enhancing the real-time and efficient process of obtaining evidence documents (Raphael, 2017).

One of the Big Four auditing firms, PwC, developed the Halo application to improve quality in audit and risk assessment testing and offer real-time consulting services for all transactions to the audited companies. This application allows auditors to access detailed and comprehensive information about the activities of the companies they audit and provide strategic advice to those companies (Bai, 2017:246-247). As can be seen, leading firms in the auditing field place great importance on AI technology in their workflows by positioning AI systems at the center of their development strategies and developing "learning" applications. This approach has enabled significant steps to

be taken toward improving service quality and efficiency in audit activities (Celayir and Celayir, 2020:134). These advancements suggest that AI will play a key role in shaping the future of the auditing sector and determining the professional competencies of auditors. However, as AI-equipped systems become increasingly autonomous and take on more roles traditionally carried out by humans, ethical and social risks also emerge. These potential risks should not be overlooked and must be managed proactively (Munoko et al., 2020:211).

Ensuring continuous assurance in business activities depends on conducting audit and monitoring functions as concurrently as possible with operational activities. To achieve this goal, adopting a proactive approach to make predictions before transactions occur is crucial. Integrating AI applications into internal audit activities can significantly contribute to more effective management of proactive processes and more efficient delivery of assurance services. However, it should not be forgotten that the human factor still plays a critical role in today's technology-driven world. Auditors must integrate the outputs of AI systems with their professional judgments in decision-making. Relying solely on data generated by AI does not always yield accurate results. At this point, internal auditors play a key role in determining companies' strategic orientations in the face of technological advancements like AI. As technological developments become more prominent in companies' workflow processes, the consulting function of internal auditors will gain even more importance to ensure effective and efficient management by helping businesses adapt to these changes (TİDE, 2017a:1). In particular, internal auditors should play an active role in facilitating the integration of new-generation AI systems into business processes and ensuring that the data obtained from AI applications is utilized strategically by management (Özcan, 2022).

The indispensability of AI technologies in both the private and public sectors means that traditional internal audit standards, methods, and internal auditors' conventional professional competencies may not meet management's needs. Therefore, senior managers must equip internal audit departments with an infrastructure compatible with AI, recognizing the many advantages of AI models, such as anticipating potential risks in achieving their goals, offering valuable insights for management decisions, and continually improving corporate governance (Li et al., 2020:28). Internal audit teams need to understand how AI works, recognize the risks and opportunities it presents, assess whether it meets expectations, and have the ability to suggest or implement corrective actions (TİDE, 2017b:6).

Conclusion and Recommendations

Today, rapidly advancing technological developments and digitalization enable businesses to operate more effectively and efficiently. While this digital transformation has led to changes in operational processes across many organizations, it has also significantly impacted auditing activities. In particular, the automation, data analysis, and decision support systems offered by AI technology have had a transformative impact on the assurance and advisory functions of auditing. This study comprehensively evaluated the impact of AI technologies on auditing processes and auditors' decision-making mechanisms. By analyzing studies in the literature using content analysis, the contributions of AI to auditing functions were detailed.

It can be said that AI will bring about a profound transformation in the auditing profession, and this transformation will deepen even further in the future. Initially used as simple decision support systems

and expert systems, AI applications have now evolved to incorporate advanced technologies such as deep learning, machine learning, and natural language processing. This developmental process has altered the traditional structure of the auditing profession and redefined the roles of auditors. AI-based audit tools developed by the Big Four auditing firms serve as concrete examples of this technology's transformative impact on the industry. Particularly, advancements in areas such as analyzing large data volumes, automating routine tasks, risk assessment, and anomaly detection have significantly increased the efficiency and effectiveness of AI systems in audit processes. Additionally, the use of such systems has reinforced impartiality and independence in audit processes, thereby enhancing trust in audit reports at the senior management level.

However, the integration of AI technologies into auditing processes also brings certain challenges and risks. High setup and maintenance costs, cybersecurity threats, data privacy concerns, and uncertainties regarding the reliability of these systems are the main challenges faced by auditing firms. Additionally, the risk of over-reliance on AI systems and the potential atrophy of professional judgment skills should not be overlooked.

A notable observation in this study is that AI does not eliminate the role of auditors but rather transforms and enriches it. Auditors, freed from routine tasks, now have the opportunity to focus on higher value-added activities such as strategic thinking, professional judgment, and consultancy. In this context, skills such as technology literacy, data analysis abilities, and proficiency in using AI systems will become increasingly important for auditors in the future. From an internal audit perspective, AI systems offer proactive risk management and continuous audit opportunities. The consulting role of internal auditors will gain even more significance, especially in the integration

of AI systems into business processes and the strategic use of AI-generated data in decision-making.

It is anticipated that the role of AI technologies in the auditing profession will continue to grow in the future. In this context, it is crucial for auditing firms and auditors to be prepared for this transformation by establishing the necessary technological infrastructure and developing human resources accordingly. In conclusion, AI technologies are becoming a fundamental force shaping the future of the auditing profession. While benefiting from the opportunities these technologies provide, it is essential to effectively and accurately manage the potential risks. The future of the auditing profession will depend on the optimal integration of AI systems and human intelligence and maximizing the synergy from this combination. Future studies should aim to address the impact of AI systems on audit quality, ethical dimensions, and regulatory frameworks.

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CHAPTER 8

NAVIGATING FAVORITISM, JUSTICE, AND EMPLOYEE OUTCOMES: A STUDY ON ENGAGEMENT AND QUIET QUITTING

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INTRODUCTION

In today's business world, favoritism—a practice where self-interest takes precedence over competence, equality, and justice in management decisions—has garnered significant attention from scholars. It is a long-standing phenomenon that is prevalent primarily in underdeveloped or developing countries (Macit & Erdem, 2020). Favoritism undermines organizational justice, which is crucial for fostering trust and reliability among employees (Greenberg, 1990). Justice, in this context, represents the commitment to fairness, equality, and respect for employees' rights within management practices. It serves as a cornerstone for fostering harmonious relationships among employees in the workplace (Colquitt et al., 2001). When management, particularly human resources (HR), fail to prioritize fair and equitable practices, employees may feel undervalued, leading them to disengage from their work. This disengagement often manifests in "quiet quitting," a trend gaining traction in today's business landscape. Quiet quitting involves employees doing only what is required of them, refraining from putting in any extra effort or going above and beyond (Tapper, 2022).

In today's competitive and fast-evolving work environments, favoritism continues to be a significant challenge, deeply influencing organizational dynamics and the overall well-being of employees (Byrne & Hochwarter, 2008). This study delves into the intricate relationships between favoritism, employee engagement, and quiet quitting, placing particular focus on the role of organizational justice as a mediating variable within these dynamics.

Through this study it is aimed to establish a bridge between academic knowledge and practical application by exploring how favoritism and organizational justice shape employee engagement patterns. Equitable and inclusive workplace are expected to foster a sense of value and fairness among employees, encouraging them to reach their full potential while

contributing meaningfully to organizational success. This study's major purpose is to investigate the extent to which employees' perceptions of favoritism and justice in the private sector are correlated with each other. In addition, this study also aims to evaluate the potential impact that this association may have on the employees' sense of engagement to the company as well as their tendency to quit quietly.

In this respect, survey method is applied to understand the underlying dynamics that trigger the tendency to quietly quit and that endanger the engagement of employees. It is accepted that as favoritism in the workplace increases, the likelihood of quiet quitting and disengaging from work will increase through diminished perceived organizational justice.

CONCEPTUAL FRAMEWORK

Favoritism

Favoritism occurs when managers favor hiring and promoting people who already work for the company or want to join the company based on personal relationships and/or subjective feelings rather than objective standards based on skills, abilities, and knowledge (Yıldırım & Tokgöz, 2020). Although the concept of favoritism has existed practically since the beginning of mankind, the theoretical talk and writing about it has increased in recent years. During the financial crises in history, there was a lot of discussion about favoritism, and it was thought to be the main cause of organizational crises (Özkanan & Erdem, 2014).

Favoritism is defined differently depending on the culture. Inappropriate and unreasonable privileges have been granted to associates of employees and supervisors in the public and other sectors without regard for the law (Erdem and Mer, 2012). Even though favoritism is commonly discussed in studies nowadays, a comprehensive framework still cannot be created (Özkanan & Erdem, 2014).

In place of hiring people who are qualified for the position, favoritism is the practice of hiring people based on relationships with them such as friendship or kindship. From this perspective, favoritism is regarded as the act of unconditionally favoring a coworker in a way that is against the law or ensuring that the coworker is promoted to a position without taking his or her skills and accomplishments into account, even though the employer has no legal authority to do so (Kurt & Doğramacı, 2014).

Favoritism is simple to notice. It can be recognized even only by observation, by familiarity with people in all positions, and by associations with both formal and informal social communication methods. For the organization to grow, a dependable work environment where organizational procedures are carried out fairly is essential. Favoritism is viewed as a factor that threatens this stable workplace environment and organizational development. When the definitions of favoritism in the literature are analyzed, it becomes clear that they all place an emphasis on injustice and breaking the law while allowing people or groups to be favored, safeguarded, and rewarded for a variety of reasons, such as blood ties or friendship relationships (Özkanan & Erdem, 2014).

Preferential treatment, backing, defending, and attacking to get an edge is referred to as favoritism. The term "favorer" in favoritism refers to the person who receives special treatment because of their position within the organization, and the term "favoree" refers to the person who is somehow related to the favorer. Favoritism behavior between the favorer and the favoree ignores ideas like ability and merit in favor of advancing an unjust and unethical ideal (Yıldırım & Tokgöz, 2020).

Favoritism is a global problem that exists everywhere, and it is starting to be regarded as a moral concern. How favoritism manifests itself in relationships between subordinates and superiors in an organization is examined in multiple studies. The findings reveal that favoritism is a persistent problem in organizations and that it is the primary driver of

tension and conflict. Additionally, it is discovered that favoritism hinders employee cooperation and produces an unequal environment in the workplace (Samuel, Onuoha, & Ojo, 2014).

The phenomenon of favoritism in the context of hiring processes is examined in a study conducted by Ponzo and Scoppa (2010). Research findings indicate that individuals with lower levels of education have a greater propensity towards endorsing nepotistic behaviors. Furthermore, firms that provide overtime wages demonstrate elevated levels of favoritism and employers tend to assign less importance to abilities and education throughout the recruiting process (Ponzo & Scoppa, 2011). Research also shows that cronyism has a modestly adverse correlation with organizational loyalty and trust and perceived favoritism demonstrates a noteworthy negative association with both variables (Lasisi, Constanţa, & Eluwole, 2022).

Organizational Engagement

Organizational engagement refers to the process by which employees integrate themselves into the fabric of the organization, driven by a combination of obligation and trust. Steers (1977) provided a description of organizational engagement as a state of integration inside an individual. In contrast, O'Reilly (1989) offered a definition of organizational engagement as the combination of employees' trust in the organization's reputation, their assurance in the organization, and their sense of affiliation with it. Luthans (1995) characterized it as the alignment between the objectives of the organization and its personnel, while Mowday, Porter, and Steers (1982) referred to it as the assimilation of employees into the organization and their sustained affiliation with it.

Organizations can be defined as social entities or groups of individuals that facilitate the achievement of set goals. The presence of employee organizational engagement is crucial for organizations to effectively attain their aims and objectives. When an individual demonstrates engagement

to an organization, it becomes crucial to assess their ability to strike a harmonious equilibrium between their personal interests and the objectives of the organization. Following the 1960s, there was an increase in the prevalence of organizational engagement inside the workplace. During the 1960s, Becker assessed organizational engagement by examining the concept of loyalty. Similarly, in 1961, Etzioni explored the classification and various dimensions of organizational engagement. Reichers (1985) and Becker (1960) provided empirical evidence showcasing the capacity for engagement to adjust (Karahan & Yılmaz, 2014).

Organizational engagement is a crucial factor that ensures employees' commitment to the organization, adherence to its objectives and values, and enhancement of overall organizational performance (Schaufeli & Bakker, 2004). Studies indicate that when employees are highly engaged, they show increased dedication to achieving the organization's goals, thereby facilitating its success more effectively and efficiently (Rich, Lepine, & Crawford, 2010). Based on available studies, organizational engagement significantly impacts employee behavior within the organization. Specifically, higher levels of organizational engagement are associated with a reduction in undesirable employee behaviors such as absenteeism, early job departure, and decreased work productivity (Harter, Schmidt, & Hayes, 2002). Furthermore, research suggests that organizational engagement positively contributes to overall corporate performance and success (Bakker & Demerouti, 2008). Employees who exhibit greater organizational engagement tend to have longer tenures within the company and possess a heightened ability to align their personal values with the organization's ideals (Christian, Garza, & Slaughter, 2011). Extensive data substantiates the positive impact of a highly engaged workforce on organizational outcomes (Markos & Sridevi, 2010). Negative employee behaviors might lead to employee attrition, while positive employee behaviors facilitate integration within the organizational

context. Consequently, organizational engagement plays a pivotal role in evaluating the psychological welfare of the organization (Öztürk & Şeremet, 2021).

Quiet Quitting

The idea of quiet quitting first appeared in German management literature, where it has been studied extensively, although it has received less attention in international literature (Seçer, 2011). The concept of quiet quitting was initially introduced by researcher Höhn, who described it as a phenomenon where an employee deliberately surrenders their proactive approach within the organizational context, disengages from their sense of dedication, and consequently refuses to comply with the responsibilities imposed upon them (Höhn, 1999). Despite not meeting the requisite qualifications, the business retains the individual as an employee; however, this individual lacks any inclination towards the goals and objectives of the organization and maintains a predominantly passive demeanor in the professional setting (Schmitz, Gayler, & Jehle, 2002).

Quiet quitting refers to the act of fulfilling only the basic requirements of a task without exceeding them. Individuals who adopt this approach do not possess a favorable attitude towards the expectation of exerting greater effort or dedicating additional time to their work. Furthermore, they decline to undertake additional work or assignments that do not offer compensation or other advantages. By refraining from expending extra effort, these individuals align themselves with the prevailing workplace culture, which may not reward additional effort (Tapper, 2022). The primary factors contributing to individuals choosing to quietly quit include a lack of well-defined objectives, inadequate acknowledgment of their contributions, and the desire to establish a harmonious equilibrium between professional and personal engagements (Tapper, 2022).

The concept of quiet quitting has received significant coverage in several online journals and periodicals, such as the Harvard Business

Review, Forbes, the World Economic Forum, the Wall Street Journal, and the New York Times as well as the mainstream media especially after 2022. Undoubtedly, the media has given considerable attention to social media posts that highlight the notion that work should not be the focal focus of one's existence. The phenomenon of quiet quitting has gained momentum especially after the reactions to the Great Resignation, a socio-economic movement that opposes the practices of the business sector. This trend has been observed in several countries, such as the United States, China, and the United Kingdom (Aydin & Azizoglu, 2022).

Following the global pandemic, the prominence of quiet quitting has notably increased, with this factor being commonly cited. Despite the recent surge in interest, it is evident that there is currently a lack of reliable and practical evaluations, as well as a universally accepted definition of quiet quitting within organizational contexts. In its most basic interpretation, quiet quitting refers to the absence of employees engaging in extra-role behaviors. Regarding quiet quitting, employees restrict their workload, accomplish prescribed duties at a minimal level, and exhibit a preference for refraining from undertaking work-related responsibilities outside their primary role definitions. Rather than prioritizing their careers as the central focus of their life, individuals opt to adhere to the prescribed work hours outlined in their job descriptions and allocate time for their personal lives outside of the organizational context. Empirical research indicates that individuals who exhibit elevated levels of organizational engagement tend to exert more effort beyond the scope of their prescribed job responsibilities due to their strong identification with their respective positions. The concept of "quiet quitting," which is grounded in the theories of COR (Conservation of Resources), SET (Social Exchange Theory), and TOG (Theory of Goal Setting), represents a call for organizational transformation (Hobfoll, 1989; Locke & Latham, 1990). It highlights the phenomenon wherein employees demonstrate a lack of willingness to engage in extra role behaviors that extend beyond the

prescribed responsibilities outlined in their job descriptions (Bolino et al., 2013). This stands in contrast to managers' expectations of employees exhibiting both exceptional performance and discretionary behaviors that go beyond their formal job requirements (Arar, Cetiner, & Yurdakul, 2023).

Organizational Justice

Organizational justice is a state in which all attitudes and behaviors exhibited within an organization are established and implemented to encompass all employees, ensuring equitable and unbiased policies both materially and morally (Colquitt et al., 2001). This concept pertains to practices used by both employees and employers, including the implementation of reward and punishment systems, as well as decision-making procedures within a company (Greenberg, 1990). Organizational justice measures the degree to which an organization adheres to these principles of fairness and equity.

When examining the framework of organizational justice, several dimensions are evident, including the distribution of employee responsibilities, maintenance of working hours, provision of fair working conditions in terms of economic and social welfare, and adequate compensation (Beugré, 2002). The establishment of a merit-based system for job allocation and recognition during promotions are essential components for achieving organizational justice (Folger & Konovsky, 1989). Organizations that prioritize fair policies often consider this principle as fundamental and give it high priority. Adams' (1965) equity theory serves as the foundation for numerous studies in this field, directly referring to the concept of organizational justice (Adams, 1965; Beugré, 2002).

Organizational justice, therefore, ensures that all employees are treated equally, reinforcing the principle of impartial operation to promote perceptions of fairness (Colquitt et al., 2001). Research indicates that a

well-established principle of fair order significantly affects the overall performance and efficiency of employees. Organizational justice is essential not only for social harmony within the workplace but also for achieving organizational objectives (Greenberg, 1990). By aligning conditions with the principles of organizational justice, organizations can achieve timely realization of goals, optimal success levels, and improved job satisfaction, engagement, and performance among members (Cohen-Charash & Spector, 2001).

When organizations foster a strong perception of justice, employees are more likely to identify with the organization and trust its management (Moorman, 1991). Conversely, inadequate or unfair distribution of justice can negatively affect employees' mental well-being and motivation, leading to increased turnover intentions (Cropanzano & Mitchell, 2005; Şahin & Kavas, 2016). In companies marked by low perceived levels of organizational justice, employees may experience demoralization, hesitation, and behaviors that conflict with the organization's culture (Colquitt et al., 2013). Such conditions can significantly impact the organization's competitiveness within the sector (Şahin & Kavas, 2016).

THE STUDY

In this study, it is claimed that favoritism affects quiet quitting and organizational engagement through the perceptions of justice. In other words, as favoritism increases, firstly the perception of justice of the individual will be damaged, and then he/she will be dragged into quiet quitting / detachment from the organization. In this respect, Social Exchange Theory (SET) provides a robust framework for understanding complex workplace dynamics between favoritism, quiet quitting, and organizational engagement. At its core, SET posits that individuals engage in interactions based on a rational assessment of what they invest (costs) and what they gain (rewards) from these exchanges. This rational evaluation serves as a guiding principle in understanding human behavior

and decision-making processes within social and organizational settings. The principles of SET extend beyond mere cost-benefit analysis. They encompass several key aspects that intricately shape the dynamics of social exchanges and influence outcomes within organizations.

The alignment of the study variables with SET principles posits that increasing favoritism negatively impacts perceptions of justice, subsequently leading to heightened tendencies towards quiet quitting. Conversely, fair and equitable organizational practices foster greater organizational engagement and commitment among employees, in line with SET principles.

Favoritism in organizations often breeds perceptions of injustice among employees due to unequal treatment in promotions, resource allocation, or decision-making processes. In this respect, it may be suggested that there is a positive relationship between increasing favoritism and the tendency to quiet quit. Quiet quitting, characterized by reduced engagement and withdrawal behaviors, is often a response to perceived injustices fueled by favoritism. Hypotheses propose that as favoritism intensifies, employees are more likely to experience disillusionment, leading to decreased motivation, commitment, and productivity. The level of perceived organizational justice will play a mediating role in this relationship.

H1: Favoritism has a significant positive effect on quiet quitting and this effect is mediated by organizational justice.

Conversely, it is expected that as favoritism increases, the level of organizational engagement will decrease through diminished levels of perceived justice.

H2: Favoritism has a significant negative effect on organizational engagement and this effect is mediated by organizational justice.

Methodology

To collect data, questionnaires were distributed to a sample that was representative of the working population across a variety of industries. 157 people participated in the study by filling out an online questionnaire. The goal of these questionnaires was to collect numerical data regarding the perceptions and experiences of favoritism in the workplace that respondents had, as well as the impact that favoritism had on the environment in which they work. With the purpose of determining how employees feel about favoritism, the surveys were designed to collect standardized data using scales and structured questions. In questionnaire, 8 questions were asked to participants to access information such as gender, level of education, total working time, total working time in the institution where they are currently working, age, marital status and whether they have a managerial role.

The organizational justice scale developed by Niehoff and Moorman (1993) was used to measure the construct. The Organizational Justice Scale consists of three dimensions: distributive justice, procedural justice and interaction justice. There are a total of 20 questions in the scale.

For the measurement of quiet quitting the scale developed by Edgar Schmitz, Bärbel Gayler, and Peter Jehle was used. The scale consists of 14 items. The scale includes differentiated responses. If there are high scores on the scale, it means that quiet quitting is higher.

The scale developed by Schaufeli & Bakker (2003) was used to measure organizational engagement. The shortened version (Abbreviated Engagement Scale) which consists of 9 items was applied. All scales were measured on a 5 point Likert which implied the following results: "1=strongly disagree", "2=disagree", "3=undecided", "4=agree", "5=strongly agree".

To conduct quantitative data analysis, statistical analysis software SPSS was used.

FINDINGS

The reliability of the scales used in the study are presented in Table 1. As seen in the table, Cronbach Alpha coefficient is greater than 0.70. It means that all the scales are reliable and therefore, they are used in the study to test the interrelations of the variables.

Table 1. Scale Reliability Scores

Scales	Cronbach Alpha
Organizational Justice	0,97
Favoritism	0,95
Organizational Engagement	0,93
Quiet Quitting	0,80

Afterwards factor analyses for the scales are carried out. The results of the factor analysis for favoritism scale yielded two factors. During the analysis, it is found that 15 items have settled under 2 factors. In this analysis, it is seen that 66,96% of the variance (p<0.001) can be explained by these two factors. When compared to the original scale, it is seen that, rather than three factors, the items loaded under two factors and these two factors are named as "Decision Making and Rewards" and "Organizational Focus" with respect to the common themes across the items under each factor.

When the results of the factor analysis for organizational justice scale are evaluated, it is seen that 70,85% of the variance (p<0.001) can be explained by two factors. During the analysis, one item is excluded because the factor loadings of the item have taken similar values under different factors. It is found that the remaining 19 items have settled under 2 factors. In the original scale, it is seen that there are 3 factors. These factors are procedural justice, distributional justice and interactional justice. For

distributional justice, the items are loaded parallel to the original distribution of the factor. However, procedural justice and interactional justice items are combined under one factor. Therefore, this factor is renamed as "stakeholder interaction justice" and it is used as a headline for the combined items.

Afterwards the factor analysis for organizational engagement scale is carried out and it is seen that 82,23% of the variance (p<0.001) can be explained by two factors. During the analysis, one item is excluded because the factor loadings of the item have taken similar values under different factors. It is found that the remaining 8 items have settled under 2 factors. In the original scale, it is seen that there are 3 factors. These factors are vigor, dedication and absorption. Original absorption items match with the output, but dedication and vigor have loaded under one factor. Therefore, the phrase "Passion" is used as a headline for combination of items under dedication and vigor.

When the results of the factor analysis for quiet quitting scale is done, it is seen that 56,88% of the variance can be explained by two factors. During the analysis, two items are excluded because the factor loadings of the items have taken similar values under different factors. In the original scale, there is 3 factor structure. However, in this study, it is found that the remaining 8 items have settled under 2 factors and these two factors are named as "Motivation" and "Dissatisfaction".

The reliability analyses for all the factors gathered during the analyses have implied alpha scores greater than 0.70. Further analyses are carried out based on the remaining items and the factors obtained.

Hypotheses Testing

The first hypothesis claims that there is a positive relation between favoritism and quiet quitting. In order to test this hypothesis regression is used with and without intervening variable. It is called three step regression analysis (Baron & Kenny, 1986).

In table 2, the statistical analyses to test the mediator role of organizational justice are given. In the first step it is found that favoritism has a direct significant effect on quiet quitting (p<0.001). In the second step, it is seen that organizational justice doesn't have a significant effect on quiet quitting as an intervening variable (p>0.05) and the effect on quiet quitting is still significant. Therefore, H1 is not supported.

Table 2. Regression Analysis for the Effect of Favoritism on Quiet quitting Through Organizational Justice

Model	R^2	R^2 adj	F	P model	B	t	P
1	0,250	0,245	51,720	0,000			
Dependent Variable: Quiet quitting							
Independent Variable: Favoritism					0,500	7,192	0,000
2	0,258	0,248	26,705	0,000			
Dependent Variable: Quiet quitting							
Independent Variable: Favoritism					0,424	4,552	0,000
Interviening Variable: Organizational Justice					-0,115	-1,232	0,220

In table 3, the statistical analyses to test the mediator role of organizational justice are given. In the first step it is found that favoritism has a significant negative effect on organizational engagement (p<0.001). It is also seen that organizational justice has a significant effect on organizational engagement as an intervening variable (p>0.05). When organizational justice is included in the regression, the effect of favoritism on engagement is not significant anymore. Therefore, it is concluded that H2 is supported.

