NEW APPROACHES IN SOCIAL, HUMANISTIC, AND ADMINISTRATIVE SCIENCES

THEORY, METHOD, AND PRACTICE

Editor
Prof. Dr. Bahar GÜNEŞ

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NEW APPROACHES IN SOCIAL, HUMANISTIC, AND ADMINISTRATIVE SCIENCES: THEORY, METHOD, AND PRACTICE
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Chapter 1

A Multidimensional Analysis on the Neet Phenomenon in Labor Markets

Bülent GÜNSOY[1], Güler GÜNSOY[2]

1. INTRODUCTION

Establishing a holistic equilibrium between education and employment within the labor market is a paramount component of economic development and the growth process. If education and employment relations are addressed in isolation within policy frameworks, a multitude of multifaceted issues—most notably unemployment—will inevitably permeate the equation. In recent years, individuals categorized as NEET (Not in Education, Employment, or Training) have emerged as one of the most significant challenges that policymakers globally struggle to mitigate. According to the ILO (International Labour Organization), the preeminent institution of global labor markets, the youth NEET rate is defined as the proportion of youth who are not employed and not involved in further education or vocational training. Young people outside the educational sphere are neither enrolled in a formal school nor an official training program; they are often characterized as inactive individuals who cannot strictly be classified as unemployed. For statistical purposes, the ILO identifies youth within this scope as individuals aged 15 to 24. However, these age boundaries are no longer definitive in the contemporary era; while organizations such as the ILO and UNESCO maintain this range between 15 and 29, recent scholarly studies have extended the upper age limit toward 35 to enhance inclusivity. Furthermore, certain jurisdictions exclude women engaged in domestic labor from the NEET classification.

The International Labour Organization (ILO) reported that in 2023, more than one-fifth of individuals aged 15-24 were classified as NEET, a figure that has increasingly become a burgeoning global concern. The failure to integrate NEET youth into labor markets results in a substantial squandering of human capital, which inevitably entails profound social costs. In 2011, even in the European Union—where NEET rates were relatively lower compared to other global regions—the economic loss stemming from the detachment of young

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people from the labor market was estimated at 153 billion euros, representing 1.2% of the European Union's GDP (Eurofound, 2012:2). Furthermore, the NEET phenomenon represents a more formidable and intricate challenge than the traditional concept of youth unemployment. While youth unemployment denotes a situation where individuals within a specific age demographic (typically 15-24) are actively seeking employment at prevailing wage levels and are available to work but remain unsuccessful, NEET encompasses those who are not actively searching for work. Although initially conflated with youth unemployment, the NEET category is inherently more profound, expansive, and multidimensional. It is imperative to note that the emergence of the NEET concept often triggers a pejorative perspective, leading to biased interpretations that suggest youth are recalcitrant or unwilling to pursue education and employment. However, this issue defies simplistic explanations and is far more complex than it appears on the surface. The 2024 ILO report titled 'Global Employment Trends for Youth 2024' (GET for Youth) highlights that persistently high NEET rates and the stagnation of decent work opportunities have catalyzed burgeoning anxiety among today's youth—the most educated generation in history. The report underscores the impact of the NEET crisis on global prosperity with the following assertion: 'None of us can look forward to a stable future when millions of young people around the world do not have decent work and, as a result, feel insecure and unable to build a better life for themselves and their families. Peaceful societies rely on three core ingredients: stability, inclusion, and social justice; and decent work for youth is at the heart of all three' (ILO, 2024).