Table 3. Regression Analysis for the Effect of Favoritism on Engagement Through Organizational Justice

Model	R^2	R^2 adj	F	P model	B	t	P
1	0,137	0,131	24,607	0,000			
Dependent Variable: Organizationan Engagement							
Independent Variable: Favoritism					-0,37	-4,961	0,000
2	0,248	0,238	25,423	0,000			
Dependent Variable: Organizational Engagement							
Independent Variable: Favoritism					-0,07	-0,772	0,441
Interviening Variable: Organizational Justice					-0,447	4,773	0,000

DISCUSSION AND CONCLUSIONS

This study is an attempt to shed light on the relational dynamics among favoritism, organizational justice, engagement and quiet quitting. The main findings of the research can be used as a tool for organizational development and a reference point for additional research areas.

To test the main hypotheses of the study two regression analyses were conducted. The first regression analysis, which explored the relationship between favoritism and quiet quitting with organizational justice as a mediating variable, yielded striking results. Contrary to expectations, organizational justice did not mediate the relationship between favoritism and quiet quitting. The direct effect of favoritism remained strong, even when organizational justice was introduced as a mediator. Commenting on the possible reasons behind this finding, it may be asserted that the tendency to quiet quit can be affected by other factors such as culture, leadership style or individual personality traits. As it is a personal and psychological phenomenon, employees do not necessarily take action after they quit from the inside. Therefore, their perception about justice may not alter their thoughts as strongly as their actions. Another reason can arise from the operationalization of the construct of quiet quitting. Although the reliability analysis yielded sufficient statistics, reliability does not necessarily lead to validity. The content validity of the scale that was used for measurement of the construct is prone to questioning as it addresses both positive and negative aspects.

The second hypothesis which claimed that favoritism negatively impacted organizational engagement through the mediating effect of organizational justice was supported. When organizational justice was included as a mediator, favoritism's direct impact on engagement became insignificant, confirming the mediation effect. As expected, it is seen that employees' perceptions of fairness directly affect their willingness to engage with the organization. When favoritism undermines justice, engagement diminishes as employees lose trust in the organization's values and processes. This finding aligns with Social Exchange Theory, suggesting that employees reciprocate fair treatment with higher engagement. Conversely, perceived injustice, amplified by favoritism, disrupts this exchange, leading to disengagement.

When put together, due to the opposite natures of the two phenomena, quiet quitting and organizational engagement may be operating through distinct psychological mechanisms and justice may be playing a critical role in fostering engagement whereas its effect on disengagement behaviors like quiet quitting might be indirect or dependent on other mediators. This deviation may open new areas for future research and other possible mediators can be included in the model to see whether justice affects constructs differently based on their nature regarding positivity or negativity. In this respect, this research may shed light on the dynamics among favoritism, organizational justice, engagement, and quiet quitting, emphasizing the need for further exploration in these areas.

Practical Implications

Understanding how favoritism impacts quiet quitting and employee engagement through the lens of perceived justice provides valuable insights for both academic discussions and practical solutions to improve organizational effectiveness.

Organizations should actively cultivate a workplace culture that values diversity, inclusion, and ethical conduct. By celebrating employee contributions based on merit and performance, and promoting these values through engagement initiatives and communication, companies can align their culture with principles of fairness and justice. In this sense, they should adjust their HR policies to promote transparency, fairness, and equal opportunities for all employees. This includes refining promotion criteria, performance evaluations, and reward systems to reduce perceptions of favoritism and ensure all employees feel they are treated fairly.

Training programs for leaders and managers can be a game-changer. Equipping them with the skills to recognize biases, address justice concerns, and resolve conflicts can help build a culture of trust and fairness. Providing employees with accessible and confidential ways to share their concerns may encourage them to share their experiences. The policies should be regularly reviewed incorporating employee feedback.

To sum up, this study highlights the interplay between favoritism, organizational justice, employee engagement, and quiet quitting. While the findings reveal some deviations from expected relationships, they offer a deeper understanding of the factors shaping workplace dynamics. By applying these insights to practical strategies, organizations can address favoritism, create fairer and more inclusive environments, and ultimately enhance employee satisfaction and productivity. Further research is required to expand the understanding of these constructs and their implications across diverse organizational contexts.

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CHAPTER 9

THE STUDY OF ATTENTION ECONOMICS

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1. Introduction to Attention Economics

Attentive users and customers, who play a pivotal role in the economy and contribute significantly to its functioning and growth, amount to an exceedingly rare and invaluable economic resource that cannot be overstated. In a world that is constantly bombarded with an overwhelming array of stimuli, where one dwells amidst an inexhaustible abundance of competing triggers vying for attention, the concept of "sustained attention" transcends the confines of mere corporate capitalist logic and emerges as a tremendously precious and disproportionately scarce commodity that possesses immense value and significance (Tsotsos, 2021).

The very nature of attention, with its inherent limitations and constraints, endows it with an aura of rarity that places it in a realm otherwise reserved for the most treasured and sought-after elements of economic theory and practice. Consequently, this scarcity has ignited a relentless quest among scholars, researchers, and experts across various disciplines and industries to explore diverse approaches aimed at optimizing attention, all driven by the shared objective of rational agents who strive to allocate their scarce attention in a manner that is nothing short of optimal, seeking to maximize their productivity and efficiency in an increasingly complex and information-driven world (Bordalo et al.2020).

Regardless of the specific approach adopted, the implications that arise from attaining a profound understanding of human attention, both at the individual and collective levels, are remarkably diverse, extensive, and far-reaching, extending far beyond the realms of economic research and theory. The management of human attention, or rather, the deliberate allocation of attention in a general sense, permeates numerous facets of human life and society (Barber, 2021).

From education to marketing, from entertainment to politics, from healthcare to technology, and from personal relationships to

societal structures, the ability to effectively capture and direct attention influences outcomes, shapes behaviors, and drives decision-making processes. It is through the strategic and thoughtful management of attention that organizations, institutions, and individuals can cultivate engagement, evoke emotional responses, relay information, and ultimately shape the course of events in a world increasingly driven by attention economies. Delving deeper into the exploration of attention, researchers and scholars have identified the multifaceted dimensions and characteristics of attention, unveiling its dynamic and complex nature (De Bruijn and Antonides, 2022).

Attention encompasses selective focus on specific stimuli, sustained concentration on a particular task or subject matter, divided attention across multiple stimuli or tasks, and even the mindful awareness of one's own thoughts, emotions, and sensory experiences. By dissecting and comprehending the intricate workings of attention mechanisms, experts aim to unlock its full potential, revolutionizing fields such as cognitive psychology, neuroscience, marketing, and artificial intelligence. Moreover, the study of attention reveals intriguing connections between attentional processes and fundamental aspects of human cognition and perception.

Concepts such as working memory, executive functions, information processing, and decision-making intertwine with attention, forming a tapestry of interconnected mental processes that shape our experiences and interactions with the world. Consequently, the pursuit of understanding attention entails a comprehensive investigation into the intricacies of the human mind, unraveling the mysteries of conscious awareness and the mechanics of how we navigate, interpret, and respond to the vast array of information and stimuli that surround us.

In summary, the true essence of attention and its management transcends the boundaries of a single discipline or economic domain. It represents a multifaceted and multidimensional phenomenon that

permeates all aspects of human existence. Attaining a profound understanding of attention and harnessing its power has become a critical pursuit for individuals, organizations, and society as a whole. By recognizing the scarcity and value of attention, we can navigate the complexities of today's attention-driven world, optimize our cognitive resources, and create meaningful and impactful experiences that resonate with those who possess the ability to attend (Vuong and Nguyen, 2024).

In this pursuit, we can unlock the untapped potential within ourselves and collectively shape a future that embraces the power and significance of attention as an invaluable resource in the pursuit of progress and well-being.

Evidently, the intricate and multifaceted relationship between attention and economic phenomena finds itself at the very fascinating and captivating intersection of two captivating fields: psychology and economics. It is truly remarkable how scarce attention, with its intricate components of bio-economic and cognitive limitations, holds such a pivotal role in shaping our economic landscape. In fact, attention itself emerges as a primary predisposition and structural factor, stemming from the remarkable evolutionary adaptation of organisms throughout time (Baird and Maruping, 2021).

One cannot underestimate the profound significance of attention, which serves as a fundamental assumption within economic theory. Without the indispensable filtering function carried out by the conscientious attention held by the agent, all the other factors of production simply remain uncalled, uninvoked, and unattended to. It is the scarcity of attention that has beckoned the attention of various disciplines such as psychology, neuroscience, and even artificial intelligence. This scarcity has also captivated the curiosity of numerous branches within economic theory, including marketing, auction theory, and the intriguing realm of media economics (Vorberg and Hambuch, 2022).

The paramount importance of both interest and attention, from an economically-oriented perspective, comes to light once we delve into the profound impact they possess on our everyday decision-making processes. Indeed, the assessment of an individual's welfare is intricately intertwined with, and heavily dependent upon, the proportion of time and resources that one must dedicate to the daunting task of decision making, all with the ultimate goal of making optimal choices that shape our lives and shape our economic outcomes. Grasping the underlying reasons behind our choices, understanding why we are captivated by one attraction over another, and unraveling the intricate economic causes that drive these preferential inclinations are of utmost critical significance. It is through this understanding that we can collectively navigate the complex maze of economic decision making with greater insight and acumen (Caplin et al., 2022).

2. Historical Development of Attention Economics

Attention economics is a relatively new and rapidly growing field of study that has emerged over the past four decades. It encompasses a wide range of disciplines and is influenced by various cultural, technological, and economic factors throughout history. In fact, the concept of attention as a valuable and scarce resource can be traced back to early economic theories.

These theories recognized the significance of "attention" and its limited availability. Contemporary theories on attention economics can also be attributed to historical economic phenomena. A notable phenomenon is the rise of the web environment, which was characterized by a shift towards increasing returns to distraction instead of focus. This shift had profound implications and played a vital role in shaping our understanding of attention economics. The emergence of behavioral economics further contributed to the development of attention economics. Behavioral economics investigates the peculiarities and biases in human decision-making,

with attention being considered within the broader concept of bounded rationality and information processing (Odell, 2020).

By incorporating attention into the study of decision-making, researchers have gained valuable insights into the cognitive limitations and information overload that individuals face in today's information-saturated world. Attention economics seeks to explore and comprehend the factors that influence how individuals allocate their limited attention. Cognitive limitations, information overload, and external stimuli all play a significant role in shaping attention allocation. By examining the economics of attention, researchers aim to uncover insights into decision-making processes, media consumption patterns, and the effectiveness of advertising and marketing strategies (Wang and Huang, 2021).

Beyond its theoretical significance, attention economics also has practical implications for policy-making. Policymakers can utilize the findings from attention economics to design regulations and policies that optimize attention allocation for the benefit of individuals and society as a whole. This highlights the importance of attention as a resource that should be carefully managed and directed (De Wit and Altbach, 2021).

Looking ahead, as technology continues to advance and information becomes even more accessible, the study of attention economics will likely evolve even further. It will continue to contribute to our understanding of human behavior and decision-making in the digital age. The intricacies of attention allocation and its impact on various aspects of our lives will remain a fascinating and vital area of research for years to come (Torous et al.2021).

Information science and library studies, in comparison to economics, have a longer history of including the attention of consumers and information seekers in the study of their own field. This attention has manifested in various ways, such as analyzing user

behavior and studying the impact of information overload on decision-making. Exploring the intricate relationship between consumers and the vast amount of available information is of utmost importance in today's digital age (Zhang et al., 2021).

In addition, streams of current research, within both economics and other fields, which address the issue of how and why consumers procure economic goods in an environment increasingly flooded with information, play a crucial role in opening the dialogue of looking at attention as a valuable currency. By understanding the factors influencing consumers' attention, scholars aim to decipher how attention affects economic choices and ultimately shape market outcomes (Awan et al.2021).

A widely recognized early paper on involuntary attention was published by psychologist James J. Gibson, who posited that "sudden intense sounds are arousing because they disrupt a flow of attention." This foundational work laid the groundwork for exploring the concept of attention and its impact on human cognition. Building upon Gibson's findings, subsequent research delved deeper into understanding the mechanisms behind attention, including the interplay of external stimuli, cognitive load, and individual differences in attentional capacity (Gibson, 1979).

Similarly, contemporary readings of "attention span" typically link the phrase as the precursor to the contemporary, techno-cognitively hyped digital-age meaning of distraction. In today's fast-paced society, where technology permeates every aspect of our lives, maintaining a sustained focus can be challenging. The ubiquity of smartphones, social media platforms, and constant connectivity has transformed the notion of attention span. Scholars now explore the effects of digital distractions on cognition, productivity, and overall well-being (Pan et al., 2022).

As we navigate this information-rich landscape, understanding the dynamics of attention and its implications has become increasingly vital. From a consumer standpoint, attention serves as a valuable currency, with various entities vying for our limited cognitive resources. By examining the intricate interplay between attention, information, and decision-making, researchers can shed light on how to effectively capture and retain consumer attention in a world filled with competing stimuli (Massaro et al.2021).

To truly comprehend the value of attention, interdisciplinary collaborations between information science, economics, psychology, and other relevant fields are vital. By drawing upon their respective expertise, researchers can develop innovative strategies to optimize attentional resources, enhance consumer experiences, and drive economic success.

In conclusion, attention has emerged as a critical component in both information science and economics. Appreciating the historical perspective of attention research and recognizing its contemporary manifestations is essential for comprehending cognitive processes in today's information-saturated society. By expanding our understanding of attention as a valuable currency, scholars can navigate the complex relationship between consumers, information, and decision-making, and contribute to the advancement of both fields (Breyer et al.2022).

3. Key Concepts in Attention Economics

Attention economics is a multidimensional field of study that explores the intricate dynamics of attention allocation. In essence, attention pertains to the finite cognitive capacity and its interplay with various cognitive processes, enabling individuals to assess and seek out additional information. This management of attention emerges as a critical quandary amidst the relentless deluge of information in today's world. Within the realm of attention economics, each person possesses

a limited reserve of attention that is subject to allocation based on cognitive or knowledge-based mechanisms. The intricate mechanisms that determine attention allocation are predicated on the complex interplay of psychological, environmental, and societal influences. Accordingly, attention is shaped by a vast array of factors, ranging from personal motivations and environmental cues to societal norms and expectations (Hyder et al.2023).

Within the framework of the economy, both the market and advertisements play a pivotal role in augmenting the willingness of individuals to invest their attention wisely. By facilitating efficient attention allocation, markets and advertisements enhance individuals' propensity to allocate their attention optimally. This optimization entails leveraging the market or advertisement's influence to prioritize the evaluation of information and selectively attend to goods or services (Sheth et al., 2020).

In this way, attention economics sheds light on the intricate dance between attention and the stimuli that vie for its allocation. By understanding the complex web of factors that shape attention, we can explore strategies to improve attention management in an information-driven society. Ultimately, attention economics offers a comprehensive framework to comprehend and enhance the allocation of attention, promoting informed decision-making and maximizing the value extracted from our limited cognitive resources (Mocanu, 2020).

Attention, a fascinating and multi-dimensional concept, can be comprehended and examined from various frameworks. One such framework is the information-processing paradigm, which explores how individuals process and interpret information. Another perspective is bounded rationality, which considers the limitations and constraints individuals face when making decisions. Lastly, attention can also be explored through the concept of "satisficing," where

individuals aim for satisfactory decisions rather than optimizing outcomes.

When viewed through the lens of satisficing, attention becomes even more intriguing. In this framework, rational individuals do not simply adhere to rigid laws of probability or economics. Instead, they possess cognitive limitations that affect different aspects of decision-making. These limitations range from the computational power of our immensely complex brains to the vast realms of uncertainty that surround us. For instance, when faced with a decision or participating in an auction as a bidder, individuals tend to direct their attention towards crucial product features. By focusing on these key aspects, they avoid aimlessly delving into the overwhelming pool of available information. This targeted attention allows individuals to assess the most relevant information and make intelligent choices (Mocanu, 2020).

The impact of attention on human behavior is profound and often astounds economists. It is through this unique lens that attention unfurls its captivating allure. Attention has the power to shape our decision-making processes and influence our navigation through the complexities of life (Velasco et al.2024).

In conclusion, attention plays a paramount role in our lives. It helps us filter information, make informed choices, and navigate through the intricate web of uncertainty. The study of attention continues to captivate researchers and sheds light on the profound intricacies of human cognition and behavior.

The key to this work is to treat relevant attention as an incredibly scarce and valuable resource, ensuring that it is allocated effectively and efficiently. By providing specific criteria for when and where attention will have a positive impact on customers, we can optimize its value. It is crucial to recognize that attention is a significant resource that must be managed wisely, especially because it is so limited in a

customer's life. This recognition will ultimately lead us to focus our attention search on global web offers, where we can make the most of this precious resource (Darmawan, 2024).

The value of attention is determined by its scarcity and its capacity to co-create value through consumer effective resource utilization. This means that when attention is allocated properly, it has the power to contribute to the creation of value in a customer's experience. Therefore, attention and its allocation choice play a vital role in influencing behavior models. In fact, attention can even be seen as both a product and a practice, highlighting its importance and impact in today's fast-paced and constantly evolving world (Huda and Hashim, 2022).

In today's digital age, where information overload is the norm, the need for effective attention management has become even more pressing. With countless distractions vying for our attention every second, it is crucial to prioritize and focus on what truly matters. By understanding the scarcity of attention and its value, businesses can develop strategies to capture and retain the attention of their customers (Sheth et al., 2020).

One way to optimize the allocation of attention is by leveraging technology and data analytics. By analyzing customer behavior and preferences, businesses can identify the most opportune moments to capture attention and deliver targeted messages. This targeted approach ensures that attention is allocated to the right customers at the right time, maximizing its impact and ultimately driving desired outcomes (Darmawan, 2024).

Furthermore, attention is not just limited to the realm of advertising and marketing. It extends to all aspects of a customer's experience, from product design and user interface to customer service and after-sales support. By designing products and services that capture and retain attention, businesses can differentiate

themselves in the market and build lasting relationships with their customers (Velasco et al.2024).

In conclusion, attention is a valuable and scarce resource that must be managed strategically. By recognizing its importance and adopting effective allocation strategies, businesses can enhance the customer experience, drive desired behaviors, and ultimately achieve sustainable growth in today's attention economy (Agusiady et al.2024).

3.1. Attention as a Scarce Resource

From an individual's point of view, attention is a highly limited and therefore highly desirable resource. Given that there is far more information in the environment around a person at any point in time than can be processed by available cognitive capacity, there must be robust selection processes in place to pick out the most important stimuli. Moreover, the abundance of information and entertainment options provided through various media channels further emphasizes the need for effective strategies to manage and capitalize on the attention of individuals. Consequently, the field of attention economics has emerged, focusing on the study of these effects (Al Hitmi, 2022).

Attention economics revolves around the fundamental principle that the value of a situation or outcome is derived from its status as an alternative. In other words, the evaluation of any choice or action is intrinsically linked to the opportunities relinquished by choosing otherwise. This economic concept is known as opportunity cost or opportunity loss. Opportunity costs manifest strongly in the realm of attention and its accompanying cognitive processes. Whenever decisions are made, there are four distinct choices to be considered: action versus inaction, one product over another, one place or task over another, and one time over another. Each of these choices carries its own set of opportunity costs, impacting the allocation of attention (Dahiya et al.2024).

As a result, a fierce competition emerges for individuals' attention. Attention scarcity becomes a significant form of shortage, scarcity, or competing needs in today's fast-paced world. Not only does attention scarcity affect individuals, but it also actively shapes market dynamics and influences the decision-making processes of people. Understanding the intricate relationship between attention, economics, and time is crucial in navigating this attention-driven era (Vepsäläinen, 2023).

Recognizing the value and scarcity of attention allows individuals and organizations to make informed choices and devise strategies that effectively capture and retain the attention of their target audience. By comprehending the principles of attention economics, individuals can navigate the complex landscape of information overload and make decisions that align with their goals and priorities (Asfour, 2024).

Ultimately, the interplay between attention, scarcity, and choice influences the way we engage with media, make selections, and shape our overall experiences in an attention-centric world. This understanding is vital in effectively managing and optimizing attention allocation, ensuring that it aligns with our inherent cognitive capacities and helps us achieve our desired outcomes. As we delve deeper into the realm of attention economics, we uncover the various mechanisms and strategies that can be employed to maximize attention capture and retention (Al Hitmi, 2022).

One such mechanism is the concept of attentional filters. These filters act as gatekeepers, determining which stimuli are allowed to enter our conscious awareness and which ones are filtered out. Attentional filters operate based on factors such as relevance, novelty, and emotional salience, among others. By understanding these filters and the criteria they utilize, individuals and organizations can tailor their presentations and messages to increase the likelihood of capturing attention. This can be achieved by leveraging powerful storytelling techniques, captivating visuals, and engaging narratives

that resonate with the target audience. The ability to effectively bypass attentional filters creates a significant advantage in today's attention-scarce environment (Asfour, 2024).

Furthermore, the concept of attention economics also highlights the importance of timing in capturing attention. Timing plays a crucial role in determining the receptivity and availability of attention resources. Understanding when individuals are most likely to be attentive and receptive can significantly impact the success of communication and marketing efforts. By identifying optimal timing windows, individuals and organizations can strategically position themselves to maximize attention capture and engagement. This strategic timing may involve leveraging events, trends, or even physiological states that enhance attentional receptivity, such as periods of heightened alertness or emotional resonance. By aligning messaging and presentation with these opportune moments, attention can be effectively captured and utilized to achieve desired outcomes. In addition to timing, the concept of attention economics also emphasizes the importance of personalization and relevance. In a world overflowing with information and stimuli, individuals are more likely to engage with content that is tailored to their specific needs, interests, and preferences. Personalization allows for the customization of experiences and messages, creating a sense of relevance and resonance that captures attention. By leveraging data analytics, machine learning algorithms, and advanced targeting techniques, individuals and organizations can provide personalized content, recommendations, and offers that align with the unique characteristics of the target audience. This personalized approach enhances the likelihood of attention capture and engagement, as it caters to individual preferences and aligns with the individual's cognitive processing capacities. Moreover, attention economics also recognizes the role of emotions in capturing and retaining attention (Thomas, 2024; Peredy et al.2024).

Emotions have a profound impact on attentional processes, as they influence our cognitive states and receptivity to information. By incorporating emotional appeals, storytelling, and immersive experiences, individuals and organizations can create emotional resonance that captures attention and enhances engagement. Emotional appeals can be achieved through various means, such as evoking joy, empathy, surprise, or even fear. These emotional triggers create a heightened state of attention, as individuals are more likely to be attentive to stimuli that elicit strong emotional responses. Leveraging emotions effectively can significantly enhance attention capture and retention, ensuring that individuals remain engaged and receptive to the intended messages. Furthermore, attention economics also sheds light on the importance of feedback loops and iterative improvement in the realm of attention capture and retention. By continuously monitoring and analyzing audience responses, individuals and organizations can gain valuable insights into the effectiveness of their attentional strategies. This feedback allows for the refinement and optimization of approaches, ensuring that attentional resources are efficiently utilized. Continuous improvement can be achieved through various means, such as A/B testing, user feedback, and data-driven analysis (Locke, 2023; Kumar et al.2024).

By embracing a data-driven mindset and iteratively refining attentional strategies, individuals and organizations can stay attuned to evolving audience needs and preferences, maximizing attention capture and retention. In conclusion, attention economics offers valuable insights into the complex dynamics of attention allocation and utilization in today's attention-driven era. Recognizing attention as a scarce and highly desirable resource enables individuals and organizations to navigate the challenges of information overload and capture the attention of their target audience effectively. By understanding the principles of attention economics, leveraging attentional filters, strategic timing, personalization, emotional appeals, and iterative improvement, individuals and organizations can

optimize attention capture and retention. Ultimately, the interplay between attention, scarcity, and choice shapes our experiences in an attention-centric world and influences the success of communication, marketing, and decision-making processes (Zhang and Liang, 2022; Lohk and Lia, 2024).

3.2. Attention Allocation Mechanisms

The way in which individuals allocate their attention can be very complex, as their actions can be influenced by diverse cognitive and emotional mechanisms and processes. In order to understand the economy of attention better, it is important to understand some of these mechanisms.

Voluntary models of attention stipulate that attention is drawn by stimulus salience and that individuals have certain attentional priorities based on their personal preferences. The involuntary model argues that external stimuli can shift an individual's attention despite his or her wishes. There is also a debate regarding the way in which different attributes of stimuli decide attention allocation. What is largely agreed upon in the field of psychology is that there is an interaction between an individual's personal preferences and the influence of environmental signals. Due to this, the direction of a subject's gaze and consequent attention shifts can be influenced and controlled by the environment or be goal-directed (Myllylahti, 2020).

With the technological advancements of the last century, especially in the current digital space, attention allocation is a more closely scrutinized topic. This is also because of the increasing downfall of people's tendencies to focus their attention. This is not only related to the increased use of gadgets but also media consumption (Vedechkina and Borgonovi, 2021). Studies have been carried out on engagement and attention retention and have pointed out that the former influences the latter and that both are influenced by context, delivery, and content. As such, advertisers and content

creators will clearly benefit from a better understanding of these mechanisms to take full advantage of the strategies that they might develop to effectively grab attention and make the best use of the small window of engagement (Yap et al.2021).

From a societal perspective, there is also an ongoing debate about the implications of an environment that requires decision-making prioritization in such high numbers and at such high speeds on mental health due to the effort involved. Given the complexity and multi-faceted nature of attention, a variety of mechanisms are employed to manage, allocate, filter, and sustain the concentration of individuals within potentially very numerous information sources (Jungherr and Schroeder, 2021).

In conclusion, the intricate and multifaceted nature of attention allocation elicits the need for a comprehensive understanding of the underlying mechanisms and processes that shape individual focus.

The voluntary models highlight the influence of stimulus salience and personal preferences, while the involuntary model suggests that external stimuli possess the capability to divert attention regardless of personal desires. Furthermore, debates persist surrounding the determinants of attention allocation and the interplay between personal preferences and environmental signals. The direction of gaze and attention shifts, whether driven by the environment or goal-oriented, undeniably play a crucial role (Vedechkina and Borgonovi, 2021).

As society enters the digital age characterized by technological advancements and increased media consumption, attention allocation becomes an increasingly critical area of study. The declining ability of individuals to maintain focus poses noteworthy challenges, necessitating a closer examination of engagement, attention retention, and their correlation with contextual factors such as delivery, content, and the overall media landscape. To this end, advertisers and content

creators can greatly benefit from an enhanced understanding of these attention mechanisms, enabling them to develop strategies that captivate audiences and effectively utilize the limited window of engagement (Challoumis, 2024; Ugbebor et al.2024).

Simultaneously, a broader societal discussion unfolds, exploring the potential impact of decision-making prioritization and the mental strain associated with navigating a fast-paced, information-driven environment. Given the intricate nature of attention, various mechanisms are implemented to manage, allocate, filter, and sustain concentration amidst an abundance of information sources (Jungherr and Schroeder, 2021).

The pursuit of unraveling attention's complexities continues, driven by the recognition of its fundamental role in shaping human experience and societal dynamics. Moreover, as attention continues to reveal its multifaceted nature, researchers are compelled to investigate additional facets and underlying processes that contribute to individual focus allocation. Various studies and scientific inquiries have shed light on the intricate interplay among cognitive, emotional, and social mechanisms that shape attention. These investigations have yielded valuable insights regarding voluntary attention models which underscore the significance of stimulus salience and personal preferences (Myllylahti, 2020).

Conversely, involuntary attention models suggest that external stimuli possess a profound ability to divert attention, irrespective of personal desires. While the determinants of attention allocation remain subject to ongoing debates, a consensus exists regarding the intricate interactions between an individual's preferences and the influential environmental signals. Notably, the direction of gaze and resultant shifts of attention, whether propelled by environmental cues or driven by goal-directed objectives, emerge as pivotal factors in the allocation process (Jungherr and Schroeder, 2021).

As societies embrace the digital era, characterized by exponential technological advancements and heightened media consumption, the intricate subject of attention allocation commands increased scrutiny. The escalating challenge of maintaining sustained focus stems not just from the pervasive usage of technological gadgets but also from the relentless bombardment of media stimuli. Extensive research endeavors have been conducted to uncover the dynamics of engagement and attention retention, revealing intricate links between these two phenomena and highlighting their susceptibility to contextual variables such as delivery, content, and the overall media ecosystem (Madore et al.2020; Kedi et al.2024).

The accruing knowledge of attention mechanisms presents a valuable opportunity for advertisers and content creators to better strategize and effectively seize the fleeting window of engagement.

Concurrently, a broader societal discourse unfolds, grappling with the potential consequences of navigating a high-speed, information-driven environment replete with constant decision-making prioritization. Implicit in such considerations is the recognition of the intricate nature of attention, necessitating the implementation of diverse mechanisms to manage, allocate, filter, and sustain concentration amidst a proliferation of information sources. In summary, the intricate and multifaceted nature of attention allocation engenders a scholarly quest for a comprehensive comprehension of the underlying mechanisms and processes that shape individual focus (Vedechkina and Borgonovi, 2021). While voluntary models highlight the impact of stimulus salience and personal preferences, involuntary models emphasize the capacity of external stimuli to influence attention irrespective of personal intent. Concurrently, ongoing debates center around the determinants of attention allocation and the interplay between personal preferences and environmental signals. The direction of gaze and attention shifts, whether propelled by

environmental cues or guided by goal-directed objectives, play an unequivocal role in attention allocation (Yap et al.2021).

Against the backdrop of a digital age marked by technological advances and escalating media consumption, attention allocation assumes critical significance. The diminishing ability of individuals to sustain focus presents notable challenges, necessitating scholarly exploration of engagement, attention retention, and their interrelation with contextual factors such as delivery, content, and the broader media landscape. In this regard, advertisers and content creators stand to gain immensely from an enhanced understanding of attention mechanisms, empowering them to devise strategies that captivate audiences and maximize the limited engagement window. Simultaneously, a comprehensive societal dialogue unfolds, delving into the potential ramifications of decision-making prioritization and the mental strain associated with navigating a fast-paced, information-centric environment. Driven by the recognition of attention's intricate nature, a diverse array of mechanisms is deployed to manage, allocate, filter, and sustain concentration amidst an abundance of competing information sources. The pursuit of unraveling attention's complexities persists, fuelled by an appreciation of its profound influence on human experience and societal dynamics (Qalati et al.2020).

4. Theoretical Frameworks in Attention Economics

Attention economics draws its theoretical background from two main scientific disciplines: economics and psychology. In economic terms, attention is considered a scarce resource that needs to be managed efficiently. Consequently, attention economics and the related production and consumption of news are becoming a matter of significant interest for market strategists and conventional economics. From the psychological perspective, attention is molded by a number of cognitive biases and depends on discursive processes of the media. Even though this view is not often explicitly expressed, it is a hidden

premise of every research question that aims at measuring the effects of news on decision-making (Falkinger, 2007).

Five different theoretical frameworks explain the economic and neuropsychological perspective of attention. These are signaling theory, scarcity economics, choice theory, artificial intelligence, and psychology. Signaling theory provides a strategic view on attention. Scarce attention is managed strategically and focuses on the essentials of decision-making. Any economics approaching attention phenomena finds close links to the theory of signification and abstract advertising, since the latter transforms material qualities into salient features (Festré, and Garrouste, 2015).

Scarcity economics investigates conflicts concerning access to media attention. This may include individual or collective selection processes of the population that still has the capacity to allocate decision-relevant attention.

There are a number of psychological approaches in economics investigating the individual level in terms of 'bounded rationality.' These theories investigate why deviations from rational self-maximizing behavior might nevertheless produce positive results. Also, in terms of choice theory, attention is perceived as a scarce resource. In modern societies, consumers are confronted with so many different and personalized product offers that one does not have the time to consider all alternatives in a logically consistent way (Festré, and Garrouste, 2015).

Artificial intelligence focuses on the mechanistic aspects of attention allocation. Here, symbolic and sub-symbolic cognitive structures determine knowledge-based decision surrogates that manage human attention. This view neglects the possibility that attention is deliberately misallocated. Options theory goes further in the explanation of the psychological cognition of attention. It is wholly

based on the fact that our attention diminishes as the amount of information presented to us increases (Falkinger, 2007).

Therefore, it devalues the very concept of information in a rational choice model. These theories have guided empirical studies and allowed us to provide some answers to the open questions. Each of them can help in justifying policy interventions, but to which extent they are fruitful depends on our understanding of the balance between economic and psychological aspects that characterize our society. Indeed, the complexity of human information processing involving economic and psychological factors can be investigated drawing upon these several theoretical frameworks, allowing interdisciplinary perspectives to be offered on the question (Koopmans, and Vliegenthart, 2011).

Overall, attention economics is a multidisciplinary field that combines insights from economics and psychology to understand how attention is allocated, managed, and influenced in society. It has implications for market strategists, decision-making, and policy interventions, highlighting the importance of understanding the balance between economic and psychological factors that shape our attention economy. Attention economics has emerged as a significant area of study, drawing attention from researchers, academics, and professionals across various disciplines (Falkinger, 2007). The exploration of attention allocation and its impact on decision-making has gained traction in recent years, as the digital age has intensified the competition for individuals' attention. The convergence of economics and psychology provides a comprehensive framework to analyze and comprehend the intricacies of attention dynamics, shedding light on why individuals allocate attention in certain ways and the consequences of such allocations (Koopmans, and Vliegenthart, 2011). By leveraging theoretical frameworks such as signaling theory, scarcity economics, choice theory, artificial intelligence, and psychology, researchers can navigate through the complexities of attention and

unravel its underlying mechanisms. Furthermore, attention economics offers valuable insights into market strategies and the design of effective policy interventions. By understanding the interplay between economic and psychological factors in shaping attention distribution, stakeholders can optimize their communication strategies, enhance decision-making processes, and ultimately thrive in the attention economy of the modern world (Loewenstein and Wojtowicz, 2023).

4.1. Economic Models of Attention

In the field of economics, the concept of attention becomes incredibly significant as it emerges as a scarce resource, requiring careful allocation among various options and alternatives. This captivating phenomenon of attention scarcity is not only evident in theoretical frameworks but also observable through meticulous experimentation in controlled laboratory environments. However, despite its undeniable relevance, the integration of attention into economic models does possess certain inherent limitations and drawbacks. By dissecting attention into distinct facets of reaction and perception, the approach towards maximizing value and embracing the neoliberal perspective on human behavior tends to become diluted and undermined (Wickens, 2020). Nonetheless, researchers have elucidated how time can be judiciously assigned to different alternatives based on the decision-maker's utilities and preferences. Furthermore, given the alternatives that capture attention, decision-makers possess the autonomy to select the pathway they shall tread. The study of strategic behavior unveils insightful methodologies for quantifying the worth and significance of investing time and effort in attention allocation. Notably, this innovative modeling transcends traditional disciplinary boundaries, bridging the realms of economics and operations research, thereby catering to the interests of scholarly audiences across various esteemed journals (Dai et al.2021, Hitt et al.2020).

Remarkably, these research endeavors only serve as initial stepping stones in an ongoing journey, postulating that the strategic modeling of attention would engender countless intriguing questions and hypotheses that necessitate thorough examination and resolution. Indeed, attention has been rigorously investigated as a scarce and coveted resource that lies at the epicenter of intense competition. Numerous theoretical models have been devised, commencing with the fundamental observation that attention readily attracts monetary gains. The commodity each consumer acquires is aptly portrayed as access to attention, skillfully crafted and produced by a diverse range of producers who employ disparate advertising strategies while effectively incorporating elements of user-generated content (Nižetić et al.2020; Drigas and Mitsea2020). Essentially, envisaging the market as a dynamic arena, consumers strive to avail access to highly sought-after television shows, which may be experienced through conventional viewership or actively engaging via social media platforms, or even by vociferously expressing enthusiasm upon hearing about it through radio broadcasts (Wickens, 2020). Although all these avenues of interaction are presumed to be inherently similar, denoting viable substitutes in terms of stimulation and engagement, they may substantially differ in the time and effort expected from consumers.

Astutely recognizing viewer-centric preferences, producers tirelessly endeavor to maximize viewership, which is qualitatively defined as the cumulative time and effort allocated by consumers to actively engage with the content they have generated. Importantly, the most prominent deviation arises when one explicitly models the burgeoning competition for attention within the realm of social media platforms, often characterized by the unrestricted availability of news items that can be consumed without any financial constraints. Remarkably, within this fiercely competitive landscape, consumers and producers inevitably find themselves inextricably intertwined as they make implicit, if not explicit, choices to engage with or develop

what they perceive as a qualitative and worthwhile product deserving of attention and adulation. Through this ongoing process of attention allocation, both consumers and producers exert significant influence in shaping the content landscape, perpetuating the dynamic interplay between supply and demand of attention (Prachand et al.2020; Mishra et al.2021).

In summary, the realm of attention allocation within the realm of economics is a multifaceted and dynamic field that continues to captivate scholars and researchers alike. From the intricacies of decision-making to strategic behavior, the modeling of attention presents an enticing blend of economics and operations research. As this journey of exploration and inquiry unfolds, countless dimensions and avenues of investigation emerge, prompting the formulation of thought-provoking questions and hypotheses that will undoubtedly fuel further scholarly pursuits and unravel the complexities of attention allocation in the modern world (Bwambale et al., 2022; Gupta et al.2021).

4.2. Psychological Perspectives

Attention allocation is a consequence of complex mechanisms that take into careful consideration the value of potential actions and cause notable fluctuations in attention driven by utility. However, it is important to acknowledge the existence of "top-down processes" that are greatly influenced by an individual's motivation, learning, and emotions. In order to enhance the robustness of existing theories, it is valuable to incorporate insights from the field of behavioral economics. This can be achieved by introducing frictions such as cognitive biases or heuristics (Wickens, 2020; Sagiv and Roccas, 2021).

Humans often face difficulties when attempting to determine the true value of a choice due to various reasons, including the intricate nature of available alternatives and the direct emotional involvement they may have, thereby introducing complexity in the computation of

intrinsic value. From a managerial perspective, guiding the allocation of attention becomes a critical task, especially when it comes to valuable resources such as employees. Given that individuals possess limited attentional resources and strive to pursue a consistent set of goals, it becomes imperative for managers to exert influence over the allocation of attention assigned to different tasks by revisiting the goals explicitly set forth within goal-setting theories of the firm (Niu et al., 2021; Wickens, 2021).

It should be noted that it is simply impossible for people to keep track of the multiplicity of information simultaneously acquired, leading to the elimination of a vast amount of potential attention. In light of this, selective attention assumes great importance as it profoundly impacts the outcomes of individuals who are influenced by alternative-value-based processes, as well as the effective allocation of resources. Furthermore, goals that are pursued for emotional reasons are believed to elicit a greater share of attentional resources and tend to be pursued more efficiently as a result. Ultimately, the ability to focus on relevant information is often viewed as a fundamental resource management issue (Ceipek et al.2021; Kretschmer et al. 2022).

However, when juxtaposing the clearly defined limitations of attention with the role of heuristics and goals that are determined by emotion to direct and channel these intricate processes, it becomes clear that fruitful exploration is still needed. It is important to consider how opportunity costs play a role, influenced in part by a procedure that compels individuals to let go of certain routes. Moreover, the phenomenon of inattentional blindness sheds light on the interplay between unconscious and conscious processes in guiding the allocation of attention. In the realm of selective attention studies, no single unique and complex process can be solely attributed to the processing in the visual spatial field between the attended and ignored objects (Silvestrini et al.2023).

Acknowledging this interplay informs us that, since 1980, consciousness has been further introduced and diversified the attention literature once again, deepening our understanding of this intricate field. As researchers continue to delve into the depths of attention allocation, new insights and perspectives emerge, expanding our knowledge and paving the way for a more comprehensive understanding of this multifaceted phenomenon. The dynamic nature of attention allocation continues to captivate scholars, providing a rich and fertile ground for further investigation and advancement in the field (Cortes and Herrmann, 2021, Bialystok and Craik, 2022).

5. Applications of Attention Economics

Various applications of attention economics have been proposed throughout different sectors. The earliest applications primarily focused on the advertising and entertainment industries, two sectors that heavily rely on capturing and engaging the audience's attention. In these industries, the primary objective is to attract as many eyeballs as possible, as the number of viewers directly impacts the advertising rates. This concept of scarcity plays a crucial role, allowing sellers of eyeballs to charge higher prices due to the limited viewing audience (Wedel et al.2020).

However, the effectiveness of traditional advertising has diminished over time, mainly due to the rise of technology that enables viewers to filter out or skip advertisements. With the proliferation of ad-blockers and streaming services, advertisers are facing more challenges in reaching their target audience (Cowan et al.2020; Niv, 2021). This shift in consumer behavior has forced advertisers to explore new ways to capture attention and stay relevant in a highly competitive market. Additionally, another factor contributing to the scarcity of attention is our limited ability to process visual information (Shah and Murthi, 2021; Kshetri et al.2024).

The human brain can only focus on a limited amount of stimuli at any given time. With the constant bombardment of information in today's digital age, it becomes increasingly challenging for advertisers and entertainers to break through the noise and capture the audience's attention. This limitation in attention capacity further highlights the economic value of attention and the need for strategic approaches to capture and maintain it (Chen et al.2022, Wang et al., 2021).

In the case of entertainment, advertisers often view it as a commitment device. They invest in productions, enabling them to leverage the right to broadcast their ads to viewers who find it challenging to divert their attention from the message conveyed by the entertainers. By associating their advertisements with highly engaging and captivating content, advertisers can increase the chances of their message being received and remembered by the audience. This strategy creates a symbiotic relationship, benefiting both advertisers and entertainers, as they rely on each other's success for mutual gain (Modgil et al.2022; Mariani and Wamba, 2020).

Furthermore, it is crucial to acknowledge the inherent variability present in entertainment. If entertainment options were entirely substitutable, viewers would have a tendency to "graze," meaning they would sample a little from each available option before eventually settling on less replicative forms of entertainment, such as pay-per-view movies (Waschke et al.2021; Chen et al.2023). However, this is not always the case. Viewers tend to avoid shows that have a high ad-to-content ratio, as these configurations are often adjusted based on viewer behavior, leading to interruptions and other potential issues. This behavior is precisely why TV commercial zapping has become prevalent, as viewers actively avoid advertisements by switching channels or utilizing other methods to evade them (Haleem et al.2022; Zheng et al.2021; Stylos et al.2021).

Overall, attention economics plays a significant role in shaping the advertising and entertainment industries. The pursuit of capturing

and maintaining attention is vital for the success of these sectors, as it directly impacts their business models and revenue streams. By understanding the principles of attention scarcity and employing effective strategies to engage viewers, advertisers and entertainers can navigate the ever-evolving landscape of consumer attention and stay at the forefront of their respective industries (Naselaris et al., 2021; Quian Quiroga, 2023). They must constantly adapt to changing trends, technological advancements, and consumer preferences to ensure their messages are heard and their content is consumed. In an age where attention is a valuable commodity, those who can best capture and hold it will have a competitive advantage in the market (Crosse et al.2021; Vizioli et al.2021; Suhaimi et al.2020)

5.1. Advertising and Marketing Strategies

In order to combat this shorter attention span, advertisers and marketers have developed various strategies to capture and hold the attention of their audience. One way they do this is by attempting to bypass filtering mechanisms that individuals have developed to ignore or block out advertisements. For example, when watching a TV stream without advertisements, if there is any distortion or disruption in the visual flow, the company behind the TV channel will immediately address and fix the issue because they rely on viewership for their revenue. In comparison, when browsing a website, sudden music might startle the user and be followed by an advertisement for a cheap ticket to Hawaii. In this situation, the company behind the website is trying to grab the user's attention in order to promote their product (Araujo et al.2020; Chaudhary, 2024).

The difference between these two scenarios lies in the economic concepts behind TV and the web. TV producers view viewer attention as a valuable resource and aim to extract its maximum potential. This is why TV ads are not blocked and why companies are willing to pay a premium to advertise on TV. On the other hand, websites are accessible for free, so they have to find alternative ways to generate

revenue. They attempt to monetize user attention by serving advertisements alongside website content. However, this approach can be seen as annoying and intrusive to users, leading to the rise of ad-blocking tools and businesses that offer ad-free internet experiences. To be more successful, advertisements need to seamlessly blend into the overall content of the website (Rogers, 2021; Chen, 2024).

By presenting the advertisement as valuable content, advertisers can engage the audience and capture their attention without causing annoyance or disruption. This has led to the rise of advertisements that resemble content and integrate storytelling and immersive experiences to leave a lasting impact on the viewer. With access to vast amounts of data and insights about their audience, advertisers can personalize their ads to resonate with individual viewers on a deeper level (Tarabasz, 2024; Treadgold and Reynolds, 2020).

However, this level of personalization must be balanced with privacy concerns to avoid crossing the line into intrusion. In today's fast-paced digital era, advertisers face an ongoing battle to captivate and maintain the attention of their target audience. Consumers are becoming more discerning and selective in their attention, actively seeking out content that resonates with them. To stay ahead, advertisers must constantly adapt and innovate, embracing new platforms, technologies, and formats. They need to understand the psychology of attention and use strategic techniques to create impactful campaigns that cut through the noise and leave a lasting impression (Vuong and Mai2023; Baddam, 2022).

The future of advertising lies in the ability to capture attention and convert it into action. In conclusion, advertising and marketing strategies are deeply intertwined with the challenges of capturing attention in a world where attention spans are declining and competition for attention is increasing. Advertisers must navigate a complex landscape to engage and resonate with their target audience. By understanding the dynamics of attention and employing innovative

tactics, advertisers can break through the noise and establish meaningful connections with consumers. The future of advertising is dependent on the ability to capture and maintain attention in a digital era filled with constant distractions and information overload (Babatunde et al.2024; Reedy, 2024).

5.2. Social Media and Online Platforms

The rise and prevalence of social media have dramatically transformed the way in which consumers engage with content. Gone are the days of traditional media's carefully curated gatekeeping structures that restricted the type and quantity of content found in newspapers, television, and radio. With the emergence of the open Internet and subsequently the widespread adoption of social media platforms, the barriers to producing content have been significantly diminished. The advent of social media has made it incredibly easy for individuals to create and consume content. The simple act of clicking a 'like,' 'retweet,' or 'share' button has redefined the types of content that people create and access. This phenomenon has led to an overwhelming emphasis on attention-grabbing, easy-to-digest content rather than substantive, in-depth stories. The motivations behind this over-commercialization of social media content are multi-faceted. People often share content with their network to showcase their knowledge or social awareness. Additionally, the user-friendly nature of social media platforms greatly contributes to the high level of content contribution (Infante and Mardikaningsih, 2022; Muftah, 2024).

Social media platforms, alongside their economic counterparts, heavily rely on user interactions and the resulting data to drive network effects and advance advertising and recommendation models. These platforms carefully curate the content that users are likely to see, basing their selections on past viewing habits and simulated digital interactions such as 'likes,' comments, and more. The attention data generated from these actions significantly influences the types of

network effects and revenue models that companies develop (Tsoy et al.2021).

As a result, these platforms strive to create applications that generate high user engagement. However, the pursuit of engagement may sometimes lead to systems that prioritize quantity over quality, thereby compromising the establishment of lasting relationships and value for users. Social media has not only resulted in an exponential proliferation of user-generated content but has also caused an excessive focus on viral or short-lived content and contentious subjects that specifically captivate certain segments of society. This shift in attention has altered the landscape of content consumption and societal discourse (Boediman et al.2021; Redjeki and Affandi, 2021).

Social media's influence extends beyond the realm of digital platforms, permeating various aspects of everyday life. From personal relationships to political campaigns, the impact of social media can be felt far and wide. It has become a powerful tool for individuals to express their opinions, rally support, and shape public discourse. The instantaneous nature of social media allows information to spread rapidly, leading to real-time conversations and reactions. Hashtags and trending topics serve as indicators of the collective interests and concerns of a society, enabling individuals to join conversations and mobilize for causes they believe in (Manzoor et al.2020; Horner et al.2023).

However, the rapid dissemination of information on social media also poses challenges. The spread of misinformation, fake news, and manipulated content has become a pressing issue in the digital age. Social media algorithms, designed to surface engaging and relevant content, can inadvertently contribute to the spread of false information. The echo chamber effect, where users are increasingly exposed to content that aligns with their existing beliefs, further amplifies this problem. As a result, critical thinking and media literacy

have become crucial skills for navigating the complex landscape of social media. Despite the challenges, social media continues to shape and redefine the way we communicate, connect, and consume information. Its influence is undeniable, transforming industries, creating new opportunities, and giving voices to individuals who were previously marginalized. As technology advances and social media platforms evolve, it is essential for society to critically examine and mitigate the negative effects while harnessing the positive potential of this powerful tool. In doing so, we can foster a more informed, inclusive, and responsible digital society (Jain et al., 2021; Leighton et al.2021).

6. Cognitive Biases and Attention

Cognitive biases, in conjunction with the inherent complexity of the information environment, also deeply and significantly influence the decision-making processes of individuals. People instinctively and automatically form their inference of the probability of an event based on the evidence immediately available to them.

Various heuristic mechanisms, such as the availability heuristic, can therefore significantly distort and skew individuals' perception of the frequency of a particular occurrence. With individuals being hypersensitized towards instances of anomalies, turmoil, or mayhem, this phenomenon may incredibly well account for the recent pervasive and persistent preoccupation with "danger" among audiences worldwide (Anderson2023; Li, 2024).

Similarly, people have a natural inclination to notice and actively seek out evidence that confirms the truth of their preconceived notions or a given hypothesis. This confirmation bias predisposes audiences even further towards the consistent reinforcement and validation of their existing beliefs, while simultaneously fostering a deep sense of skepticism towards any information that contradicts and

challenges familiar norms and expectations (Mazeikiene and Kasperiuniene, 2024).