2. CONCEPTUAL EVOLUTION AND THE CURRENT STATE

Although the youth NEET construct originated in the United Kingdom, it has gained significant traction across diverse regions, nations, and cultures through various localized terminologies and connotations. For instance, in Japan, the phenomenon of "hikikomori" represents a distinct form of "social withdrawal" or "confinement". It characterizes individuals who sever ties with society, retreating into profound and protracted self-isolation. The magnitude of this issue was underscored in 2016 when Japanese authorities reported that the number of individuals living under these conditions had reached 541,000 (Jozuka, 2016). Shunsuke & Sakai (2021) point out that hikikomori exerts substantial deleterious effects on both psychological and physical health, severely compromising quality of life; their research further provides empirical evidence that unemployment and household income levels correlate strongly with the prevalence of this condition. Parallel to the hikikomori phenomenon,

the “tang ping” (lying flat) movement has emerged in China as a significant social trend. Gaining momentum during the COVID-19 pandemic, tang ping represents a deliberate hiatus from relentless and high-intensity labor. Confronted with burnout induced by grueling work schedules, Chinese youth are increasingly gravitating toward sedentary activities, such as reading or watching television, as a form of resistance. Rather than subsiding post-pandemic, this inclination toward a low-tempo lifestyle has intensified. Consequently, China's traditional "996" culture (working from 9:00 AM to 9:00 PM, six days a week) is being systematically abandoned by the younger generation, despite criticisms from older cohorts. Observations suggest that Chinese youth are prioritizing personal happiness, hobbies, and individual interests over hyper-competition, even at the cost of lower income (Davidovic, 2022). Similar sentiments regarding youth who are “reluctant to grow up” via traditional education or employment are echoed in other cultures: the terms “generación ni-ni” in Spain, “bamboccioni” in Italy, and “nesthocker” in Germany illustrate how the NEET concept is increasingly finding resonance globally, often laden with pejorative societal undertones (Mascherini, 2018:506).

The NEET construct finds its genesis in research conducted in the United Kingdom during the 1980s and was subsequently formally adopted by the Employment Committee of the European Commission (EMCO). Within this framework, a consensus was reached in 2010 regarding the definition and methodology of a standardized indicator to measure and monitor trends within the NEET population as an integral component of the European Union’s Europe 2020 strategy (Mascherini, 2018). The contemporary conceptualization of NEET originated from a seminal study in the United Kingdom. In their 1994 research, Istance, Rees, and Williamson introduced the term 'Status A' (later referred to as 'Status 0') to categorize individuals in the South Glamorgan labor market who did not fit into the primary pillars of employment, education, or training. In this taxonomic framework, 'Status 1' was assigned to youth over the age of 16 in education, 'Status 2' to those in vocational training, and 'Status 3' to those in active employment. Consequently, the term 'Status 0' was utilized to denote those external to these classifications—effectively, NEET individuals (Eurofound, 2012: 19-20). Williamson (1997) elucidates how Status 0 evolved into a potent socio-economic concept. Ultimately, due to the profoundly negative connotations evoked by the 'Status 0' nomenclature, it was superseded by the acronym NEET.

The NEET rate of a country can be calculated using the following formula (Mascherini, 2018: 507):

$$\text{NEET Rate} = \frac{\text{Number of youth not in employment,education,or training}}{\text{Total youth population}} * 100$$

According to Eurostat, the denominator of this indicator comprises the total youth population within the specified age cohort. Conversely, the numerator encompasses individuals who were not engaged in employment (defined as either unemployed or inactive) and/or did not participate in any form of education or vocational training during the four-week period preceding the survey.

The NEET indicator measures the share of young people who are not in employment, education, or training within the total youth population. This metric is distinct from, and more comprehensive than, the youth unemployment rate, which specifically measures the proportion of unemployed individuals among the economically active youth population. Youth unemployment is calculated as the ratio of those unable to find work within the labor force. Consequently, even when the youth unemployment rate exceeds the NEET rate, the absolute number of NEET individuals often surpasses the total count of unemployed youth. For instance, in 2015, although the youth unemployment and NEET rates in Europe were 20.3% and 12% respectively, the unemployed youth population stood at 4,640,000, while the NEET population reached 6,604,000 (Mascherini, 2018: 508). Therefore, if a country's NEET rate exceeds its youth unemployment rate, it signifies the presence of more profound structural issues. Furthermore, within the NEET category, those who are actively seeking work and are available to start (active NEETs) can be distinguished; subtracting this group yields the net figure for inactive NEETs. 'Passive NEETs' consist of individuals who are neither in education nor seeking work, and thus remain outside the labor force (Eurofound, 2012). Reintegrating the passive NEET population into the labor market necessitates a far more complex intervention. As evidenced, calculating the NEET rate is a formidable task, as the pathways into NEET status are manifold, rendering the NEET population a highly differentiated and heterogeneous group.

Young adults who are not in education, employment, or training have emerged as a significant global predicament, with different nations confronting diverse challenges. Extensive research indicates a robust correlation between NEET status and adverse outcomes, such as mental health disorders, diminished self-esteem, and social exclusion (Gunnes et al., 2025). The deleterious impact of NEET status is not confined to individual well-being; it reverberates across both the economy and society at large. Figure 1 provides a comprehensive

synthesis of the multidimensional negative consequences of being NEET from various perspectives (Ak et al., 2021; Eurofound, 2012; Eurofound, 2015; Eurofound, 2021; Feng, 2015; Redmond, 2023; Strandh, 2014).

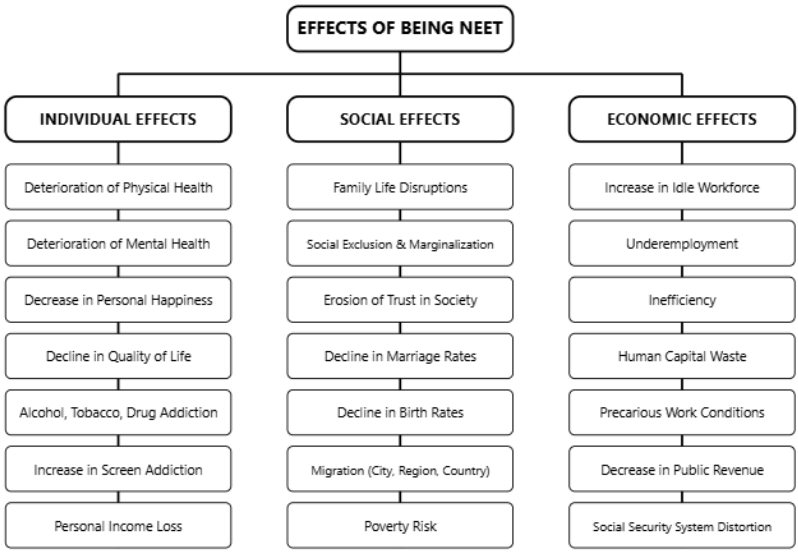

Figure 1: The Negative Impacts of Being NEET

Due to the aforementioned deleterious consequences of the NEET phenomenon, governments, national and international organizations, and the corporate sector are closely monitoring this issue and striving to formulate viable interventions. The sheer magnitude of the NEET population imbues these mitigation efforts with a sense of urgency. Indeed, according to ILO projections, by 2025, approximately one-quarter of the global youth population aged 15-24 amounting to nearly 260 million individuals—will be neither in employment nor in education.

While the prevalence of NEETs varies substantially across jurisdictions, an analysis of global trends reveals that this critical issue is more pronounced in low-income countries. Upon examining the data in Table 1, Zimbabwe exhibits the highest youth NEET rate at 51%, followed by Mauritania (50.8%), Lesotho (49.6%), Liberia (48.3%), and Guyana (46.4%). Furthermore, Table 1 illustrates that NEET rates among women are consistently higher compared to their male counterparts. This disparity suggests that cultural factors, early marriage, domestic responsibilities, and the burden of childcare and elderly care contribute to the persistently elevated NEET rates among women.