Factoring in and considering the aforementioned heuristic mechanisms and biases that inherently influence human cognition and perception, we can clearly observe that only a small fraction of people would genuinely contemplate and entertain the possibility that there was "nothing wrong," as the pervasive assumption of the abnormality bias has heavily tipped and skewed the scales of attention and focus towards all forms of malfeasance, irrespective of the actual frequency and occurrence of such incidents (Arora et al.2022).

Furthermore, the enhancement and escalation of this monopolization of attention and focus will undoubtedly exacerbate and intensify a distinct causal link between attention fixation and the subsequent emergence of cognitive dissonance. In scenarios and situations where incomplete or mediocre service is presented, it becomes much more likely to be saliently perceptible and strikingly noticeable, particularly when contrasted with an antagonistic anomaly or an egregiously positive experience (Anastasiou, 2023).

Hence, it logically follows that individuated bias, both operationally and normatively, would inevitably lead to significantly consequential and influential regulatory outcomes and decisions that greatly impact and shape the overall functioning and dynamics of various domains and sectors. The intricate interaction and interplay between the biased and pre-set attentional allocation patterns of individuals and their subsequent exposure to a wide range of incoming information and stimuli effectively serve to limit and curtail an individual's active engagement and involvement in peripheral duties, tasks, and responsibilities (Kozyreva et al. 2020; Olszowski, 2024).

Simultaneously, this biased attention allocation mechanism effectively shields and protects individuals from the overwhelming and

burdensome pressures of information overload that is so prevalent in our modern society. Moreover, as individuals gradually and progressively assimilate and bear the burden of their cognitive load, they are inevitably and invariably pushed and propelled towards reticence, withdrawing themselves from the broader society into a state of relative isolation. This reticence arises as individuals find themselves constantly overwhelmed and inundated by the sheer volume and complexity of incoming information and stimuli, ultimately becoming absorbed by their own physiological and cognitive limitations and thresholds (Arora et al.2022).

As a result, cognitive overload is thus inherently complicit and deeply involved in delineating the precise and specific extent and boundaries of various public debates, conversations, and discourse. It does so not only by deflecting and diverting attention away from information saturation but also by inhibiting and impeding the development and establishment of a practical and concrete epistemological framework and defense against relativistic and unsubstantiated opinions, arguments, and claims. In the realm of media consumption, both in terms of entertainment and informational consumption, individuals unwittingly and unintentionally find themselves exposed to and captivated by attention-capturing mechanisms that effectively redirect and divert their focus and awareness away from less dominating and less financially lucrative aspects of the particular attention object or information source (Pietracupa, 2024; Siraz et al.2023).

It thus logically and inevitably follows that within the realms of media consumption and engagement, various attentional mechanisms and processes are inadvertently being manipulated and exploited in the pursuit and quest for monetizing and capitalizing on consumer omissions and lapses in critical attention and focus. In other words, media users and consumers are subconsciously sold and presented with a carefully constructed and meticulously crafted narrative and

storyline that aligns and corresponds precisely with the overarching and ulterior motives and objectives of corporate entities and organizations that heavily rely on astutely leveraging and utilizing individuals' attention and cognitive processes for their own financial gain and profit (Cohen and Garasic, 2024).

7. Ethical Considerations in Attention Economics

Like any study in economics, attention economics raises a wide range of complex issues pertaining to fairness, efficiency, and conformance to social purpose. However, attention economics also draws upon the rich historical legacy of utilitarian perspectives in public policy and public economics, thus incorporating a deep-rooted concern for ethical matters (Abdala and Veiga2024). The ethical dimensions of attention economics emerge from the understanding that a significant number of decisions regarding attention allocation directly impact crucial elements of individual well-being and overall life satisfaction. Moreover, the broader societal welfare and the optimal combination of public support for safety, information quality, and cultural development are also at stake in this discourse (Yang et al.2021; Olsen et al., 2022; Lee et al., 2021).

When taking into consideration the various concerns associated with the concentration of media and telecommunications, employee monitoring, and filter methods, a growing sense of unease arises. Despite the economic imperative for intervention by employers, individuals, or the government to ensure efficiency, there is a realization that the resulting infringement upon personal privacy, individual liberty, or even the ability to preserve one's human capital may have profound and far-reaching consequences (Bhagat and Hubbard, 2022; Sama et al., 2022; Jahanger et al.2023; Wang and Zhou, 2023). The potential of attention capital to generate significant positive externalities for society underscores the critical importance of recognizing and respecting the existing legal framework within the redefined field of attention economics. Both antitrust laws and media

regulations must contemplate the extent to which the duties of a media actor towards the "public interest," for which they serve as stewards, encompasses such profound and comprehensive responsibilities (Hu et al., 2022; Welsch et al., 2021; Blasco-Belled et al.2020).

In addition to these concerns, attention economics has also given rise to debates surrounding the role of social media platforms, algorithmic recommendation systems, and the impact of targeted advertising. The increasing sophistication of these tools and their tremendous influence over individual attention patterns further necessitate a thorough examination of the ethical implications. As attention becomes a coveted resource in the digital age, the responsibility to safeguard the diversity of information sources, protect against manipulation and misinformation, and promote the well-being of individuals becomes paramount (Ferdman, 2020; Muringani et al.2021; Usman et al.2023).

Furthermore, attention economics encourages an exploration of the ethics of persuasion and the strategies employed by various entities to capture and retain attention. This includes examining the use of psychological techniques, behavioral nudges, and persuasive design in shaping consumer behavior. The potential for exploitation and manipulation raises pressing concerns regarding consent, autonomy, and the overall integrity of decision-making processes. Striking a delicate balance between capturing attention for productive purposes and avoiding undue influence is essential for fostering a fair and responsible attention economy (Wang et al., 2022; Clair et al.2021).

Additionally, attention economics highlights the need for a nuanced understanding of attention scarcity and its impact on social justice. The competition for attention resources and the unequal distribution of these resources can exacerbate existing inequalities and marginalize certain groups or perspectives. Ensuring equitable access to attention and mitigating the potential for attention monopolies is

therefore crucial for fostering a diverse and inclusive society. In conclusion, attention economics encompasses a wide spectrum of ethical considerations and societal implications (Yin et al.2021; Blackwell et al.2022). It necessitates careful deliberation on issues ranging from privacy and individual autonomy to media regulation and social justice. Recognizing the multifaceted nature of attention and its far-reaching consequences, it is imperative for policymakers, businesses, and individuals to engage in responsible practices that uphold the well-being of individuals and society as a whole. By addressing these ethical dimensions and striking a balance between competing interests, attention economics can contribute to a more equitable and sustainable future (Hyland, 2023; Benner et al.2022; Monge et al.2023).

8. Future Directions in Attention Economics

The landscape in the study of attention economics is currently witnessing rapid and profound changes due to continuous advancements in technology. These advancements have a significant impact on the allocation of collective attention (Beattie, 2022). It is noteworthy to highlight the emerging relevance of artificial intelligence within this field, which has reshaped sectors such as transportation, finance, healthcare, and many others. These transformations possess the potential to greatly alter attention management strategies, thus redefining the role of Public Attention Offices as well as other entities involved in attention allocation and management. In this specific section, it is essential to clarify that our intent is not limited to proposing a single evolutionary path connecting attention management with individuals' shopping or consumption habits, but rather to explore a multitude of potential pathways and scenarios (Pedersen et al.2021; Odell, 2020; Bhargava and Velasquez, 2021).

This topic has been extensively discussed in the realm of future predictions and speculation, providing a diverse range of perspectives

and possibilities. Moreover, we do not advocate for Integral Attention Management as a universal requirement driven by undeniable changes in the environment alone, but rather as a framework that can be utilized in specific contexts and scenarios. Instead, the primary objective of this section is to emphasize the emergence of tools and techniques for managing attention and implementing business models, showcasing their potential value and impact. These emerging strategies hold tremendous value not only in the present but also in the future, spanning ten or twenty years from now and beyond. It is crucial to acknowledge that attention scarcity does not solely arise from economic dynamics. It is, in fact, an outcome of consumers' decision-making processes as they allocate their resources in an ever-evolving and increasingly complex environment (Aylsworth and Castro, 2022; Franck, 2020; Brady et al.2020).

Traditionally, psychologists and marketers have argued that attention is allocated based on individuals' intentions, which direct their focus and guide their actions. If we assume this perspective to be accurate, professionals can launch campaigns focused on people's intentions in order to increase their chances of capturing attention effectively. However, recent research challenges the prevailing belief in the power of intention within the growing literature (Shi et al., 2020; De Bruijn and Antonides, 2022).

Instead, it suggests that a complex interplay of habits, routines, cognitive processes, and external stimuli play a more substantial role in attention allocation. Findings that link attention with focused ideation, rather than aimless thoughts, also prompt us to consider rhythm as a crucial component of attention management. This rhythm may consist of behavioral habits and routines associated with shopping, decision-making, and purchasing activities, among others. Furthermore, an increasing call to shift our attention towards underlying behavioral assumptions has a direct impact not only on

individual cognitive hierarchies but also on the broader framework of how attention is allocated at a collective level (Pappas et al.2021).

This points towards the need to reconfigure the productive factors influencing attention allocation, encompassing a diverse range of topics. These topics include experimental testing of variables that affect attention allocation, empirical monitoring of the consequences of attention allocation, and utility-based decision-making models and time allocation, among various others. These models possess a more fundamental structure defined by two interconnected stages: the antecedents that shape attention allocation and the consequences that arise from it (Qu et al.2023).

Other critical aspects encompass the development of addiction, an innovative perspective on public policy-making and the education sector, the significance of rewarding transmitted information, and the exploration of various marketing approaches that delve into the role played by partisanship, personal biases, and societal factors in the allocation of attention by news consumers. Additionally, the impact of cyber spiritual marketing, which explores the intersection of technology, spirituality, and attention, is another aspect worth considering. Examining the optimal organization of information production and transmission in anticipation of attention, taking into account various mediums and platforms, also holds immense value. Presently, research in the field of attention economics is merely scratching the surface, and there is a vast realm of theoretical and applied work awaiting exploration (Barton et al., 2022; Wu et al., 2021).

Ethical questions concerning the normative positioning of attention within the economy and the humanitarian effects of long-term engagement, especially in contexts where attention is monetized and manipulated, demand further discussion and deliberation. The projected directions for new models primarily revolve around interdisciplinary developments that aim to rewire the

interconnectedness among different disciplines. This includes disciplines such as computer science and AI, economics, media studies, psychology, neuroscience, sociology, and many others. It is imperative to reconsider the environment and the strong interconnectedness between human beings and technology as a natural and inseparable union, rather than viewing technology as a mere tool employed by humans (Sheykhizadeh et al.2024).

Understanding the contemporary socio-economic context is of paramount importance, characterized by an overwhelming abundance of information, constant connectivity, and intense competition for attention. Consequently, in-depth analysis of the neurophysiological and psychological dimensions of attention is essential, along with investigating the underlying mechanisms that govern memory formation, decision-making, and behavior. Moreover, integrating theoretical considerations with ethical, political, and commercial inquiries could provide a robust foundation for contemplating policy constraints and regulations that govern digital attention in a collaborative and transparent manner with stakeholders. With the increasing influence of technology, attention management becomes an ever more critical aspect of our lives, impacting not only our personal wellbeing but also the functioning of organizations, industries, economies, and societies at large (Fratocchi and Mayer, 2023).

Therefore, it becomes crucial to explore novel approaches and strategies that can effectively navigate the attention economy landscape, adapt to ongoing advancements, and address emerging challenges. Only through comprehensive research, rigorous analysis, and interdisciplinary collaboration can we unlock the full potential of attention economics and optimize the allocation of attention in an ethical, sustainable, and equitable manner, benefiting individuals, businesses, and the greater society as a whole (Shah et al.2021; Gidlöf et al.2021).

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CHAPTER 10

THE IMPACTS OF FEBRUARY 2023 TWIN EARTHQUAKES ON TURKISH LABOR MARKET[1]

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1.INTRODUCTION

Natural disasters are known as natural events whose time and place are unpredictable and therefore human beings are largely defenceless. Along with the loss of life and property, they also cause many socio-economic imbalances. Earthquakes are the most common type of disasters on earth and have more destructive effects than others. The most active earthquake zones worldwide are the regions where tectonic plates interact with each other the most. Earthquakes of different intensities have been experienced in the world and have created different socio-economic effects throughout history. In this context, the area around the Pacific Ocean, West-North America, the west coasts of Central-South America, Japan, the Philippines, Indonesia, the north of New Zealand and the Himalayas are known as regions with potential for large earthquakes (URL 1). The largest earthquake belt in the world is the Pacific earthquake belt, also known as the 'Ring of Fire', which has hosted 81% of the earthquakes on earth. The Valvidia & Chile earthquake of 9.5 magnitude in 1960 and the Alaska earthquake of 9.2 magnitude in 1964 were experienced in this belt (URL 2). In this context, it should be emphasised that the 1960 Valvidia earthquake was the largest earthquake of all time measured on the Richter scale. In this context, it should be emphasised that the 1960 Valvidia earthquake was the largest earthquake of all time measured on the Richter scale. The epicentre of the earthquake was the city of Valvidia, 700 km south of Chile. The earthquake also caused a tsunami in the Pacific Ocean. The earthquake killed 1655 people, injured 3000 people and left two million people homeless. It was stated that it caused an economic damage of approximately 550 million dollars. The waves of the great tsunami that emerged in the Pacific after the earthquake devastated the coastal areas of New Zealand, Japan and the Philippines, and caused the death of 61 people in Hilo, the coastal town of Hawaii (URL 3). The second largest earthquake belt is known as the Alpide earthquake belt. This belt covers the Java-Sumatra-Himalayas-Mediterranean and Atlantic regions and 17% of the earthquakes in the world have occurred in this belt. In the Alpide belt, the 9.1 magnitude earthquake occurred in Indonesia in 2004, together with the tsunami that followed, caused 230,000 people to lose their lives (URL 2).

Türkiye is a country located in the Alpide earthquake belt, one of the notable earthquake belts of the world. Due to the complex geological structure and geodynamic position, there are many active faults in the country. North

Anatolian Fault, East Anatolian Fault, Marmara and Aegean Regions are known as the areas with the highest earthquake risk in the country. The North Anatolian Fault in the country has hosted 7 major earthquakes in the last century, including the 1939 Erzincan earthquake. The 1999 Izmit earthquake, which caused great destruction in the country, also occurred in the Eastern Marmara section of the North Anatolian Fault (URL 4). On 6 February 2023, Turkey experienced two major earthquakes centred in Kahramanmaraş on the North Anatolian Fault and these earthquakes affected a very large region. Related earthquakes were labelled as the "Disaster of the Century" in Türkiye and caused huge losses. In this study, the effects of the twin earthquakes, one with a magnitude of 7.5 and the other with a magnitude of 7.8, centred in Pazarcık and Elbistan districts of Kahramanmaraş province, which occurred on 6 February 2023 with an interval of 9 hours in Turkey, on the labour market are examined. In this framework, in the study, the general economic effects of the earthquakes are discussed initially. Then, the effects of the earthquakes on labour markets are tried to be explained. The effects of the earthquakes on labour markets are examined in three sub-sections; the impacts on working hours and employees, the impacts on basic labour force indicators and sectors and thirdly other impacts, in detail of informal employment, human resources, migration and gender inequalities.

2.MATERIAL AND METHODS

The main objective of the study is to examine the effects of the twin earthquakes experienced in Turkey on 6 February on labour markets. In order to achieve this objective, both global and national databases are used to analyse the effects of twin earthquakes on labour markets. In this context, databases of the International Labour Organization (ILO), Turkish Statistical Institute (TURKSTAT) and Social Security Institution (SGK) are used. In addition to the relevant data, the literature on the subject has also been analysed in detail; international and national reports, manuscripts, dissertations and policy notes have also been included in the study.

3. AN OVERVIEW ON ECONOMIC EFFECTS OF FEBRUARY 6 EARTHQUAKES IN TÜRKİYE

The twin earthquakes experienced by Turkey on 6 February 2023 are considered to be the most destructive disaster in the country's history. Although the most severe earthquake in the country's history is known as the 7.9 magnitude earthquake in Erzincan in 1939, the twin nature of the 6 February earthquakes increased the destructiveness. The first earthquake of 7.7 magnitude centred in Kahramanmaraş lasted 65 seconds and the second earthquake of 7.6 magnitude in Elbistan lasted 45 seconds, thus eleven provinces including Kahramanmaraş, Gaziantep, Şanlıurfa, Diyarbakır, Adana, Adıyaman, Osmaniye, Hatay, Kilis, Malatya and Elazığ suffered huge destruction. Late response to the earthquake, lack of a disaster management plan to ensure coordination, lack of planning and harsh winter conditions are among the factors that caused the high death toll in the region. It was determined that search and rescue teams and aid could not reach many villages in the stated area (URL 5). According to latest official statements, more than 53.537 people lost their lives and 107.213 people were injured due to the earthquakes (URL 6). Thus, the earthquakes caused significant loss of life and damage and devastated the region in which they occurred. A significant part of the Eastern and Southeastern Anatolia Region of the country (an area of 108,812 square kilometres) has been significantly affected by the earthquakes (URL 7). Earthquakes with such devastating effects have affected almost all macroeconomic indicators in the country and caused great damage to the economy directly and indirectly. The eleven provinces affected by the earthquake account for approximately 10 per cent of the Turkish economy. The size of the population directly affected by the earthquake is 14 million, which is 16 per cent of the total population (URL 8).

When analysing the real economic costs of earthquakes, Demiralp (2023) asserts that two dimensions should be taken into account, the first of which is the destruction and damage caused by earthquakes. The second is the impact on production capacity, i.e. output. According to the recent earthquake report prepared by TEPAV, 40 per cent of the building stock in the earthquake zone has been damaged or destroyed to varying degrees because of twin earthquakes. Due to the destruction and damage caused by the earthquake, it is estimated that the reconstruction of the region will take 5 years. In the relevant report, it is emphasised that the earthquake will create a financing

need of 150 million USD in a 5-year period. The largest part of this cost arises from activities to rebuild and reinforce the superstructure and infrastructure in the region. The second biggest cost is the loss of property such as vehicles and fixtures. The third cost item is the shelter and labour support to be allocated for earthquake-affected households (TEPAV, 2023a). According to the Ministry of Environment, Urbanisation and Climate Change, the cost of the earthquake to the national economy reached 110 billion dollars within one year (URL 9).

It should be underlined that Türkiye faced high inflation and high unemployment rates in the period after the Covid 19 pandemic, and faced devastating twin earthquakes while struggling with macroeconomic problems. Thus, the earthquakes faced in the aftermath of the pandemic significantly disrupted the macroeconomic structure of the country, decreased production in various sectors, increased inflation and poverty in Türkiye. As stated in the previous paragraphs, the product of the 11 provinces most affected by the earthquake is approximately 10% of the country's GDP (URL 8).The earthquake zone accounts for 15% of the agricultural production in the country, and from an industrial perspective, it can be seen that the steel and textile sectors are strong in this region (Demiralp, 2023). Thus, in the first quarter of 2023, Turkey could grow by 4%, while the agricultural sector contracted by 3.8% and the industrial sector by 0.7% (URL 10). With the earthquake, the supply-demand balance was disrupted, expenditures increased, production losses in the provinces where the earthquake was felt intensely caused a significant increase in the general level of prices and inflation was triggered. The Central Bank revised the inflation forecast and increased its inflation forecast from 22% to 58% in 2023 (URL 11). Although the Central Bank raised its forecasts, the forecasts were not met again, and the inflation rate in 2023 was 65% (URL 12).

The earthquake also increased public expenditures and led to inflation. The fact that the region is an important agricultural production centre led to an increase in food prices and triggered food inflation. It would be appropriate to say that earthquakes disrupted and jeopardised public financing balances in the short run (Sabırsız&Şöhret, 2024, p.591). As highlighted in a study analysing the foreign trade situation in 11 provinces affected by the earthquake, foreign trade volume decreased in the first 6 months after the earthquake compared to the previous year, with the highest decrease in foreign

trade in February. In terms of foreign trade indicators, Adıyaman, Hatay, Kahramanmaraş and Malatya experienced the most unfavourable situation. Damage to the transport infrastructure adversely affected national and international supply chains (Özsalman&Yıldırım, 2024, p.598-614). The 11 provinces most affected by the earthquake realised 9% of Turkey's exports in 2022. Following the Covid 19 pandemic and the Russia-Ukraine war, the earthquakes in Turkey caused significant problems for exporting companies. In addition to production loss and supply chain problems, the closure of ports, airports and damage to highways after the earthquake caused transport problems. This situation was extremely unfavourable for imports and exports. On the other hand, loss of labour force and financing difficulties also made exports significantly difficult (Tetik&Albulut, p.93-99). Since the export and industrial structure in the region is largely based on the textile & iron and steel sectors, the industry in the earthquake zone has shrunk significantly, and according to Türkonfed, it seems very difficult to reach the pre-earthquake level of national income and exports before 2026 (URL 13).

4. LABOUR MARKET IMPACTS OF THE TWIN EARTHQUAKES

In this section, the effects of the earthquake on the labour market will be examined under three sub-headings; impacts on working hours and insured employees, impacts on main labour force indicators and employment by sectors and other impacts (impacts on gender inequality, informal employment, human resources and migration).

4.1. Impacts on Working Hours and Insured Employees

The effects of the twin earthquakes on the labour market were very sharp. As mentioned in the previous section, the twin earthquakes disrupted economic activities over a large area. The region most affected by the earthquake is home to 14 million inhabitants and more than 1.5 million Syrian refugees (URL 14 & URL 15). As mentioned earlier, over 50 thousand people were killed and over 100 thousand injured in the earthquakes. The significant decline in economic activity brought about significant losses in working hours. According to the International Labour Organization (ILO) report, earthquakes reduced working hours by 16%. This reduction is equivalent to the working hours of 657,147 full-time equivalent workers. The same report

states that the reduction in activity was highly uneven, being quite small in Adana and quite large in Malatya (Figure 1).

Figure 1. Loss of working hours in the provinces most affected by the earthquake (ILO, 2023a)
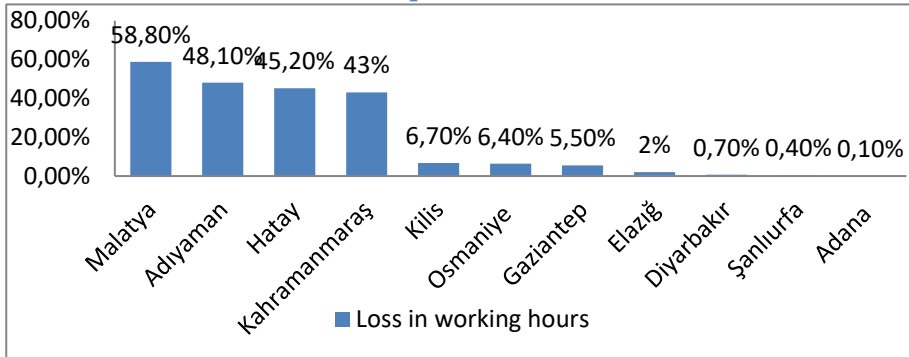
Apart from the loss of working hours, the ILO report drew attention to the significant dangers in occupational health and safety. The high amount of asbestos in the earthquake zone jeopardised health and safety in the region. On the other hand, injuries due to falling from debris, electrical hazards, exposure to harmful gases and chemicals and ergonomic risks were emphasised as important risks. The report noted that vulnerable groups in the labour market (women, youth and persons with disabilities) may find it more difficult to recover from the tragedy. The report also pointed out that the poverty created and deepened by the earthquakes in the region may increase the problem of child labour in the country (ILO, 2023a).

The number of people employed in the earthquake-affected provinces is 3.8 million by the end of 2022 and the employment in the region constitutes 13.3 per cent of the country's employment (URL 16). Therefore, the loss of lives and injuries in the earthquake region decreased labour force participation and increased unemployment in the region. SGK data reveal that the number of active insured employees (4a+4b+4c) decreased in all provinces most affected by the earthquake (Table 1).

Table 1. Active insured employees (4a+4b+4c) in the provinces most affected by the earthquake (URL 17)

	February 2023	March 2023
Adana	575.056	553.723
Adıyaman	111.913	105.228
Diyarbakır	343.295	340.743
Elazığ	137.775	135.975
Gaziantep	554.214	511.933
Hatay	287.270	260.760
Kahramanmaraş	214.466	182.773
Kilis	40.965	38.545
Malatya	165.625	155.806
Osmaniye	118.273	110.900
Şanlıurfa	345.486	335.088

4.2. Impacts on Main Labour Force Indicators and Employment By Sectors

According to the Level 2 classification of the Turkish Statistical Institute, the cities most affected by the earthquake can be analysed at 4 different regional levels. These are TR63 (Hatay, Kahramanmaraş, Osmaniye), TRB1 (Malatya, Elazığ, Bingöl, Tunceli), TRC1 (Gaziantep, Adıyaman, Kilis) and TRC2 (Şanlıurfa and Diyarbakır) regions. According to TURKSTAT statistics, basic indicators such as labour force participation rate and employment rate decreased in most of these regions in 2023 compared to the previous year. Moreover, it is observed that the unemployment rate increased in TR63 region notably (Table 2).