Table 1: Top 20 Countries with the Highest NEET Rates (Percentage of Population, Aged 15 to 29)

COUNTRY	Year	Total	Male	Female
Zimbabve	2024	51.0%	44,3.%	57.4%
Mauritania	2019	50.8%	42.9%	57.9%
Lesotho	2024	49.6%	50.3%	48.8%
Liberia	2017	48.3%	44.9%	51.1%
Guyana	2019	46.4%	38.9%	53.6%
Somalia	2019	44.7%	38.4%	50.6%
Zambia	2023	44.1%	39.4%	48.6%
Madagascar	2022	43.3%	37.1%	49.3%
Gambia	2023	42.6%	42.9%	42.3%
Nauru	2021	41.1%	33.6%	49.0%
Marshall Isl.	2021	40.6%	39.2%	42.1%
Botswana	2024	40.1%	41.4%	38.8%
Kiribati	2023	38.3%	36.8%	39.9%
Laos	2022	38.7%	35.7%	41.8%
Eswatini	2023	36.7%	34.0%	39.4%
Ghana	2022	36.2%	33.3%	38.8%
Nepal	2017	35.2%	21.4%	46.5%
Tuvalu	2022	34.6%	33.7%	35.5%
Rwanda	2024	34.4%	30.0%	38.6%
Kenya	2022	32.9%	27.6%	37.9%

Source: ILO, https://ilostat.ilo.org/data/snapshots/youth-neet-rate/ (Accessed: 20.08.2025).

The NEET rates within OECD member states are illustrated in Figure 2. As of 2024, the NEET prevalence across the OECD spectrum generally oscillates between 10% and 15%. While nations such as Norway, Slovenia, and Ireland exhibit NEET populations below the 10% threshold, the rates in countries like Türkiye, Costa Rica, and Greece surpass 15%. Notably, Türkiye stands out prominently among OECD countries with a rate exceeding 25%, marking a significant outlier in the regional distribution.

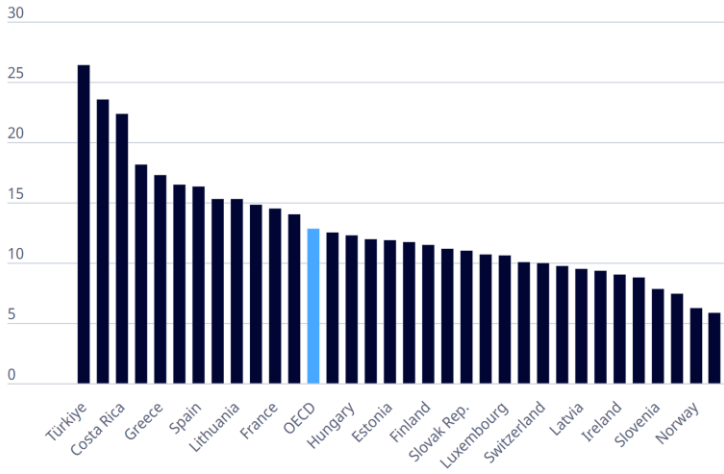

Figure 2: NEET Rates Across OECD Countries (Percentage of Total Population, Aged 15 to 29, 2024)
Source: OECD, https://www.oecd.org/en/data/indicators/youth-not-in-employment-education-or-training-neet.html (Accessed: 03.08.2025).

In 2024, the average NEET rate across European Union member states was recorded at approximately 11%. Within this group, Romania stands out with a NEET prevalence approaching 19.4%, followed by Italy (15.2%) and Lithuania (14.7%). As illustrated on the right axis of Figure 3, non-EU countries such as Türkiye, Bosnia and Herzegovina, and Serbia exhibit NEET rates that significantly surpass the European Union average. The European Pillar of Social Rights Action Plan, supported by EU funding mechanisms, has established a strategic target to reduce the NEET rate to 9% by the year 2030.