Table 2. Main Labour Force Indicators In The Earthquake Zone (URL 18)

	2022			2023		
	Labour force participation rate (%)	Employment rate (%)	Unemployment rate (%)	Labour force participation rate (%)	Employment rate (%)	Unemployment rate (%)
TR63	49,6	42,4	14,6	45,6	38,6	15,5
TRB1	48	44,1	8,1	47,2	43,9	7,2
TRC1	49,7	44,4	10,7	48,2	43,3	10,2
TRC2	42,5	37,7	11,5	43,2	38,6	10,8

It should be underlined that even before the earthquake, the disaster region stood out as a region where basic indicators such as employment and labour force participation rate were below the average of Turkey, while the unemployment rate was above the average of Turkey (ILO, 2023b). Therefore, the earthquake made the labour market in the region even more fragile.

When the distribution of employment by economic activities in the earthquake zone is analysed, it is observed that employment is mostly concentrated in low-skilled jobs such as agriculture, trade, textile and food products manufacturing (ILO, 2023b). The sector with the highest decrease in employment is the agriculture sector. Since the region provides approximately one sixth of Turkey's agricultural production, the significant destruction of the region has affected the agricultural sector the most (Demiralp, 2023). TR63 and TRC1 regions are the regions with the highest decrease in agricultural employment compared to previous year. Details of employment by sectors in the relevant region in 2022 and 2023 can be seen in Table 3.

Table 3. Employment By Sector In The Earthquake Zone (URL 18)

	2022			2023		
	Agriculture (%)	Industry (%)	Service (%)	Agriculture (%)	Industry (%)	Service (%)
TR63	18,3	25,1	56,7	15,2	26,3	58,4
TRB1	28,2	19,7	52,1	29	22,1	48,9
TRC1	15,2	33,6	51,2	10,9	35,7	53,4
TRC2	28,8	23,4	47,9	28,6	25,3	46,1

The decrease in agricultural employment in the earthquake region led to a decrease in agricultural employment throughout the country. According to national data, the share of agriculture, industry and services sectors in employment in 2022 was 15.8%, 27.7% and 56.5%, while it was 14.8%, 27.5% and 57.6% in 2023 respectively (URL 18). The fact that agriculture is a prominent sector in the earthquake region has intensified the impact of the earthquake on seasonal agricultural workers. The effects of the earthquakes on seasonal agricultural workers have also been quite severe. After the earthquake and aftershocks, it was found that many households that had not previously engaged in seasonal agricultural labour started to engage in seasonal

agricultural labour. This newly formed group had not lived in tents or earned their living through agriculture before. With the earthquakes, the debts of these households and their dependence on agricultural income increased. It has been determined that children in these households have started to become agricultural labourers and have moved away from education opportunities. It was observed that individuals who were previously engaged in agriculture turned to non-agricultural work (e.g. rubble removal and construction work) as a result of the decrease in agricultural production in the earthquake zone and the inability of farmers to make the necessary investment in their lands. Moreover, it is determined that many seasonal agricultural worker families migrated earlier than in previous years (Küçük et al., 2023, p.6-7).

A study reveals that in Hatay, Malatya, Adıyaman and Kahramanmaraş provinces, which were primarily affected by the earthquake, the labour market will be affected on a larger scale and the recovery process will take a longer time due to the high number of destroyed buildings especially in the provincial centre. According to the same study, the migration of qualified labour force from the region and their starting a new life and working in different cities will make it difficult for them to return to the region. This situation will lead to difficulties in the supply of employees to be employed in jobs requiring experience and qualifications in the relevant region (Öcal, 2023, p.10-11). Earthquakes caused significant damage to industrial facilities, some machinery and equipment became unusable, and those that were usable lost their physical stability and became in need of adjustment. In the reports published after the earthquake, it is emphasised that the biggest loss in industrial enterprises is the loss of labour force. In addition to the loss of lives in the region, the migration of the remaining labour force due to financial losses and psychological reasons caused a great loss of labour force. During the interviews, managers of industrial facilities reported that they could reach only one third of their labour force in the first month after the earthquake. Earthquakes affected the employment in Organised Industrial Zones in the related region. Employment in Organised Industrial Zones in the earthquake region is more than one fifth of the total employment in Organised Industrial Zones in Turkey. In addition to the loss of labour force, damage to transport, communication and electricity infrastructure negatively affected production. The biggest destruction in the earthquake zone occurred in Kahramanmaraş Organised Industrial Zone. Adıyaman Organised Industrial Zone suffered partial damage. It is revealed that other Organised Industrial Zones in the

region were less affected by the earthquake. Although the damages in large industrial facilities in the earthquake zone seem to be largely recoverable, it was stated that small-scale enterprises are facing serious damages (URL 19). In the earthquake region, many companies stopped production for a certain period of time and some of them reduced production. As it is known, Kahramanmaraş is a province in the earthquake zone, which has come to the forefront with its textile sector. Spinning factories suspended production for a while due to the earthquake. Hatay is also known as a province where iron and steel sector is developed. It was determined that the enterprises working in the iron and steel sector in Hatay also suspended production for a while due to the earthquake. Although it is difficult to predict the net effects of the earthquake on the regional economy and employment, it would be appropriate to say that Kahramanmaraş, Adıyaman and Hatay provinces will be more affected by the earthquakes in terms of labour market and employment. (Kenar, 2023, p.7). The earthquake deeply affected not only the producers but also the employees who survived and could continue to work. According to the results of the surveys conducted in June 2023 with garment and textile manufacturers in four major cities in the earthquake region, 33% of the manufacturers gave unpaid leave to their employees after the earthquake. The relevant firms did not provide any financial support to their workers. 48% of the respondents stated that they paid full salaries to their workers after the earthquake (Göçer&Bahçecik, 2023, p.3).

4.3. Other Impacts: Impacts on Gender Inequality, Informal Employment, Human Resources and Migration

The earthquake region is a region with significant gender differences in terms of labour force participation even before the disaster. Before the earthquake, the employment rate was 63 per cent for men and 28 per cent for women. Unemployment in the region is a more severe problem for women even before the disaster. The unemployment rate of women in the region before the earthquakes was approximately 15 per cent, while that of men was 11 per cent (URL 20). Earthquakes have deepened gender inequalities in the region. A study conducted by TEPAV reveals that the average employment rate of women in earthquake-affected provinces in the region is lower than the average in Turkey, and that women's employment has shrunk significantly, especially in districts with high damage. The study states that according to the SGK data of March 2023, the female employment rate in the earthquake zone

is 27.8 per cent, which is below the average of Turkey (33.6 percent). Moreover, the report highlights that labour force losses in the region are much higher for women than for men, with the sharpest loss occurring in Hatay, where the female labour force declined by over 70% (TEPAV, 2023b, p.8).When the individuals employed in the earthquake region are analysed by gender, it is observed that female employment has decreased more than male employment in the region. In TR63, TRB1 and TRC1 regions, the number of women employed in 2023 decreased compared to the previous year (Table 4). It is thought that the decrease in agricultural production due to the earthquake and the concentrated labour of women in the agricultural sector are the main reasons for this situation.

Table 4. Number Of Employed Individuals By Gender In The Earthquake Zone; Thousand People (URL 18)

Years	TR63		TRB1		TRC1		TRC2	
	Female	Male	Female	Male	Female	Male	Female	Male
2022	311	724	182	416	227	653	247	709
2023	260	704	172	413	219	659	262	715

One of the prominent features of the disaster area in terms of labour force is informal employment. According to national data, the rate of informal employment in the region in 2021 (39 %) is well above the average of Turkey (29 %). As mentioned earlier, the loss of working hours in the earthquake zone is 16 per cent and ILO has estimated that about 40 per cent of this loss involves informal workers (URL 16; URL 21). When the reasons for not being included in the labour force in the earthquake region are examined, it is found that the number of those who have no hope of finding a job and those who are able to start work but not looking for a job have increased (Table 5).

Table 5. Labour Force Situation In The Earthquake Zone; Thousand People (URL 18)

Years	TR63		TRB1		TRC1		TRC2	
	Discouraged workers	Available to work	Discouraged workers	Available to work	Discouraged	Available to work but not	Discouraged workers	Available to work

		but not seeking work		but not seeking work	workers	seeking work		but not seeking work
2022	70	59	89	25	46	27	141	14
2023	103	72	97	28	77	53	197	44

It is observed that the disaster in the earthquake region has significantly affected the human resources. Only the official migration of around 2 million people from the region has reduced the labour force potential. Besides, the pre-earthquake prevalence of unregistered employment in the region (39%) greatly reduces the impact of the employment protection measures put in place. Considering the fact that the deceased and injured population in the region will not be able to return to the labour force within a year, the effects of the disaster on the labour market are more clearly understood. On the other hand, the social service buildings of the services provided to disadvantaged groups such as the disabled, children, elderly and women suffered significant damages and the related damages significantly increased the vulnerability of these groups. Heavy damage of Directorates of the Labour and Employment Agency in the earthquake region (for example, Adıyaman and Kahramanmaraş Provincial Directorates of the Labour and Employment Agency were heavily damaged) affected the labour market negatively in the region (URL 20)

As it is known, the disaster area is a region where both Turkish citizens and a significant number of Syrian refugees resided before the earthquake. A research indicate that after the earthquake in the region, locals migrated to the cities where their relatives and relatives lived, while some Syrians living in the region returned to their country (Bozkurt, 2023, p.106). Before the earthquake, 13.5 million of the 14 million population in the earthquake zone lived in provincial and district centres (nearly 97%), while about half a million lived in villages and towns. Therefore, before the earthquake, a large part of the population was settled in provincial and district centres (URL 20). However, this settlement balance has changed with the earthquakes. After the earthquakes, migration to rural areas has also become quite widespread. Many people living in urban areas before the earthquake migrated to rural areas. Those who had single storey houses in rural areas opened their houses to their relatives, and more than one family resided in the same house. The earthquakes led to a significant demographic mobility in the region. Those

who continued to live in the cities affected by the earthquake had to struggle with problems such as shelter, access to clean water and hygiene. Especially Mersin province was faced with significant problems due to the influx of so many earthquake victims. Those who could not get used to the other regions to which they had migrated in the first months of the earthquake turned to the nearby provinces of Adana and Mersin after a certain period of time, thus these provinces experienced significant migration mobility (Sert et al., 2023). Considering that the earthquake zone has a significant surface area and the destruction is great, it is foreseen that an intensive return migration to the region will not be realised in a short time (Sipahioğlu Ökten, 2024, p.308). As in the case of Mersin, the problems that arise in the cities where migration is directed to reveal the following fact; people experience problems of employment not only in the regions where the earthquake occurred, but also in the places where migration mobility is directed and concentrated. Therefore, while the regions where the earthquake is felt more intensely emigrate, the non-earthquake regions are faced with employment problems that arise with more migration. Problems related to labour force should not be considered as problems specific to the region where the disaster occurred (Karatay Dilekli&Çilmi, 2024, p.327).

The earthquakes affected the individuals in the relevant region both physically and psychologically, and psychological disorders emerged in many individuals due to the trauma experienced after the earthquake. Earthquakes affected not only the people living in the region, but also the individuals working as disaster and aid workers in the region (Işıklı&Tüzün, 2017). Search and rescue teams, health personnel, security forces such as police & gendarmerie, and psycho-social support workers such as psychologists were also exposed to traumatic situations even though they did not experience the disaster, since they were in one-to-one contact with the people affected by the disaster. As revealed by the studies in the literature, these employees have encountered various psychological problems, especially traumatic stress (Arasan Özbay, 2015).

5. CONCLUSION

The twin earthquakes of 6 February 2023, which affected a very large region, deeply shook the economic structure of Turkey. These earthquakes caused significant loss of life, injuries and destruction especially in 11

provinces. In addition to the loss of life, injuries and destruction, the infrastructure of the region affected by the earthquake was significantly damaged. Many houses and workplaces were destroyed and many houses and workplaces were severely damaged. Turkey, who has a fragile macroeconomic structure, faced with high inflation and unemployment rates, especially after the Covid 19 pandemic, suffered a significant blow with twin earthquakes. Since the earthquake zone generates about one tenth of Turkey's total GDP and one sixth of its agricultural output, Turkey has suffered significant production losses due to earthquakes. Expenditures increased, the supply-demand balance was disturbed, the general level of prices increased, in short, macroeconomic indicators deteriorated seriously. The earthquake also had a negative impact on the country's foreign trade. Such devastating twin earthquakes, which have caused significant loss of life and destruction, have of course had very negative effects on the labour market. As the International Labour Organization statistics reveal, earthquakes caused significant losses in working hours, and the losses in working hours were particularly sharp in Malatya, Hatay, Adıyaman and Kahramanmaraş provinces. As national statistics reveal, the earthquakes significantly decreased labour force participation and increased unemployment in the region. Since employment in the earthquake region is close to one-sixth of the total national employment, the earthquakes have significantly affected the labour market not only in the region but also in the country in general. TR63 region including Hatay, Kahramanmaraş and Osmaniye, TRC1 region including Gaziantep, Adıyaman and Kilis, TRB1 region including Malatya, Elazığ, Bingöl and Tunceli are the regions where basic labour force indicators deteriorated significantly due to earthquakes compared to the previous year. When employment was examined in the context of sectors, it was determined that the highest employment loss belonged to the agricultural sector. TR63 and TRC1 regions stand out as the regions that experienced the greatest loss in agricultural employment. Loss of life and migration have significantly reduced the workforce in the region, and especially the migration of qualified workforce from the region has also significantly reduced the quality of the workforce. The qualified workforce that migrated from the region was reluctant to return to the region after the earthquakes and started a new life in different cities. Therefore, there have been difficulties in the supply of labor for jobs that require qualifications and experience (Öcal, 2023). Earthquakes also damaged industrial facilities, and a significant part of the machinery and

equipment essential to industrial activities became unusable in the provinces that were severely affected by the earthquake. In the earthquake region, Kahramanmaraş province is one of the leading provinces in the textile sector, and Hatay province is one of the leading provinces in the iron & steel sector. As Kenar (2023) revealed, production was suspended for a while due to earthquakes in these provinces. Earthquakes have also deepened gender inequalities in the region, and it has been determined that women's employment has decreased, especially in the provinces most affected by the earthquake. TR63 region is one of the regions where the number of women employed decreased significantly after the earthquake. After the earthquakes, migration to rural areas and different provinces increased. In this context, Adana and Mersin provinces stand out as the provinces that receive the most immigration. Studies in the literature assert that the relevant cities have faced various socio-economic problems due to intense migration (Sert at al.,2023; Karatay Dilekli&Çilmi, 2024) . The twin earthquakes caused not only great economic devastation but also significant psychological devastation. In addition to the local people who experienced the earthquake, individuals who came to the region for aid and rescue after the earthquake also faced significant psychological damage.

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CHAPTER 11

THE ROLE OF THE SLOW MOVEMENT IN SUSTAINABLE DEVELOPMENT: A SWOT ANALYSIS APPROACH

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1. Introduction

The onset of the Industrial Revolution (IR) resulted in the beginning of an extraordinary era of economic growth spanning two and a half centuries, unlocking vast resources and improving living standards across various parts of the world. However, this progress was uneven, leaving billions in severe poverty and placing immense pressure on ecological systems (Blampied, 2021; Anas et al., 2024). One of the most significant consequences of IR is the overconsumption of natural resources. The intensive use of coal, oil, and other fossil fuels has increased air and water pollution, leading to ecosystem degradation. Factory waste has contaminated water sources such as rivers and lakes, posing threats to both human health and natural ecosystems. Additionally, the rapid urbanization driven by industrialization has resulted in reduced green spaces, loss of biodiversity, and destruction of natural habitats. Moreover, climate change is directly linked to the rise in greenhouse gas emissions that have emerged as a consequence of the IR (Peacock, 2008; Malik et al., 2024). These negative impacts have brought environmental and sustainability concerns to the forefront of global discussions.

The increase in environmental awareness during the 1970s, particularly following the Stockholm Conference in 1972, highlighted these issues (Baste & Watson, 2022). These developments laid the groundwork for the sustainable development approach introduced in 1987 (Roseland, 2000). The United Nations (UN) defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Our Common Future Report, 1987). Sustainable development, therefore, emphasizes a model of progress that integrates environmental, social, and economic dimensions, incorporating principles such as the efficient use of resources, equitable income distribution, and environmental protection (Roseland, 2000).

Conversely, the slow movement, which emerged in Italy in the 1980s, was a reaction against the accelerated pace of modern life (Schneider, 2008). In today's world, speed dominates various aspects of life, from work to social relationships, often negatively impacting individuals' quality of life. The slow movement challenges the pressures created by this rapid pace and advocates for a more meaningful and fulfilling lifestyle. By critiquing consumption habits, it encourages a focus on human relationships, nature, culture, and individual well-being. In this context, the slow movement, with its environmentally friendly and human-centered approach, can be considered a valuable tool for achieving sustainable development (Jung et al., 2024).

This book chapter aims to explore the role of the slow movement in sustainable development. To achieve this, it begins with a literature review, followed by an analysis of the slow movement's role in sustainable development using a SWOT framework. Through this analysis, the strengths, weaknesses, opportunities, and threats associated with the slow movement's contribution to sustainable development will be identified. The remainder of the chapter is structured as follows: First, the definition of sustainability, its historical development, various types of sustainable development, and its associated goals are discussed under the heading of sustainable development. Next, the concept of slowness is defined, and its various forms are examined. Subsequently, the research methodology is outlined, and previous studies employing SWOT analyses to relate sustainable development to different variables are reviewed. The chapter concludes with a summary of findings. The author expects this chapter to contribute theoretically to the relevant literature.

2. Literature Review

2.1. Sustainable Development

The Oxford Dictionary of English defines sustainability as "the property of being environmentally sustainable; the degree to which a

process or enterprise is able to be maintained or continued while avoiding the long-term depletion of natural resources" (Oxford English Dictionary, 2024). The literature generally agrees that this concept was first applied in fields related to renewable resources, such as agriculture, forestry, and fisheries, with its roots tracing back to the early 18th century. Although the origins of sustainability extend back several centuries, it has only become a prominent topic on national agendas within the past half-century**.** From the 1970s onward, sustainability began to be primarily discussed within the context of environmental concerns. The concept first entered mainstream discourse related to development through the "Our Common Future" report, prepared by the UN World Commission on Environment and Development in 1987. This report significantly contributed to the widespread popularization of the term in subsequent years. In the report, sustainability was contextualized within sustainable development, defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Şen et al., 2018). Sustainable development is understood to consist of three main components (Tabares et al., 2021).
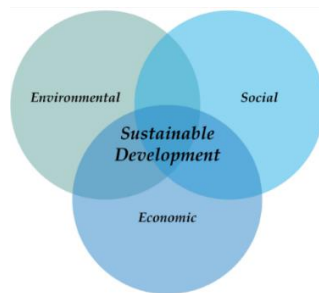

Figure 1. Dimensions of sustainable development

(**Source:** Tabares et al., 2021)

As can be seen in Figure 1, sustainable development consists of three basic components: economic sustainability, which focuses on promoting growth without depleting natural resources or compromising

the ability of future generations to meet their needs; environmental sustainability, which emphasizes the protection of the natural environment and the management of biodiversity to ensure ecosystems remain healthy; and social sustainability, which aims to improve the well-being of communities through fair, inclusive, and equitable practices while safeguarding social justice and human rights. For sustainable development to be achieved, all three dimensions must be balanced, and none of them should be overlooked (Kaya & Kaya, 2013).

On September 25th, 2015, 193 member states of the United Nations (UN) agreed on a set of goals aimed at eliminating poverty, safeguarding the environment, and ensuring peace and prosperity for all as part of the new Sustainable Development Agenda. This framework was organized around 17 Sustainable Development Goals (SDGs). The "2030 Agenda" outlines specific, measurable targets for the 17 SDGs to be achieved within the following 15 years. The SDGs are shown in Figure 2 below (Lamichhane et al., 2021).

Figure 2. UN Sustainable development goals

(**Source**: Sachs et al., 2017; Lamichhane et al., 2021).

The brief explanations of these 17 goals are summarized as follows (Halkos & Gkampoura, 2021; Kesici et al., 2024):

❖ **Goal 1: No Poverty:** Ensuring everyone has access to basic needs such as food, shelter, and healthcare.

❖ **Goal 2: Zero Hunger:** Guaranteeing access to sufficient and nutritious food for all.

❖ **Goal 3: Good Health and Well-Being:** Promoting physical and mental health for all individuals worldwide.

❖ **Goal 4: Quality Education:** Ensuring inclusive and equitable education for lifelong learning opportunities for all.

❖ **Goal 5: Gender Equality:** Achieving equality between men and women across all aspects of life.

❖ **Goal 6: Clean Water and Sanitation:** Ensuring everyone has access to clean water and proper sanitation.

❖ **Goal 7: Affordable and Clean Energy:** Providing sustainable and affordable energy to all communities.

❖ **Goal 8: Decent Work and Economic Growth:** Fostering inclusive economic growth and creating fair employment opportunities.

❖ **Goal 9: Industry, Innovation and Infrastructure:** Developing resilient infrastructure, advancing innovation, and supporting sustainable industries.

❖ **Goal 10: Reduced Inequalities:** Reducing disparities and ensuring equal opportunities for everyone.

❖ **Goal 11: Sustainable Cities and Communities:** Building cities that are inclusive, safe, and environmentally sustainable.

❖ **Goal 12: Responsible Consumption and Production:** Encouraging efficient use of resources and reducing waste.

❖ **Goal 13: Climate Action:** Taking urgent measures to combat climate change and its impacts

❖ **Goal 14: Life Below Water:** Protecting oceans and marine ecosystems for the benefit of future generations.

❖ **Goal 15: Life on Land:** Conserving terrestrial ecosystems and safeguarding biodiversity.

❖ **Goal 16: Peace, Justice and Strong Institutions:** Promoting peaceful societies and ensuring effective, accountable institutions.

❖ **Goal 17: Partnerships for the Goals:** Enhancing global cooperation to achieve the Sustainable Development Goals.

Since a SWOT analysis will be conducted in this chapter to evaluate the impact of the slow movement on achieving the aforementioned goals, the next section will elaborate on the concept of the "slow movement."

2.2. Slow Movement

Globalization encourages individuals to work harder, live faster, produce more, and consume even more (Ozturk et al., 2011; Kucukergin & Ozturk, 2020). This rapid pace leads to environmental degradation and replaces the cultural elements that once enriched socialization and life experiences, which were passed down through generations, with standardized and often mundane alternatives. The "Slow Movement," which has emerged in recent years, criticizes the fast-paced nature of modern life and advocates for a cultural shift that challenges speed and modern consumption patterns across various areas, including food, drink, economics, traffic, journalism, and fashion. Initially focused on topics such as slow food, slow cities, slow fashion, slow journalism, slow media, and slow travel, the Slow Movement now emphasizes the importance of slowing down all aspects of daily life. The movement began with the slow food initiative, which emerged in the 1980s as a response to the growing trend of "fast food" associated with industrialization. Following the success of slow food, the slow city movement was introduced, with the Slow Cities organization now representing 225 cities in 30 countries. This movement focuses on preserving local cultural elements in the face of globalization,

promoting environmental protection, and implementing sustainable policies for local development (Özmen et al., 2016).

Slow Food: The Slow Food movement began in Bra, Italy, in the 1970s as a response to the rise of industrialized food and its impact on local businesses and farms. Carlo Petrini officially launched the movement in 1989, and it has since grown to include 100,000 members across 132 countries. Slow Food advocates sustainable and ethical food production that respects the environment, animals, and workers. It promotes local, traditional, and seasonal food while emphasizing the value of food quality over price. The movement has several key initiatives, including the Ark of Taste, which aims to preserve biodiversity by protecting rare food species and their traditional production methods. Slow Food also fosters education through "convivia" local groups that organize food events to raise awareness about taste and food culture. It challenges the dominance of mass-produced food by encouraging consumers to prioritize quality and pay higher prices for sustainable options. Furthermore, Slow Food's origins are closely tied to local movements in Italy, where groups sought to protect their food heritage from the threats posed by industrialization. The movement gained significant momentum through protests against the spread of fast food, most notably during an anti-McDonald's rally in 1986. Today, Slow Food has profoundly influenced global food culture by advocating a return to local, traditional, and rich food practices (Heitmann et al., 2011; Simonetti, 2012; Bekar et al., 2015).