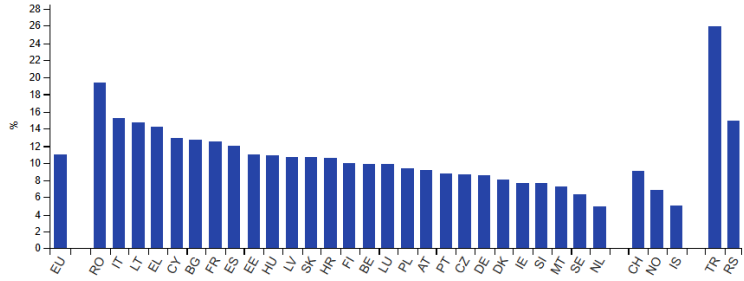

Figure 3: NEET Rates in European Union Member States (Percentage of Total Population, Aged 15 to 29, 2024)
Source: EUROSTAT, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistics_on_young_people_neither_in_employment_nor_in_education_or_training (Accessed: 15.05.2025)

The global youth NEET average, which stood at 22.8% in 2005, has declined to 20.4% by 2025. When countries are categorized by income level as of 2020, it is observed that youth NEET rates in low-income and lower-middle-income countries remain above the global average, whereas upper-middle-income and high-income countries trend below this average. As evidenced by Figure 4, youth NEET rates in low-income countries not only exceed the global average but also fail to exhibit the downward trajectory observed in other income groups in recent periods. An analysis of regional trends reveals that Arab states significantly diverge from the rest of the world with the highest youth NEET rates. In this context, African countries also remain above the global average. Conversely, countries in the Americas, Europe, and Central Asia exhibit rates below the global average, while Asia-Pacific countries move in tandem with the worldwide average.

Figure 4: Regional Trends in NEET Rates
Source: ILO Modelled Estimates (ILOEST) Database, ILOSTAT.

3. CATEGORIZATION OF NEET STATUS

In numerous studies examining the NEET phenomenon, various theoretical categories have been established depending on the authors' perspectives. However, formulating these categories based on empirical application is essential for a more realistic conceptualization of the issue. Such an application-oriented approach ensures that proposed policy interventions are not only grounded in practical realities but also significantly more efficient in achieving their objectives. Drawing upon findings from antecedent research and utilizing EU-LFS (European Union Labour Force Survey) data, Mascherini (2018: 520) formulated a novel categorization for the NEET population. Accordingly, the sub-categories of NEET are delineated as follows:

a. Re-entrants: This category encompasses youth who are poised to re-enter employment, education, or vocational training in the near future, thereby initiating or resuming the accumulation of human capital through formal channels. These individuals have already been hired or enrolled in a program and are awaiting the commencement of their activities.

b. Short-term Unemployed: This group comprises all youth who are currently unemployed, actively seeking work, available to start within two weeks, and have been without employment for less than one year.

c. Long-term Unemployed: This category includes youth who are actively seeking work and available to start within two weeks but have been unemployed for more than one year. Individuals in this cohort are at an elevated risk of labor market detachment and social exclusion.

d. Unavailable due to Illness or Disability: This category covers youth who are not seeking work or are unavailable to start within two weeks due to health-related issues or disabilities. This group includes those whose conditions preclude them from paid employment and who require more extensive social support.

e. Unavailable due to Family Responsibilities: This cohort includes individuals who are not seeking work or are unavailable to start due to caregiving responsibilities for children or disabled adults, or other family-related obligations. This group represents a mix of vulnerable and non-vulnerable individuals; some are excluded from the labor market because they cannot afford care services, while others voluntarily withdraw to fulfill familial roles.

f. Discouraged Workers: This group consists of youth who have ceased their job search based on the conviction that no opportunities are available to them. These are predominantly vulnerable youth at high risk of chronic unemployment and profound social alienation throughout their professional lives.

g. Other: This constitutes a statistical residual category for NEETs whose reasons for their status do not align with the aforementioned six categories. It is likely a highly heterogeneous mix encompassing both extremes of the vulnerability spectrum: from the most marginalized and hard-to-reach individuals to the most privileged who are awaiting specific opportunities or pursuing alternative life paths.