Slow Cities (Cittaslow): Cittaslow, which translates to "Slow City," is derived from the Italian word "Citta" (city) and the English word "slow." This concept, originating from the Slow Food movement, is an association of cities aimed at preventing the standardization of urban structures caused by globalization and preserving local identities. Globalization often leads to cities becoming increasingly similar, resulting in a loss of their unique local identities. Cittaslow counters this homogenization by preserving the

traditional characteristics, tranquility, and local values of cities, promoting a lifestyle that emphasizes local and sustainable living as an alternative to the culture of fast consumption (e.g., fast food). This approach seeks to mitigate the effects of rapidly expanding global capital by incorporating the Slow Food philosophy into urban design. Cittaslow has adopted the snail as its logo because it symbolizes the core values of slowness and rest (See Fig. 3). The snail, moving at its own deliberate pace and carrying its home wherever it goes, embodies the principles of reason and composure. In the context of Cittaslow, slowness is elevated to a fundamental virtue, representing a preference for nature over the fast-paced demands of modern civilization. Expanding on this idea, Cittaslow defines slowness as prioritizing nature over the pressures of industrialized life (Keskin, 2011; Yurtseven & Kaya, 2011; Hatipoğlu, 2015).

Slow Travel: Slow travel is defined as a travel philosophy that emphasizes the quality of the journey rather than the speed of reaching the destination. A primary advantage of slow travel lies in its potential to offer significant environmental benefits. Unlike fast travel modes, such as air travel or driving which contribute to high levels of greenhouse gas emissions and often detach travelers from the journey itself slow travel promotes alternative, eco-friendly transportation options. These include walking, cycling, animal-powered transport, and mass transit systems (such as buses and trains), selected based on their ecological impact (Conway & Timms, 2012). This approach appeals to travelers who prioritize sustainable development (Mavric et al., 2021).

Figure 3. Logo of The Cittaslow Movement

(**Source:** Cittaslow, 2024).

3. Methodology

In this study, a literature review is conducted on research examining the relationship between the slow movement and sustainable development. Subsequently, a SWOT analysis is performed on the slow movement in sustainable development to identify its strengths, weaknesses, opportunities, and threats (Leigh, 2009). SWOT analysis is one of the methods commonly used in various studies (e.g., Mondal, 2017; Pereira et al., 2021; Navarro-Martínez et al., 2020; Reihanian et al., 2012; Uhunamure & Shale, 2021; Mostaghimi & Rasoulinezhad, 2022; Nilashi et al., 2023).

Moreover, numerous SWOT analysis studies have been conducted to explore the relationship between sustainable development and various variables. For instance, Palomares et al. (2021) examined the relationship between artificial intelligence (AI) technologies and the SDGs, evaluating both progress and future potential. Their study began with a review of existing literature, followed by a SWOT analysis to assess AI technologies in relation to each SDG. Similarly, Bonfante et al. (2021) conducted a literature review on sustainability aspects within the Rare Earth Magnets

(REM) supply chain and their contributions to achieving the SDGs. Their research included a complete analysis of 44 peer-reviewed publications, followed by an evaluation of strengths, weaknesses, opportunities, and threats. Likewise, Xiao et al. (2020) carried out a detailed examination of waste management and Waste-to-Energy (WTE) systems in China. Their study included a comprehensive review of various waste types and corresponding management strategies. Additionally, they employed a SWOT analysis to evaluate the effectiveness of WTE technologies in China.

Building on the above studies, this research follows a similar approach, adopting the SWOT analysis method.

4. Findings

As a result of the literature review (e.g., Pink, 2008; Semmens & Freeman, 2012; Georgic et al., 2013; Yalçın & Yalçın, 2013; Şahin & Kutlu, 2014; Park & Kim, 2016; Kömürcü et al., 2016; Zawadzka, 2017; Deniz, 2017; Kartal, 2019; Demir, 2021; Sousa et al., 2021; Walker et al., 2021; Öztürk et al., 2023), a knowledge base was initially established, and the collected information was subsequently subjected to analysis. Based on this analysis, the SWOT related to the impact of the slow movement on sustainable development is presented in Figure 4 below.

❖ **Strengths:** The Slow City movement (Cittaslow) fosters the support of local economies. In municipalities that are part of the Cittaslow network, initiatives are implemented to promote the development of local products and vendors. Additionally, these municipalities adopt policies aimed at environmental protection. Furthermore, social policies introduced in Slow Cities enhance social solidarity. The Slow Food movement also plays a significant role in promoting local food. Lastly, Slow Cities implement policies to preserve cultural heritage (Semmens & Freeman, 2012; Şahin & Kutlu, 2014; Ekinci, 2014; Presenza et al., 2015).

❖ **Weaknesses:** The implementation of the Cittaslow movement in small settlements may face challenges due to limited natural and financial resources, which can impede necessary investments for sustainable development. In such areas, infrastructure deficiencies may hinder the provision of essential services, including transportation, energy, and water, all of which are crucial for achieving sustainable development. Additionally, insufficient local ownership of the Cittaslow movement by the community, combined with a lack of local support, can further complicate the realization of sustainable development objectives. Furthermore, the absence of widespread support for the Cittaslow movement may create challenges in securing funding and ensuring the long-term sustainability of development projects (Özmen & Can, 2018; Yüksel et al., 2020; Kurnaz & İpar, 2020).

❖ **Opportunities:** Environmental awareness is steadily increasing on a global scale, encompassing local populations, governments, and visitors to slow cities. Environmental challenges, particularly the climate crisis, are expected to further amplify this awareness. In this context, the concept of "slowness," which is inherently aligned with environmentally sustainable practices as exemplified by slow cities is anticipated to gain greater prominence. Consequently, the significance of slow cities is likely to rise. Moreover, Cittaslow cities are particularly well-suited for ecotourism due to their emphasis on preserving natural beauty, traditional lifestyles, and local cultures. As the demand for ecotourism continues to grow, slow cities are expected to gain even more recognition. Finally, as part of the broader slowness movement, slow cities actively collaborate with international organizations, fostering partnerships aimed at environmental protection and cultural heritage preservation (Benli, 2013; Hekimci, 2015).

❖ **Threats:** The world's population is rapidly increasing. As a result, the population in slow cities may also grow significantly in the future, potentially hindering the implementation of sustainable development policies in these areas. Furthermore, with globalization, the importance of local cultures may gradually diminish, which is contrary to the goals of sustainable development. The escalating impacts of climate change could undermine the progress achieved through slow city policies. Finally, governments may reduce their support for slow cities in the future, potentially diminishing the significance of these cities, which play a crucial role in sustainable development (Ergüven, 2011; Coşar, 2013; Özmen & Can, 2018; Coşar, 2019).
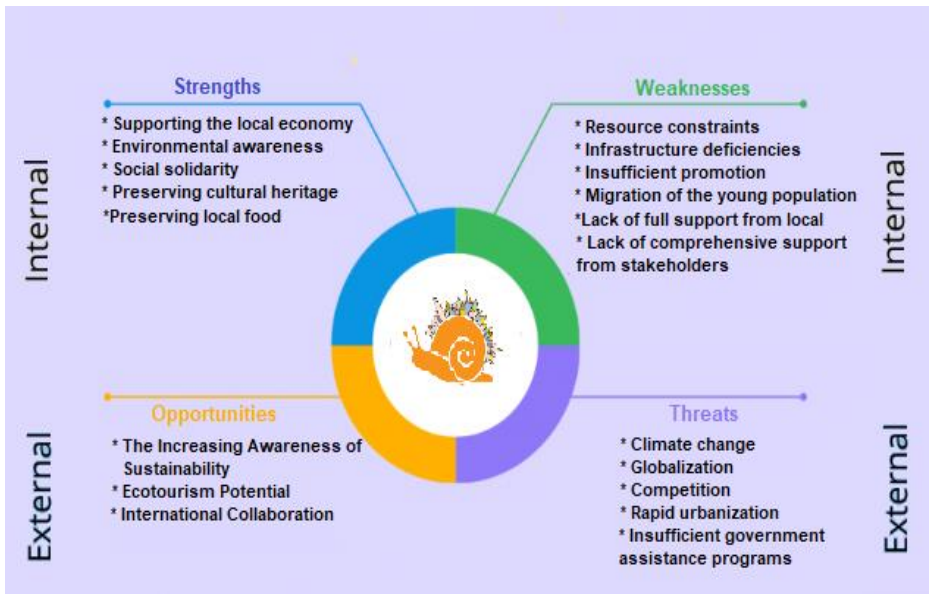

Figure 4. Strengths, Weaknesses, Threats and Opportunities in the Impact of Slowness Movement on Sustainable Development

Source: Compiled by the author.

5. Conclusion

This book chapter aimed to explore the role of the slow movement, with a particular focus on the Cittaslow (Slow City) initiative, in promoting sustainable development. By conducting a comprehensive literature review and SWOT analysis, this study identified several critical insights into the strengths, weaknesses, opportunities, and threats associated with the slow movement's contribution to sustainable development.

The slow movement's greatest strength lies in its ability to foster local economic development, promote environmental protection, and enhance social cohesion within slow cities. These cities prioritize sustainable practices, such as supporting local food movements and preserving cultural heritage, both of which are fundamental aspects of sustainable development. The alignment of these values with ecological preservation and community engagement offers an effective strategy for mitigating some of the negative environmental impacts caused by industrialization (Presenza et al., 2015).

However, it is important to acknowledge that the contribution of slow cities to sustainable development also faces certain weaknesses and threats. As such, proactive measures must be implemented to address these challenges and ensure the long-term success of the slow movement.

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CHAPTER 12

FINANCIAL SYSTEM, FUTURES MARKETS AND DERIVATIVE INSTRUMENTS

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INTRODUCTION

Since people are social beings, they feel the need to interact and communicate with others (Diktaş and Yücekaya, 2023:113). Interaction also takes place through the exchange of needed goods and services. Consumer behaviour starts with the feeling of a need and ends with examining products, doing research, examining and comparing products for the need, and making a purchase decision (Elagöz and Yücekaya, 2019:96). The financial system is a mechanism that brings together savers and individuals and institutions that want to invest in an economy. The main components of this system are financial markets, financial institutions and financial intermediation services (Mishkin, 2019). The efficient functioning of the financial system ensures economic growth and optimises resource allocation. Financial markets are places where capital suppliers and demanders come together. These markets include platforms where stocks, bonds, foreign exchange and various derivative products are traded (Fabozzi and Modigliani, 2020). For example, while the stock market helps companies provide equity financing, the bond market fulfils the need for borrowing. Financial institutions include banks, insurance companies, investment funds and other financial intermediaries. These institutions facilitate the transfer of funds, reduce the risks of market participants and contribute to the stability of the economic system (Levine, 2005). Banks, in particular, play an important role through deposit collection and lending activities. Basically, the financial system ensures the efficient allocation of resources. It collects funds from savers and directs these funds to productive investments. It also provides critical services such as risk management and liquidity provision (Levine, 1999). The financial system is an indispensable element for economic development and stability. The existence of an efficient financial system supports the efficient utilisation of resources

and promotes economic growth. Therefore, strengthening the financial system and making regulatory mechanisms effective are critical for sustainable development goals. In order to achieve this, the diversity of financial instruments is also important

As one of the critical components of the financial system, futures markets are of great importance in terms of both risk management and economic efficiency. Futures markets are organised markets where contracts are traded that condition the purchase and sale of goods or financial assets to take place at a future date (Hull, 2006). These markets play a critical role especially in risk management and reducing price uncertainty. Futures markets offer a complementary structure to spot markets. Futures contracts traded in these markets are organised according to a certain standard. The contracting parties agree on the price and quantity as of the date of the agreement and the transaction is executed at a future date (Kolb and Overdahl, 2010). Futures contracts serve two main purposes: hedging and speculation. Hedging provides protection against price fluctuations, especially for firms operating in agriculture, energy and finance sectors. Speculation, on the other hand, encourages investors who aim to profit from price movements to be active in the market (Chance and Brooks 2010). The role of futures markets in the financial system is to enhance market efficiency. These markets offer investors and businesses flexibility in managing cost and income fluctuations. In addition, the functioning of these markets has a positive impact on the economy by increasing the overall liquidity and information flow in financial markets (Chance and Brooks, 2010). Regulation and development of futures markets are crucial for the healthy functioning of the economic system

Derivatives, on the other hand, basically refer to financial contracts that are traded based on the future price of an asset. The value of these instruments is determined by the price movements of

the underlying asset (Hull, 2006). Derivatives markets are used extensively for various purposes such as hedging, speculation and arbitrage. Main categories of derivative instruments: Futures, Options, Swaps, Swap Contracts, Forward Contracts

1. FINANCIAL SYSTEM

The financial system is the whole system composed of fund suppliers, fund demanders, financial instruments and intermediary institutions (Ceylan and Korkmaz, 2000:1). In the simplest sense, the basic function of the financial system is fund transfer. There are four basic economic units in the economy: households, enterprises, government and foreigners. There are 3 possible economic situations for these units. These are, respectively, balanced budget situation, budget surplus situation, budget deficit situation. In a balanced budget situation, revenues are equal to expenditures. In case of budget surplus, revenues are more than expenditures, while in case of budget deficit, expenditures are more than revenues. Those who are in budget surplus are also called those who have surplus funds, and those who are in budget deficit are also called those who need funds. Thus, in order to realise economic activities in the economy, it is necessary to bring together those who have surplus funds and those who need funds. Funds flow from those with surplus funds to those in need of funds through financial assets (instruments) that constitute the financial system and with the help of a number of financial intermediaries. Financial assets (instruments) are written documents that represent a partnership right or a receivable on the transferred funds during the transfer of purchasing power. There are many financial investment instruments that differ from each other according to the nature of the contracts underlying the transfer of funds in financial markets, their duration or marketability, the characteristics

of the owner or issuer, the guarantee and the level of income to be provided (Doğukanlı and Canbaş, 2001:7). These instruments, also called financial assets, are called "securities" or "paper" in capital markets. These are share certificates and bonds. Apart from these two instruments, documents documenting ownership are also considered as financial assets. These types of financial assets, called "hybrid financial assets" or "derivative financial assets", are also traded in capital markets. These financial assets have the characteristics of stocks and bonds or are financial assets issued for the purpose of trading on bonds and stocks. Some of the financial assets traded in the money market are treasury bills, certificates of deposit and financing bills (Sarıkamış, 2000:6). Economic units that spend more than their incomes in financial markets are called fund users, while those that spend less than their incomes are called fund providers. Here, the environment where those who supply funds and those who demand funds meet is the financial market.

1.1. Financial Markets

Financial markets are markets where people with excess savings make their savings available to people with a deficit in savings. The exchange of funds in these markets takes place when those who demand funds give a document to those who supply funds. For this reason, financial markets are the markets in which the purchase and sale transactions of these documents in the form of negotiable instruments, which are expressed as financial instruments (Ceylan and Korkmaz, 2000:1)

1.1.1. Functions of Financial Markets

Financial markets have functions such as ensuring the flow of funds from suppliers to demanders, increasing the liquidity of assets, price formation, encouraging and increasing savings, thus ensuring capital accumulation and enabling the effective use of national funds,

reducing the costs of changing hands, reducing transaction costs (Konuralp, 2005:15). These functions are

- Ensuring the flow of funds from those who supply to those who demand: financial markets cause idle, disorganised and small savings to come together by finding a safe environment that provides profit and thus increase the supply of funds in the economy. In addition, the acquisition and utilisation of funds is spread to a wider base at the macro level. For those who supply funds, alternative sub-markets emerge and the possibility of allocating savings among these markets arises. Opportunities for both fund suppliers and fund demanders to benefit from the market increase

- Liquidating securities: The second economic function of financial markets is to provide a convenient mechanism for investors who wish to sell financial assets. In this way, financial markets provide liquidity, which is important for investors when conditions are difficult or when it is advantageous to sell.

- To establish the price of securities: Since financial markets bring buyers and sellers face to face, the price of the financial asset traded is formed in these markets.

- To encourage and increase savings, thus capital accumulation and enabling the efficient use of national funds

- Reduced transaction costs: There are basically two types of costs: The first one is the research costs, which are determined by the time spent by a person who intends to buy or sell a financial instrument to find a counterparty and the announcement or advertisement expenditures made in this regard. In an organised financial market, such research costs are reduced. The second is the cost of obtaining the information necessary to buy or sell the financial In an

efficient financial market, since the price of a financial asset includes the information available to all market participants, the cost of obtaining information will be considerably reduced.

1.1.2. Types of Financial Markets

Financial markets are a group of markets consisting of many interconnected sub-markets. It is possible to classify financial markets according to different criteria. In this case, it is possible to classify financial markets spot and futures markets according to their degree of organisation, according to the transactions performed in the market, according to the financial instruments used, according to their national and international nature, according to the delivery and payment terms (Doğukanlı and Canbaş, 2001:7).

1.2. Financial Institutions

One of the elements of the financial system is financial institutions financial intermediaries. Because it is often impossible for economic units demanding and supplying funds to meet directly. Thus, there is a need for various financial institutions to accelerate the flow of funds between these two units (Doğukanlı and Canbaş, 2001:113)

Financial institutions are organisations whose main assets are largely of financial instruments, whose activities are concentrated on these instruments and thus, they generate their income mainly from transactions related to financial instruments. The most important contribution of financial intermediaries to the economy is to transfer the flow of funds regularly and cheaply from savers to end users or entrepreneurs who want to finance their projects (Ceylan and Korkmaz, 2000:21). Apart from this, the services and benefits provided by financial intermediaries or financial institutions to those who demand and supply funds are as follows To reduce the cost of funds, To reduce and distribute risk through diversification, To

harmonise maturity differences, To make maturity adjustments, To make quantity adjustments, To provide financial advisory services.

1.3. Financial Assets(Instruments)

In return for the funds they transfer to fund demanders, fund providers receive a document indicating their receivables or partnership rights arising from this exchange. This document is called "Financial Instrument", "Financial Investment Instrument" or "Financial Asset". Financial instruments represent a certain purchasing power and are created by fund demanders and given to fund holders in return for their funds (Doğukanlı and Canbaş, 2001:13). The main financial assets are banknotes, deposit books, commercial papers, insurance policies, pension contracts and capital market assets; , bonds, profit-loss sharing certificates, participation redeemable shares, non-voting shares, financial bonds, bank bonds and bank guaranteed bonds, income partnership bonds, housing certificates and real estate certificates, securities investment fund participation certificates, asset-backed securities, deposited securities certificates, purchase and sale of securities with the commitment to repurchase or sell (repo and reverse repo), derivative financial instruments; futures contracts, forward contracts, option contracts, swap transactions (Doğukanlı and Canbaş, 2001:15-23).

2. FUTURES MARKETS, DERIVATIVE INSTRUMENTS

Derivatives are products whose prices depend on the price of another product. In other words, a derivative product is a financial asset whose value at maturity or within maturity is determined by the price of the asset subject to the contract (Ceylan and Korkmaz, 2000:178). Derivative instruments were first introduced with agricultural products. Especially the risks inherent in agriculture initiated a hedging movement among farmers (Çıtak, 2003:84-92).

2.1. Historical Development of Derivatives Markets

The Anatolian sage Thales of Miletus, who lived in the 5th century BC, combined his knowledge of astrology and mathematics to predict that the next olive harvest would be very good. He signed an agreement with all olive pressing workshops in Miletus and its neighbourhood in return for a deposit.

the workshops will work for him. Harvest time comes, Thales was not wrong; the crop is very good. The demand for olive workshops increases rapidly. Thales makes a lot of profit by renting out the workshops he had previously closed at very high prices. In fact, what Thales does is to realise the option sale of the olive harvest. He foresaw the future by blending his knowledge with his expertise; he made the right decisions at the right time and eventually turned his investment into profit. Futures been used in agricultural products since the Middle Ages. In order to avoid the price risk they might face due to excess supply, farmers sold their crops before harvesting. Throughout the ages, the futures market has developed and added financial futures to its products (İşyatırım, 2004:75)

The first applications of futures contracts in the simplest sense emerged in Japan in 1697. Rice producers issued certificates of receipt by showing the rice they produced as collateral (Kayacan et al., 2010:439).

While the first organisation that can be considered as a market in the world was the Dojimina Rice Commodity Exchange established in Osaka in 1730, the first organised futures market was established in Chicago, which was a trade centre at that time, in 1848 within the body of CBOT (Chicago Board of Trade) (Kayacan et al., 2010:439). In 1919, with the establishment of the Chicago Merchantile Exchange (CME), where various products were traded, futures transactions moved to an institutional structure and the trading conditions of the

contracts prepared between traders and farmers were put into a legal order (www.oyakyatırım.com).

Financial futures contracts, on the other hand, have become a risk for investors due to the fluctuations in interest rates and exchange rates as a result of the abandonment of the Bretton Woods system (the agreement that was the source of the policy of pegging the currencies of countries to each other) in 1972.

The International Money Market (IMM) emerged with the aim of providing hedging against interest rate and exchange rate risk. In order to meet this need of investors, the CBOT established the IMM - International Monetary Market in in the USA, a market where futures contracts for seven foreign currencies would be traded. The first futures contracts written on a foreign currency

The transaction agreement was recorded in 1973 (Kayacan et al., 2010:439). The gold standard was applied uninterruptedly in the world from the 1870s until the beginning of the First World War. With the outbreak of the First World War, the gold standard suspended. Due to the difficulties brought about by the war economy, the dependence of certain currencies on gold was removed and their free fluctuation was ensured. Countries were impatient to switch to the gold standard again. As soon as the war ended, the gold standard was restored. However, the Great World Depression of 1929 caused countries to exit the gold standard one by one and hastened the collapse of the gold standard. After the Second World War, there was a need to establish an international commercial and financial system that would facilitate the repair of the economies destroyed in the war. The Bretton Woods system was established in such an environment (Seyidoğlu, 1996: 495).

The Bretton Woods System, created in 1944 and based on fixed exchange rates, collapsed in 1973 when the currencies of the major industrialised countries were floated. According to this system,

IMF members other than the USA had defined the value of their currencies in dollars at the official exchange rate. The USA, on the other hand, had a privileged situation. It did not peg the dollar to another country's currency, but to gold at $35 per ounce: $35 per ounce of gold. Since each national currency had a dollar parity and the dollar was linked to gold at a fixed price, all national currencies indirectly had a "gold parity". The first futures contract based on interest rates was written and recorded on "GNMA Certificates" in 1975. (GNMA: A security issued under the guarantee of the state National Mortgage Association in the USA and collateralising a portfolio of mortgage bonds (Kayacan et al. 2010:440). Futures Index Contracts, on the other hand, emerged in order to protect investors from stock price risk and were first introduced in 1982 by the Kansas City Board of Trade in the USA. Market participants' search for derivative instruments continued to increase and the first option contracts were introduced in the early 1980s with technological developments. In the 1990s and 2000s, derivative contracts developed rapidly and the products subject to derivative instruments have become quite diversified. Financial futures such as Treasury Bills, Eurodollar deposits and currencies emerged after the classical commodity futures. Such financial futures are products of the 1970s, when the Bretton Woods Agreement collapsed and currencies began to move freely. In the 1980s, a new type of financial futures contract was created. This new contract on an index of stock markets.

2.2. Development of Derivatives Markets in Turkey

Until the 1980s, Turkey applied an inward-oriented and import-substituting industrialisation model that was closed to external, in other words, international competition. During this period, the prices and interest rates of agricultural goods were determined by the state, fixed exchange rate system was applied in foreign exchange, and free buying and selling of foreign exchange was

prohibited. Istanbul Stock Exchange (ISE) The Istanbul Stock Exchange was established on 26 December 1985 and became operational on 3 January 1986 in order to ensure the trading of securities with confidence and stability (www.imkb.gov.tr).

In an economy where agricultural product prices, interest rates and foreign exchange prices are under state control and determined by the state and there is no organised stock exchange, derivatives markets are not needed since there is no price variability and therefore no risk. Futures markets, where derivative instruments are traded, are markets that emerged out of necessity in economies with sufficiently developed spot markets. Therefore, the Turkish economy has found an environment for the development of the spot market after 1980 with the effect of the decisions taken and the liberalisation policies implemented. With the liberalisation of prices, the adoption of an open system open to international competition, the adoption of an export-oriented industrialisation model, restrictions on foreign trade were removed and foreign trade policy was gradually liberalised. Therefore, more emphasis was given to the determinism of market forces in resource allocation. However, factors such as high rates of inflation and the lifting of restrictions on foreign exchange increased the risks in the economy. The development of the banking system and the the ISE led to the development of financial instruments and the for risk management.

Nevertheless, the establishment and development of futures markets still took time. Firstly, the Central issued the Circular No. 2 on the Decree No. 28 on the Protection of the Value of Turkish Currency, which was published in the Official Gazette dated 29.12.1983. Futures markets, on the other hand, entered the agenda of Turkey in 1989 during the sixth five-year development plan period. In 1992, the law regulating capital markets was revised and the authority to determine and regulate the establishment, operating principles and

principles of institutions related to futures transactions was given to the CMB. On 23.07.1995, Futures

And the General Regulation on Options Exchanges was published in the Official Gazette. After the establishment of the Gold Exchange, a gold futures market was established, although it was not active. Within the framework of the Futures Market Directorate established by the ISE in 1994, extensive studies were carried out on futures transactions based on capital market instruments, especially the index (Örten and Örten, 2001:17-18.). In 2004, the Regulation on Futures and Options Exchange (TURKDEX Regulation) was published in the Official Gazette dated 27 March 2004.

2.3. Participants of Derivatives Markets

There are three types of participants in a futures market. Those who seek to hedge the risk associated with the asset (or variable) on which a contract traded in this market is based (hedgers), speculators who seek to make a profit by bearing that risk, and futures arbitrage investors who seek risk-free profits by taking advantage of the differences between the cash market price of the underlying asset and the futures contract price.

2.3.1. Speculators

Speculators aim to profit from price movements in the market by assuming the risk of hedgers. Speculators seek to invest and gain through the purchase and sale of contracts and take risks to do so. In futures markets, speculators are those who are willing to assume the risks. Speculators believe that they have more accurate information about whether the price of an asset is set high or low than other market participants. If they think that the price of an asset remains high, they take a short position, and if they think that the price of an asset remains low, they take a long position (Chambers, 2007:185).

2.3.2. Arbitrageurs

Arbitrage is the process of buying low in one market and simultaneously selling high in another market. Arbitrageurs are investors who aim to make risk-free profits by taking advantage of price imbalances between markets (Aydeniz, 2008:42.)

2.3.3. Hedgers

Hedgers are individuals or organisations that seek to hedge against possible adverse price changes in the price of a commodity or security at a future date. The hedger takes a position in the futures market in the opposite direction to the position taken in the spot market. With the hedging strategy, hedgers aim to offset a possible loss in the spot market with a gain in the futures market (Kayacan et al. 2010:440).

Hedgers buy a futures contract to hedge their current position in the spot market against possible future price increases (Long Position). Conversely, they sell a futures contract to hedge against possible future price falls (Short Position).

2.4. Risk Concept for Derivative Instruments

Although there are many different definitions of risk, according to the accepted definition, risk is the uncertainty in the degree of gain or loss (Kaygusuz, 1998:5). Investors who invest in equities two types of risk. The sources of risk can be divided into "systematic risk" and "unsystematic risk" according to whether they can be controlled or not. Systematic risk is the risk arising from the system. Changes in the social, economic and political environment constitute systematic risk. Systematic risk can also be defined as the risk that cannot be eliminated by diversification of the portfolio. Systematic risk is also known as market risk. In other words, changes in market conditions cause the price of the stock to change. Unsystematic risk arises from the unique activities of the firm. These are the risks arising from the own structures of financial or non-

financial institutions. The source of unsystematic risk is the firm itself or the sector that the firm is related to. Labour strikes, management errors, discoveries, advertising campaigns may lead to changes in consumer preferences. Unsystematic factors are independent from other industries and factors affecting the securities market in general (Demirtaş, 2004:103-109). In derivatives markets, the concept of risk is even more important. The most important risks that can be associated with derivative markets are settlement risk, agency risk, credit risk, operational risk, legal risk and market risk (Ayrıçay, 2002:58)

2.4.1. Delivery Risk

Failure to fulfil the obligation to deliver the traded financial assets at maturity. Exchanges use tools such as membership qualifications, margin continuity and financial collateral to mitigate risks.

2.4.2. Representation Risk

It arises from the conflict of priorities between the top management of the organisations and those who perform the management function on behalf of the owners. Actions that increase the welfare of one of these two segments may reduce the welfare of the other segment, cause negative effects on the value of the firm, and even, as in bankruptcy and loss events, may dimensions that may affect the capital structure and cause great damage to the firm.

2.4.3. Credit Risk

It is simply the failure of the counterparty to fulfil its obligations.

2.4.4. Operational Risk

It refers to unexpected losses arising from inadequacies observed in the internal control system or information systems

2.4.5. Legal Risk

The risk of incurring losses as a result of the total or partial failure to enforce a derivative contract due to a decision taken by the courts, regulatory authorities or any authorised public body.

2.4.6. Market Risk

The risk of changes in the price of a derivative instrument as a result of fluctuations in the price, rate or index level of the underlying asset.

2.5. Derivative Instrument Contracts

Derivative contracts can be defined as contracts that provide contingent rights and whose value depends on the value of the underlying variable. This definition has two elements. The first is that derivative contracts provide contingent rights. Thus, a derivative contract provides the right and obligation to fulfil the conditions specified in the contract after a certain time at the agreed price. While the terms of the contract may be freely determined between the parties, derivative contracts prepared by an organised exchange with uniform terms and conditions may also be traded when the contract is intended to be circulated. The second element of the definition of a derivative contract is that the value of the contract will depend on the value of the underlying variable. When determining the price of a derivative contract, investors who are parties to a derivative contract take into account the present value and the value at maturity of the product or variable on which the contract is based. In addition, some variables such as market interest rates and transportation costs are also effective on the contract price (Kayacan et al., 1999:1). Forward, swap and option products are traded in unorganised over-the-counter markets, whereas futures and options products are on organised exchanges.

2.5.1. Forward

Forward or alivre (pre-sale) transactions are defined as transactions in which the maturity, price and quantity of any

commodity are determined and contracted on a future date, the delivery and payment of which are determined today.

2.5.2. Futures

A standard futures contract (Futures) is a price-fixing mechanism for the future that allows you to buy or sell a certain commodity in a certain amount and on a certain date. Futures contracts are one of the most widely used derivative instruments to hedge risk, especially in sectors with high price fluctuations. In the futures market, the buyer enters into an obligation to purchase a commodity or asset in the amount specified in the contract in accordance with the terms of the standard contract. The seller in the futures market; In accordance with the terms of the standard contract, it enters into an obligation to sell a commodity or asset in the amount specified in the contract at maturity. Futures Contracts can be issued on any product (standardised agricultural products), financial indicator (index, assets based on short-term interest rates, inflation rate, etc.), security (stocks, medium and long-term government bonds, etc.), foreign currency (exchange rates, etc.), precious metal (gold, silver, crude oil, etc. based on natural resources).

2.5.3. Swap

Swap is one of the derivative instruments. The Turkish equivalent of the English origin word Swap is "takas", "değiştirme", "değiş-tokuş", "değiş-tokuş", "trampa etmek", "to exchange something for something else". Swap is a special agreement between two parties to exchange future cash flows arising from a specific financial asset within a predetermined system. With this agreement, the parties aim to change the financial conditions to their own advantage. The basis of the swap transaction is that different institutions face different credit conditions depending on their creditworthiness in different financial markets and the parties use these differences their own benefit. As a

result, swap is the application of the theory of comparative advantage in foreign trade in financial markets (Civan, 2004: 335).

Swap contracts are not a borrowing or investment method. Swap contracts are financial instruments that are used to change the cash flows of existing debt or investments. Swap contract types can be listed as interest rate swaps, currency swaps, parallel debts, mutual debts, asset swaps, swap options, long term forward foreign exchange agreements, cocktail swaps, currency and interest rate swaps. In addition, swap transactions are diversified with instalment swap transactions, forward or delayed swap transactions, cascading swap transactions, extendible swap transactions, shortenable swap transactions and swap deposits transactions.

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CHAPTER 13

FROM MICRO TO MACRO: A SURVEY ON THE PRESENCE OF CREDIT CONSTRAINTS AND THE EXTENT OF HUMAN CAPITAL ACCUMULATION

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1. Introduction

This study provides a literature review on the effect of credit constraints on human capital accumulation. Since the seminal work of Becker (1975), the role of borrowing constraints in human capital investment has been heavily explored in the literature on human capital, market imperfections, income distribution, and growth. In the absence of credit limits, with perfect capital markets, rational individuals invest in human capital until the rate of return on investment equals the return on financial capital (Mincer, 1958; Becker, 1962). However, credit constraints create market imperfections that alter the optimal choice of investment.

The altered choices and incentives change the level of schooling, especially in higher education, as it depends heavily on financial resources and has an opportunity cost of foregone earnings since young people face a trade-off between working and schooling. The altered human capital accumulation has costs at both the micro level in the form of lower average lifetime earnings and utility, as well as at the macro level in the form of lower aggregate human capital of a country and, hence, lower growth.

The remainder of this paper is organized as follows. Section 2 provides an overview of the literature on the existence and relevance of credit constraints, mainly in the form of investments in higher education. Section 3 discusses the importance of the source and type of constraints and their differential policy implications. Section 4 turns to the big picture and brings up studies of aggregate implications of constraints, such as on the growth of a country and on changing patterns of being constrained through international trade. Finally, Section 5 concludes the paper.

2. Credit Constraints in Education

Borrowing constraints are expected to be the most important in terms of educational investment, which requires high financial resources. Therefore, it is reasonable to expect that they will mainly appear in college attendance decisions. In the literature, theoretical models apply to any type of human capital accumulation. However, empirical models primarily focus on educational behavior. Many studies have investigated the existence or non-existence of credit constraints using data on family resources, education level, and school choice. Because college costs are paid by either family income or

student loans, the literature focuses on these two sources to show the suitability of credit constraints. If family income plays an important role in college enrollment decisions, or similarly, if ease in student loans has a positive impact on college attendance, we can conclude the importance of borrowing constraints for youth.

2.1. A Simple Theoretical Model: Lochner and Monge-Naranjo (2012)

Lochner and Monge-Naranjo (2012) reviewed seminal studies on the topic and summarized the main results. To have a theoretical intuition for the results in various empirical papers, they demonstrate human capital investment using a two-period model with and without borrowing constraints. When there is no credit constraint, the individual problem is written as:

$$\max U = u(c_0) + \beta u(c_1)$$
$$\text{subject to } c_0 = W + w_0(1 - h) - \tau h + d$$
$$c_1 = w_1 a f(h) - Rd$$

Optimal human capital investment maximizes the present value of the net lifetime income. Thus, the optimal level of human capital equals the marginal return of investment to the return of financial assets:

$$\frac{w_1 a f'[h^U(a)]}{w_0 + \tau} = R$$

The optimal level of borrowing $d^U(a, w)$ is given by the Euler equation:
$$u'[W + w_0 + d^U(a, W) - (w_0 + \tau)h^U(a)]$$
$$= \beta u'[w_1 a f[h^U(a)] - Rd^U(a, W)]$$

However, when there is an exogenous borrowing constraint in the form of $d \leq \bar{d}$, with λ being a multiplier on the constraint, the optimal human capital investment $h^X(a, W)$ when the constraint is binding becomes:
$$\frac{w_1 a f'[h^X(a, W)]}{w_0 + \tau} = R + \lambda^*$$
where λ^* is positive. When the constraint is not binding, the optimal amounts are the same as those in the unconstrained case.

This simple model provides certain predictions for testing empirical studies. The first observation is that when the constraint is binding, we have $h^X(a, W) < h^U(a)$, that is constrained people are under-investing in human

capital. Second, human capital investment strictly increases in wealth and borrowing limits for constrained individuals; however, it is independent of wealth for unconstrained people. Third, the marginal return on human capital strictly decreases in wealth for the constrained case. Finally, the human capital investment response is more negative to a rise in tuition costs, τ, than to an increase in opportunity costs, w_0. The main intuition is that borrowing constraints prevent individuals from smoothing consumption to the desired level, which raises the marginal cost of investment and lowers the level of human capital investment.

## 2.2. Empirical Evidence: Belley and Lochner (2007)

In a manner akin to the previously discussed theoretical framework, Belley and Lochner (2007) employed a two-period model to investigate the significance of family resources in relation to college enrollment. Their findings indicated that college attendance exhibits a heightened sensitivity to family income when students encounter constraints compared to situations where they do not face such limitations. Using NLSY79 and NLSY97 data, they show that the importance of family income in college increases over time. Moreover, they provide empirical evidence for model predictions in the sense that borrowing constraints decrease the likelihood of college attendance.

Belley and Lochner (2007) used a methodology similar to Carneiro and Heckman (2002) and regressed educational outcomes (high school completion and college attendance) on family income quartiles, AFQT quartiles, and family background measures such as parental education, number of siblings, and they further controlled for race, Hispanic ethnicity, and gender. The researchers discovered that family financial resources significantly influence the likelihood of college enrollment, albeit with a comparatively lesser impact on the rate of high school graduation. They further investigated the non-linear relationship in income using polynomials rather than an indicator for quartiles and found similar patterns in high school completion and college attendance. [1]

Figure 1 shows the effect (and 95% confidence interval) of family income on college attainment for both the NLSY79 and NLSY97 cohorts in polynomial specifications. The effect was mostly observable for students from low-to-middle-income families in the NLSY97 cohort. For this cohort, students from high-income families are 16 percentage points more likely to

attend college than those from low-income families in the quartile specification indicator.

Figure 1: Estimated Effects of Income on Educational Attainment
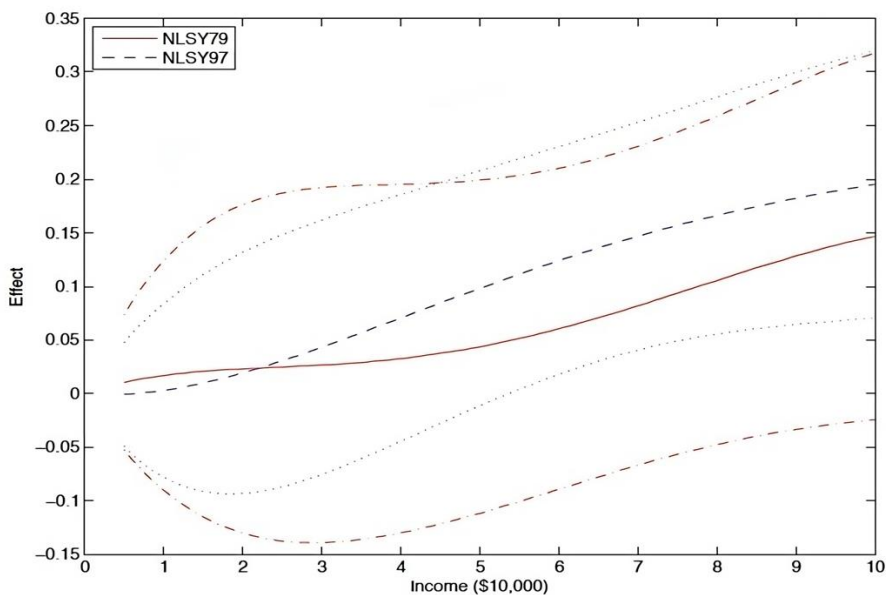
Source: Belley and Lochner (2007)

2.3. Importance of Total Wealth: Lovenheim (2011)

Lovenheim (2011) carries the discussion to another level by examining the influence of residential wealth on the propensity for college enrollment. The literature on educational investment focuses mostly on family income. However, when total family resources are considered, we might expect that there are different sources to finance college investment; hence, wealth, rather than income, is important. His analysis is based on two theoretical arguments regarding the relevance of housing wealth to the likelihood to enroll in college. First, the rate of return that a student can borrow for educational investment depends on the value of family assets. The increase in the value of a house converts it into an increase in collateral that a student can use. As housing loans are relatively cheaper, the average interest rate for a family to borrow for

college expenses decreases. Hence, as home prices change, college enrollment decisions are altered for constrained students. The second argument is based on considering college attendance as good consumption. As home prices increase, families would like to increase their educational consumption due to the wealth effect.

Lovenheim (2011) uses the variation in short-run housing wealth during the recent housing bust in the 2000s when the housing wealth was very liquid. The motivation to focus on housing is the observation that 85% of college attendees come from a family that owns a home, and for most families, housing is their primary financial asset. Furthermore, the value of houses rose dramatically during recent housing booms. During this period, the median home price rose by 55% which led home equity as a percentage of personal income to increase by more than 600%.

The empirical model is as follows:

$$Enroll_i = \beta_0 + \beta_1\,Own_i + \beta_2\,Equity_i + \beta_3 Y_i + \gamma X_i + c_i + t_i + \varepsilon_i$$

where *Enroll* is a dummy variable taking 1 if individual i enrolls in college, *Own* is an indicator of house ownership, *Equity* is home equity of individual i, *Y* is total family income, and *X* is a vector of control variables of individual and household characteristics. The regression model incorporates fixed effects corresponding to year and geographic region. Since housing wealth can be endogenous, children from wealthy households are more likely to go to college, and high-wealth families have high home equity levels. Hence, he used short-run changes in housing wealth as an instrument. The results of the regression analysis using data from the PSID are summarized in Table 1. A $10,000 rise in the value of home equity leads to a 0.71 percentage point increase in the likelihood of college attendance, which corresponds to a 1.37% increase in marginal effect. Considering the fact that the rise in average home equity was $57,965 between 2001 and 2005, the likelihood of going to college increases by 7.91%.

Table1. College Enrollment and Home Equity

		Home Equity Level Instrumented with:	
Independent Variable	OLS (1)	Home Price Change (2)	CF Equity Change (3)
Real home equity ($10,000)	.0014 (.0018)	.0056 (.0030)	.0071 (.0025)
Homeowner	.1944 (.0506)	.1744 (.0499)	.1615 (.0479)
Real family income ($10,000)	.0031 (.0013)	.0020 (.0014)	.0017 (.0014)
Log per capita income	.3945 (.5113)	.4446 (.4841)	.4855 (.4893)
Log population ages 18-22	-.0249 (.1161)	-.0199 (.1123)	-.0179 (.1124)
Unemployment rate	−.0334 (.0398)	−.0236 (.0370)	−.0226 (.0377)
Constant	2.0831 (1.4550)	2.1346 (1.4018)	2.2211 (1.3605)
First-stage home price/equity estimates		.5940 (.1297)	.7035 (.1318)
First-stage F-statistic		20.96	28.51

Source: Lovenheim (2011)

As previously noted, the main issue in Lovenheim's study is that the results can be driven by either wealth effects or credit constraints. Table 2 presents the results when the sample is split based on family income. The table shows that the change in college enrollment probability is more prevalent for low-income families, supporting the existence of credit constraints for this group. Moreover, if the wealth effect is the main force driving the results, we should see an increase in other consumption goods when home equity rises. However, consumption data from the PSID do not support this claim. Hence,

the author concludes that the relaxation in credit constraints during the recent housing boom is the fundamental reason why college enrollment increases with the value of houses.

Table 2. College Enrollment and Home Equity by Income Group

Independent Variable	Family Income ≤ $70,000 (1)	Family Income $70,000$125,000 (2)	Family Income ≥ $125,000 (3)
Real home equity ($10,000)	. 0567 (.0252)	. 0100 (.0111)	. 0054 (.0047)
Homeowner	-. 1798 (.1268)	. 2966 (.2211)	. 2596 (.2982)
Real family income ($10,000)	04480 (.0187)	−.0445 (.0214)	. 0020 (.0015)
Log per capita income	1.6878 (.7796)	0.8068 (.7528)	1.4599 (2.6559)
Log population ages 18-22	. 2606 (.1486)	. 5011 (.1333)	1.4841 (.8393)
Unemployment rate	. 0423 (.0619)	-. 1801 (.0878)	. 0555 (.0988)
Constant	2.3480 (1.8762)	-2.5083 (2.9220)	-16.4005 (10.4751)
No. of observations	828	419	250
First-stage home price/equity estimates	. 3017 (.1037)	. 5008 (.1626)	. 6588 (.2440)
First-stage F-statistic	8.47	9.48	7.29

Source: Lovenheim (2011)

2.4. Indirect Channel: Cowan (2016)

In addition to the direct channels of borrowing constraints, they are likely to operate through indirect channels that affect human capital accumulation. Cowan (2016) explored the importance of individual time

preferences in relation to the accumulation of human capital in scenarios where credit constraints are in effect.

Cowan uses a simple two-period model in which schooling choice brings some disutility to individuals, $v(S)$ in the utility function which is unobserved and assumed to be randomly distributed in the population. The specification of the utility function is given as: $U_s = \frac{c_{s,1}^\gamma}{\gamma} + \beta \frac{c_{s,2}^\gamma}{\gamma} - v(S)$. The constraints of youths who are going to school are:

$$c_{1,1} = w + d - \tau$$
$$c_{1,2} = y_{1,2} - Rd$$

where w represents endowments, y is income, and τ is the college attendance costs. The constraints of youth who are not going to school are:

$$c_{1,1} = w + d - y_{0,1}$$
$$c_{1,2} = y_{0,2} - Rd.$$

Conditional on observable factors and parameters, call X, probability of attending school is $P(S = 1 \mid X) = P(v < D^{unc})$ where D^{unc} is the difference in utility. When there is no disutility or borrowing constraints, human capital investment is independent of individual time preferences, which is in line with Becker's (1967) argument. If there is disutility associated with schooling, D rises with β. This says that patience offsets some of negative impact of schooling, hence individuals with higher β are more likely to attend college. When borrowing constraint in the form of an exogenous limit $\bar{d}$ binds, the difference in utility D^{con} is more sensitive to β. $\frac{\partial D^{con}}{\partial \beta} - \frac{\partial D^{unc}}{\partial \beta} > 0$. This is because when the constraint is binding, individuals cannot smooth consumption as much as they want. Therefore, the desire to smooth consumption in the first period also works against school attendance, amplifying the importance of time preference.

In the empirical part, he used a probit model to test the effect of the discount factor (DF) on the likelihood of attending college. The linear probability model corresponding to this analysis is given as:

$$S_j = \lambda_j DF + X\eta_j + \varepsilon_j$$

where DF is the discount factor, and X includes observable control variables; $j = 1$ for the unconstrained group and $j = 2$ for the constrained group.

The discount factor was computed using a hypothetical intertemporal trade-off question in the 2006 survey of the NLSY79. Race/ethnicity and family income categories were used to determine potentially constrained

groups. The results show that an increase in DF from 0 to 1 result in an increase in college attendance probability by 12.3 percentage points. This corresponds to a 3-percentage point increase in likelihood by a standard deviation increase in DF of 0.24. The results of separate regressions for race/ethnicity groups show that the effect of DF on college attendance is stronger for blacks. Blacks likely have less access to credit markets; hence, they have more difficulty smoothing consumption while in school, which increases the impact of DF. Table 3 shows that the effect of DF is economically and statistically significant at 1% level, one standard deviation increase in DF raises the probability of attendance by six percentage points.

Table 3. College Attendance and Time Preference

	Dependent Variable: Completed at Least 1 Year of College		
	Nonblack, Non-Hispanic	Black	Hispanic
Discount factor	. 037 (.069)	. 245 (.092)	. 107 (.110)
Female	.067** (.032)	. 157 (.043)	. 171 (.050)
Urban residence at age 17	. 005 (.037)	-. 036 (.054)	.139* (.079)
Number of siblings	-.014* (.009)	-.019** (.008)	-. 013 (.010)
Mother high school graduate	. 122 (.040)	. 158 (.048)	-. 005 (.068)
Mother some college or more	. 344 (.040)	. 273 (.071)	. 262 (.099)
AFQT percentile	.012 (.003)	.026* (.003)	.021* (.004)
AFQT percentile (in 10 s) squared	-.002 (.003)	−.020 (.004)	−.015 (.004)

| Parental income at age 17 (in $10,000s)	. 007 (.014)	. 009 (.019)	. 030 (.023)
Parental income at age 17 (in $100,000 s) squared	. 035 (.077)	. 036 (.126)	-. 202 (.147)
Observations	1,286	681	464

Source: Cowan (2016)

2.5. Counter-evidence: Carneiro and Heckman (2002)

There is conflicting evidence on the importance of credit constraints in human capital accumulation. Carneiro and Heckman provide evidence that short-term credit constraints are not important in postsecondary schooling. They distinguish between short- and long-term factors. Short-run factors are the liquidity constraints that families face during a child's adolescent years, which reveal a shortage of resources to finance college education. They argued that the impact of such constraints is small. What is more important are the long-term factors that are associated with the family environment in shaping cognitive and non-cognitive skills. This can be understood as another form of credit constraint, and it plays a much larger role in college attendance decisions.

The starting point of the study was the observed difference in college attendance in different family income groups. Figure 2 shows the college participation rates by income quartiles calculated by the authors using CPS data.

Figure 2. College Participation by Parental Family Income Quartiles
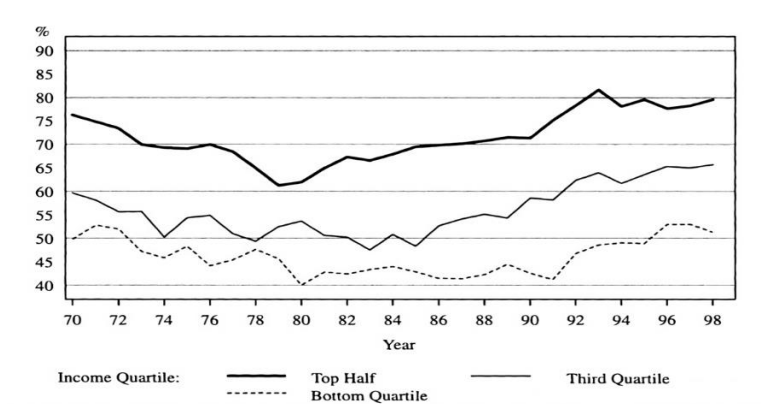
In their analysis, they discuss the interpretation of the well-known empirical observation that the IV estimates of returns to schooling (Mincer coefficient) are larger than those of OLS (Grilliches, 1977; Card, 1999, 2001). This observation is often considered evidence of the existence of borrowing constraints (e.g., Kane 2004). This is because IV can be interpreted as an estimation of those that change schooling using the instrument. Higher returns must mean that they have higher costs of schooling; hence, they must be constrained. Carnerio and Heckman (2002) provide counter-evidence to this argument. They argued that most instruments are invalid. Even if the instruments are valid, the results can be considered evidence of self-selection and comparative advantage. Typically, the quality margin is ignored in the literature. Finally, they argue that IV does not identify credit-constrained individuals.

The argument on self-selection relies on the assertion that if the cost of going to college is not correlated with returns, then the average return on schooling for those who go to college should be higher than the marginal entrant. Figure 3 shows a demonstration of this assertion (left panel). However, the relationship is reversed when the costs of schooling are sufficiently high, and students with high returns incur high costs. Then, marginal entrants will have higher returns than average college attendees, which occurs in the presence of credit constraints. This is shown in the figure below (right panel).

Figure 3. Conflicting theories of the returns to schooling distribution
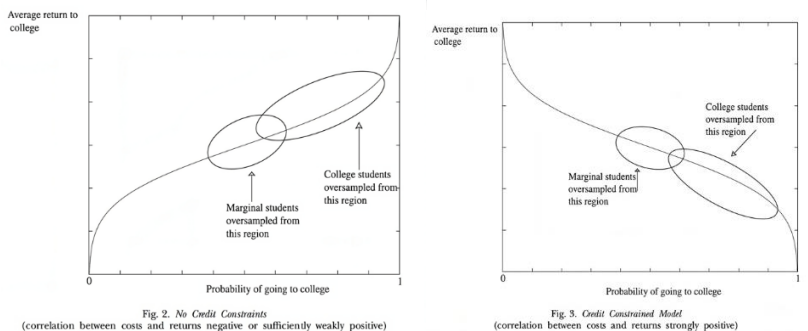
Carneiro and Heckman test this claim and, using various data sets and instruments, reach robust findings that IV estimates are higher than OLS estimates. However, their analysis of treatment effects for different margins of

indifference in college attendance shows that returns to schooling are higher for an average person who goes to school than for a marginal person.

Furthermore, it is possible to control for long-run effects and analyze the role of short-term credit constraints on college attendance. If controlling for ability substantially reduces the influence of family income, long-run family factors that shape children's ability are the main reasons behind college attendance, leaving a negligible role for short-term credit constraints. Cameron and Heckman (1998,1999,2001) examine the gap in college attendance between various minority groups and whites. They find a big reduction in the impact of family income when ability is controlled than when it is not controlled and the effect of tuition on college entry diminishes with ability inclusion. They conclude that long-run factors that are crystalized in ability drive the college attendance difference between minority groups and whites. These results provide counterevidence for the importance of short-term borrowing constraints.

Similarly, Cameron and Heckman (1998, 1999) find little impact of family income on college attendance after controlling for family background, cognitive achievement, and unobserved heterogeneity. As a direct test of borrowing constraints, Keane and Wolpin (2001) analyzed the importance of parental transfers and used data on wages, assets, schools, work, marriage, and parental co-residence for white males. Their findings show that borrowing constraints exist and are tight, but their experiments indicate a negligible role for enrollment. Indeed, relaxing borrowing constraints affects low-income families in other areas, such as leisure and consumption.

3. Sources of Borrowing Constraints

The sources of credit constraints and their types may have different policy implications. The mechanisms affecting incentives and human capital investment are expected to be different when we consider the constraints to be exogenous or when the constraints arise endogenously. Moreover, different types of credit are expected to have different restrictions and sanctions that lead to different outcomes in individual behavior.

3.1. Endogenous Constraints: Andolfatto and Gervais (2006)

In the presence of borrowing constraints, individuals underinvest in human capital. This is because human capital cannot be used as collateral in

debt contracts for future earnings. The literature usually assumes an exogenous debt limit when considering financial market imperfections [2]. When exogenous limits are concerned, an optimal policy can be in the form of subsidizing young people and giving pensions to old people, and to balance the budget, taxing the middle-aged group who are in the peak earning years of their working life. In this environment, human capital investment increases monotonically with educational subsidies.

Andolfatto and Gervais (2006) argue that it makes more sense for debt limits determined by creditors to change in response to policy regimes, which makes credit limits endogenous. Empirical evidence

also supports the varying lending behaviors across policy regimes. They employ a deterministic three-period overlapping generations model with endogenous human capital formation. They discuss the policy implications of the model in providing subsidies to the young when the constraints are exogenous and endogenous. The model endogenizes borrowing constraints by imposing a no-default condition on debtors. Creditors will lend up to the level they expect to recover in the case of default. In this model, even though human capital cannot be collateralized, creditors can impose sanctions in the event of default. The sanctions in this study are in the form of exclusion from financial markets. The no-default conditions are given as:

$$u(c_2) + \beta u(c_3) \geq u(w_2 + f(x) - (1 + R)s) + \beta u(w_3 + Rs)$$
$$u(c_3) \geq u(w_3 + Rs)$$

where s is the subsidy level and x is the human capital investment in the first period of an individual which brings $f(x)$ output in the second/working period of life. Unlike the exogenous case, multiple solutions arise in the case of endogenous limits. The interaction between endogenous human capital and endogenous debt constraints creates nonconvexity in the constrained set. This means that human capital accumulation does not monotonically increase with subsidy s. Higher levels of s may increase incentives to default, which makes creditors cut loans and, as a result, debt constraints bind more tightly. Figure 4 shows a demonstration of the nonconvex constrained set.

Figure 4. Constraint Correspondence
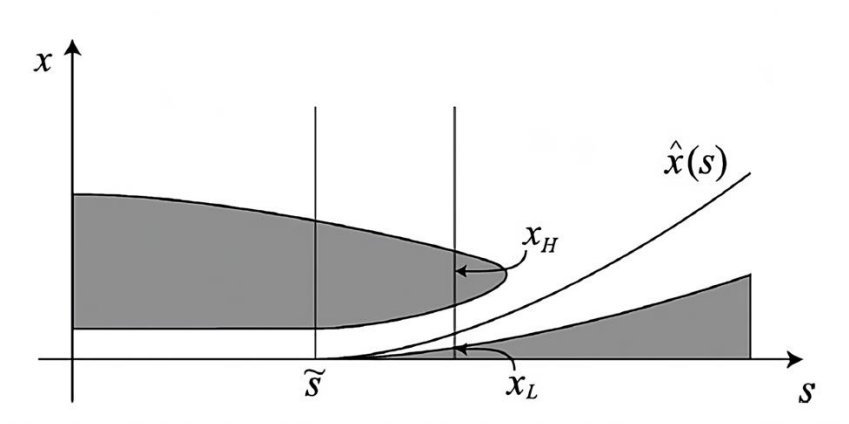
This non-convexity is a result of the no-default condition in the neighborhood of $\hat{x}(s)$, which is the level of human capital that would provide perfect consumption smoothing in the event of default. Hence, around the neighborhood of this level, an agent would choose to default, as she can still smooth consumption relatively well; hence, these levels of human capital are not feasible. This leads to multiple solutions for a wide range of subsidies. This means that an economy with en-ante identical individuals features ex-post heterogeneity in the form of income distribution and heterogeneous career choices. The simulations in Figure 5 show how increasing subsidies for some ranges may result in lower human capital accumulation and lower levels of lifetime utility.

Figure 5. Savings, Investment and Utility as a Function of Education Subsidy

Savings and Human Capital Investment   Lifetime Utility
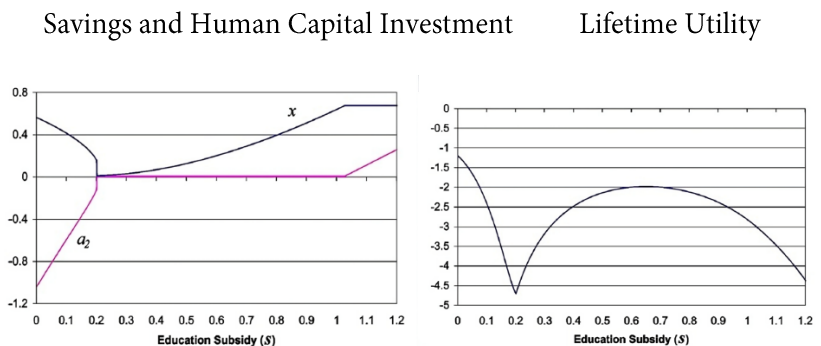
Source: Andolfatto and Gervais (2006)

3.2. Creditor Identity: Lochner and Monge-Naranjo (2011)

In addition to the difference implied by endogenous/exogenous constraints, whether the source of the binding debt limit is government-funded or supplied by a private institution also has differing results. Each source of credit may have different conditions for credit eligibility and credit level (fixed limit or tied to investment) and may have different sanctions in the event of default (fully enforceable or limited enforcement). These conditions and sanctions are usually linked to complicated laws and are related to the institutional identity of the source. In this study, Lochner and Monge-Naranjo (2011) go over each possible borrowing limit type. The motivation of this paper is to explain two facts in the U.S. data: First, conditional on family income, college attendance is strongly increasing in ability. Second, conditional on ability, college attendance is strongly increasing with family income. They want to show whether human capital investment with an imperfect capital market model can account for both the rising importance of family income and the importance of ability, which cannot be attained by standard exogenous constraint models.

Similar to Lochner and Monge-Naranjo (2012), they incorporate a two-period life-cycle model, in which ability is also an important determinant of earnings. When there is a fixed exogenous upper bound on debt in the form of $d \leq \bar{d}^X$, the model generates a negative relationship between ability and schooling in the event of binding constraints: $h^X(a, w)$ is strictly decreasing

in ability, a. This result is generated by the relationship between ability and investment in constrained youths. There is an intertemporal substitution effect such that high-ability people earn high returns on human capital investment, and hence, invest more. There is also a wealth effect such that high-ability individuals have higher lifetime earnings which leads higher desire to smooth consumption. Assuming a sufficiently high intertemporal elasticity of substitution (IES ≤ 1), the wealth effect dominates. This negative relationship is in contrast with the data.

Then, they assume the debt limit is in the form of Government Student Loan (GSL) programs in the U.S. which directly ties lending to schooling unlike Andolfatto and Gervais (2006), $d \leq h$, as well as a maximum fixed upper limit, $d \leq \bar{d}^G$. Then, the constraint implied by GSL becomes $d \leq \min\{h, \bar{d}^G\}$. Government loans are fully enforceable. This constraint improves the performance of the model and for most ability ranges, the positive relationship between ability and human capital investment is generated, except for very high-ability individuals, who are constrained by both limits.

Moreover, they add private lending, which is not fully enforceable, to the model. In the case of default, the lender can recover only a fraction of the earnings which endogenizes the credit limit, $d_p \leq \kappa a f(h)$. Then, the total borrowing limit takes the following form:
$$d_g + d_p \leq \min\{h, \bar{d}^G\} + \kappa a f(h)$$
The coexistence of the two sources of credit improves the model and generates results in line with the observation of a positive relationship between ability and human capital. The threshold asset level below which individuals are constrained is decreasing in $\bar{d}^G$ and κ, that is, the expansion of either source of credit. This means that expanding credit to young people would reduce the fraction of the population that is constrained and change their investment behavior. Depending on their ability, the two sources of borrowing provide differential outcomes in investment behavior. For high-ability individuals constrained by both credits, increasing the GSL limit may increase human capital investment by more than one-on-one. For low-ability individuals for whom the upper limit in GSL is slack but the tied-to-human capital limit binds, the investment is at an optimal level with no constraints if there is no private lending. However, with the availability of private loans, this group can overinvest in human capital because, on the margin, total credit is increasing by more than one-for-one with investment, as additional GSL credits also expand excess to private lending. This results in a negative
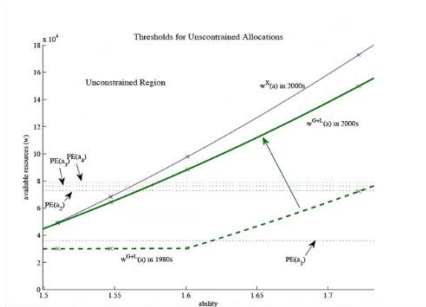
relationship between investments and wealth. Their investments may fall with the expansion of private credit. Under all circumstances, the model can generate a positive relationship between investment and ability.

Figure 6. Ability vs Wealth and Human Capital
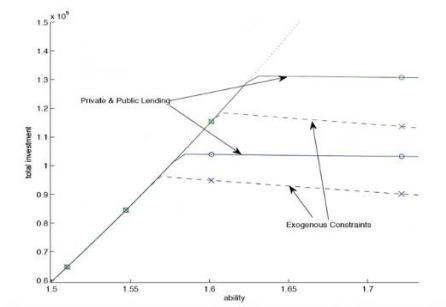
Ability and Wealth   Ability and Human Capital

Source: Lochner and Monge-Naranjo (2011)

4. General Equilibrium

Thus far, we have presented theories and evidence of the impact of borrowing constraints on individual human capital outcomes. It is obvious that the existence and degree of constraints will have countrywide impacts on human capital accumulation and growth in the country.

4.1. Aggregate Human Capital: Cristou (2001)

Cristou employs a three-period overlapping generations model similar to Diamond (1965) and Altig and Davis (1989), with human capital accumulation and heterogeneity in the borrowing ability of individuals against future income, type A and type B, where type A individuals are constrained. Individuals maximize lifetime utility:

$$\max W = U\left(C_{1,t}^i\right) + \beta U\left(C_{2,t}^i\right) + \beta^2 U\left(C_{3,t}^i\right)$$

subject to

$$C_{1,t}^i + S_{1,t}^i = w_t\left(1 - T_t^i\right)$$

$$C_{2,t}^i + S_{2,t}^i = w_{t+1}\left(1 + g\left(T_t^i\right)\right) + (1 + r_{t+1})S_{1,t}^i$$

$$C_{3,t}^i = (1 + r_{t+2})S_{2,t}^i$$

$$S_{2,t}^i \geq 0.$$

where T_t^i is the percentage of time devoted to education, $g\left(T_t^i\right)$ is the return on investment in education, and i is the type of the individual. Type A individuals face borrowing constraints in their first period as well, $S_{1,t}^A \geq 0$. Production takes place in a perfectly competitive market using capital and labor as inputs. Given that θ is the fraction of constrained population (type A individuals), aggregate labor supply and aggregate capital in the economy are solved as:

$$N_t = \theta\left(2 - T_t^A + g(T_{t-1}^A)\right) + (1 - \theta)\left(2 - T_t^B + g\left(T_{t-1}^b\right)\right)$$

$$K_t = \theta\left(S_{1,t-1}^A + S_{2,t-2}^A\right) + (1 - \theta)\left(S_{1,t-1}^B + S_{2,t-2}^B\right).$$

The model is simulated for varying values of θ and the impact on aggregate variables is analyzed in Figure 7. The figure shows that as the fraction of the constrained population increases, the aggregate time spent in education decreases in the steady state. Moreover, as the constrained fraction increases, countrywide savings increase, which leads to a rise in high per capita income.

Figure 7. Borrowing Constraints and Steady State Outcomes
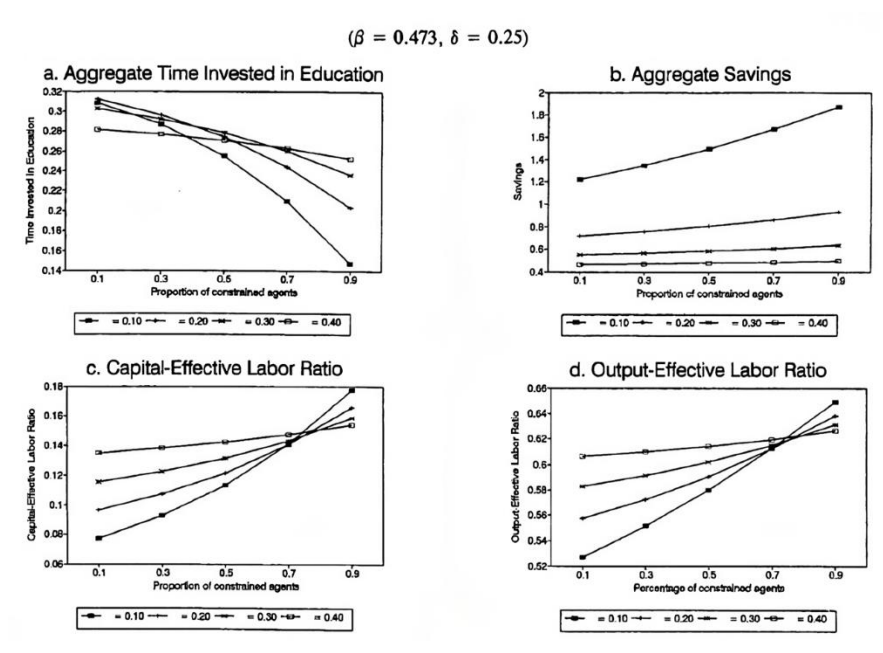
The author further tested the model implications of human capital using a sample of 78 countries. First, he estimates the fraction parameter θ using the intuition from the Permanent Income Hypothesis that the fraction is the sensitivity parameter of departure from disposable income [3]. He then regressed school enrollment on this parameter and other controls. As control variables, GDP per capita is incorporated to avoid potential endogeneity due to omitted variables since high-income countries might invest more in education. Another specification also includes government spending on education as a share of GNP, as higher government spending might alleviate the negative effect of borrowing constraints on education investment. The results as summarized in Table 4, are robust in all specifications and show that, as the fraction of the constrained population increases, the primary and secondary school enrollment ratio decreases.

Although Cristou's (2001) results show the aggregate effects of borrowing constraints on countrywide human capital accumulation, the model is counterintuitive in terms of the growth of a country because the aggregate savings caused by increased working hours and reduced time in

education lead to economic growth. This is because of the production technology which does not incorporate human capital as a factor of production.

Table 4. Borrowing Constraints and Enrollment

	Constant	Fraction of credit-constrained agents	Income	Government spending on education	Adjusted R^2
Specification 1	104.70	-50.65			
	(24.75)	(−6.73)			0.35
Specification 2	75.49	-24.32	0.30		
	(13.66)	(−3.18)	(6.94)		0.56
Specification 3	64.45	-21.73	0.26	2.63	
	(8.89)	(−2.96)	(5.86)	(2.59)	0.58

Source: Cristou (2001)

4.2. Growth: De Gregorio(1995)

Similarly, De Gregorio (1995) employs an overlapping generations model with endogenous growth and shows that credit constraints may hinder economic growth. Unlike Cristou (2001), the production technology is a function of human capital as $Y_t = \alpha K_t^{\phi} (H_t l_t)^{1-\phi}$ where H is average level of human capital. This variable evolves over time as an individual invests in education and the aggregate law of motion of the human capital is the same:
$$H_{t+1} = \delta H_t + \theta h_t K_t^{\alpha} H_t^{1-\alpha}$$
$$= (\delta + \theta h_t \sigma_t^{\alpha}) H_t$$
where σ is the ratio of physical capital to human capital. θ captures the efficiency of human capital accumulation process. δ represents depreciation if it is less than 1. If it is greater than one, then we can interpret this parameter as the minimum growth level of skills without education.

The solution to the general equilibrium problem at a steady state ensures that borrowing constraints reduce the time devoted to education, increase the physical capital-human capital ratio, and increase economic growth. Consistent with the overlapping generation models in the literature, borrowing constraints increase aggregate savings if we do not consider

growth. However, growth also increases individuals' savings; therefore, an increase in borrowing constraints will lower growth, which will have an effect on savings in the economy. The total effect of e is ambiguous in the model.

The regression model to test the impact of borrowing constraints on human capital accumulation is the same as Cristou (2001), which includes per-capita income to capture income and effects on human capital, and education expenditure over GDP along with a proxy for the extent of borrowing constraint as explanatory variables. Borrowing constraints are proxied by consumer credit as a fraction of national income (CONSC), or by the maximum loan-to-value ratio (LTV) for the purchase of a house. [4] Moreover, total credit from the banking system to the non-financial private sector (CREDIT) is also a good indicator of the national development level of developing countries; hence, it is used as another proxy for credit constraints. An increase in these variables indicates relaxation of the constraints. The regression for OECD countries provides some evidence for the negative impact of credit constraints on primary and secondary school enrollment; the coefficient of the proxies is positive even after controlling for schooling variables. The second set of regressions explores the impact of borrowing constraints on growth. The dependent variable is per capita GDP growth for years 1970-85 in the OECD sample and some developing countries. Again, the results suggest a positive effect of the relaxation of borrowing constraints on per capita GDP growth. Table 5 summarizes the results of the corresponding regressions.

Table 5. Borrowing Constraints and Growth

	LTV	CONSC	CREDIT
Mean	69.2	7.1	15.7
Standard deviation	11.4	5.7	10.6
Effect on SEC	4.5	4.5	6.9
Net effect on growth	0.08	0.07	0.28
Total effect on growth	-0.05	0.28	1.35

Note: All numbers are given as percentages. SEC and growth effects are percentage point changes resulting from a one-standard-deviation change in the variable.

Source: De Gregorio (1995)

4.3. International Trade: Cartiglia (1997)

To make the big picture even bigger, the relationship between borrowing constraints and human capital in the international environment was explored by Cartiglia (1997) with a theoretical model of international trade. The motivation of this study is to observe that in the post-war period, countries that followed an export-oriented trade strategy invested in both human and physical capital, the education of men and women rose, and they experienced rapid development, for example, Korea, Singapore, Hong Kong, and Taiwan. However, most trade models in the early literature imply that skill-scarce countries invest less in human capital after opening to trade because of the availability of cheaper skill-intensive goods (comparative advantage theories) [5]. This literature typically assumes perfect capital markets. However, as shown in the studies above, empirical evidence shows the existence of capital market imperfections, especially in developing countries, which prevent the optimal level of human capital investment.

Cartiglia (1997) incorporates market imperfections into an open-economy general equilibrium model and shows how these financial frictions impact the pattern of comparative advantage. The production structure is such that there are two sectors which produce high-tech goods and low-tech goods. The population is also divided into skilled and unskilled workers, who can only work in the corresponding industries. The production functions are Cobb-Douglas and are given as follows:

$$H = K_H^\alpha S_H^{1-\alpha}$$
$$L = K_L^\alpha U^{1-\alpha}.$$

A distinct feature of this model is the education system, which is necessary for obtaining skills. Only the skilled workers were employed as teachers. Hence, skilled workers are employed either in high-tech industry or in education sector: $S_t = S_{Ht} + S_{Et}$.

The process by which trade liberalization operates is articulated as follows: when a small open economy possessing a comparative advantage in

low-tech commodities engages in trade, the pricing of high-tech goods experiences a decline attributable to both the immediate impact on prices and the influx of capital directed towards the low-tech sector. Concurrently, wages within the high-tech sector decreases, leading to the reallocation of certain skilled laborers into the educational profession. This transition results in a decrease of educational expenses and alleviates the constraints associated with credit access. Consequently, education becomes increasingly accessible, thereby facilitating an enhancement in human capital accumulation through trade. The economy subsequently gravitates towards a new equilibrium characterized by an augmented population of skilled workers. Conversely, in nations abundant in skills, trade exerts a downward pressure on the returns to education.

5. Conclusion

Evidence suggests that borrowing constraints affect young individuals' schooling choices. Credit limits prevent many young individuals from attaining an optimal investment level. Several studies show that the difference in schooling levels between different income groups can be attributed to debt constraints for the young and their families. However, some studies show the irrelevance or minor role of short-term credit constraints in education.

Despite some counterevidence, the overall picture of the role of borrowing constraints provides the following main findings:

1. Borrowing constraints exist for people with low-income wealth.

2. Debt limits reduce schooling for constrained individuals.

3. The resulting lower human capital by constrained people reduces overall growth in the economy and increases inequality.

Several studies in the literature build models of human capital accumulation and conduct experiments on policy changes. Several other studies have provided empirical evidence for possible policies that can be implemented to foster human capital accumulation. These studies provide the following possible solutions to alleviate the negative impacts of credit market imperfections.

1. Increasing government subsidies for higher education will potentially lead to higher human capital, especially for high-ability students.

2. Trade liberalization is also potentially a good policy for increasing human capital levels and, thus, growth in a country in the long run.

Literature on the interaction between credit market imperfections and human capital accumulation provides important facts and policy implications. However, there are still holes to fill to obtain a complete picture. The persistence of the effects of credit constraints in later life needs to be explored. The following questions can be asked for future research: To what extent do credit constraints in early life lead to credit constraints later in life? What are the important channels of this transition? What is the role of altered human capital investments in this transition? Moreover, the role of these constraints in the differences between countries and international trade/financial relations is also a promising area that needs to be modeled and tested.

Specifically, the role of borrowing limits and the human capital relationship in the international transition of the Great Recession would be an interesting topic for research.

6. Endnotes

[1] Belley and Lochner (2007) conducted a comparative analysis of NLSY79 and NLSY97 cohorts and concluded that the constraints are more important for the new cohort and primarily for low- and middle-ability youths.

[2] The seminal works of Aiyagari (1994) and Huggett (1993), which are leading horses in macroeconomics literature on imperfect markets, assume exogenous limits.

[3] The estimation methods are described more detailed in Vaidyanathan (1993)

[4] These proxies are as in Jappelli and Pagano (1994)

[5] Examples of such models can be found in Findlay and Kierzkowski (1983), and Stokey (1991).

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