4. RISK FACTORS PRECIPITATING NEET STATUS

Identifying the factors that drive a young individual toward NEET status is an arduous process, as these elements are typically intertwined through intricate

and complex relationships. Since NEET is a multidimensional phenomenon, empirical research suggests that distinct determining factors exist for each specific NEET sub-group (Ak et al. 2021; Erdoğan et al., 2025; Franzosi et al., 2015; Gunnes et al., 2025; Günay & Yaylagülü, 2022; Mascherini, 2018; Şahin et al. 2021; Rahmani et al., 2024; Şahin et al., 2023). Furthermore, the prevalence and nature of the NEET condition exhibit significant variation across different countries and regions, influenced by divergent political regimes, policy frameworks, and institutional practices. Upon reviewing the scholarly literature, it becomes evident that the determining factors listed below are not universally applicable to every nation or regional bloc; moreover, the relative weight and distribution of these factors fluctuate considerably depending on the specific national context.

4.1. Individual Factors

Individual factors pertain to an individual's intrinsic characteristics, health status, and specific life circumstances.

a. Age: The progression of age is positively correlated with an increased risk of transitioning into NEET status (De Lannoy & Mudiriza, 2019; Wickremeratne & Dunusinghe, 2018).

b. Psychological Health Issues: Mental health challenges such as anxiety, depression, and a deficit in self-esteem. These issues may also manifest at the perceptual level (Bynner & Parsons, 2002; Gariépy et al., 2022; Karaoğlan et al., 2023; Sierra et al., 2018; Tayfur et al., 2022).

c. Physical Health Issues: Disabilities and chronic medical conditions. Similar to psychological factors, these may also impact the individual at a subjective perceptual level (Cabral, 2018; Eurofound, 2016; Rennison et al., 2005; Su et al., 2022; Wong, 2016).

d. Prior Negative Experiences and Lack of Motivation: Challenges such as an inability to set goals or find direction, unrealistic expectations for rapid career advancement, resistance to organizational authority, and upbringing styles. Furthermore, factors like the allure of socialization over labor, an incessant search for novelty, disillusionment within the professional sphere, lack of fortitude, avoidance of competition, and a propensity to surrender in the face of adversity contribute to this status. These are often compounded by unfavorable national wage and labor policies, a burgeoning sense of hopelessness over time, and adverse professional experiences (Rodriguez-Modroño, 2019; Rodwell et al., 2018; Şahin & Boduroğlu, 2025; Yates & Payne, 2006).

e. Personality Traits: Lower levels of psychological resilience, cognitive delays, and emotional fragility (Alvarado et al., 2020; Mendolia & Walker, 2014).

f. Educational Deficiencies and Academic Failure: Low educational attainment, early school leaving (dropout), suboptimal academic performance, or individual learning disabilities (Bynner & Parsons, 2002; Carcillo et al., 2015; Lin & Chiao, 2022; OECD, 2021; Vancea & Utzet, 2018; Yang, 2020).

g. Various Addictions: Alcohol consumption, substance abuse, and technological dependencies, such as gaming addiction (Baggio et al., 2015; Eyraud et al., 2025; Odea et al., 2014).

h. Social Isolation: A deficit in social skills or feelings of marginalization. This includes being influenced by the negative attitudes of peers, exposure to bullying, and the distortion of job-seeking processes due to familial or kinship pressures, which can erode social competencies (Bäckman & Nilsson, 2016; O'Higgins & Brockie, 2024).

4.2. Education-Related Factors

The structure of the education system and an individual's personal academic experiences are significant contributors to NEET status.

a. Deficiencies in the Education System: Inequality of opportunity in education and curricula that fail to align with individual needs and diverse learning profiles (Davey et al., 2025; Eurofound, 2012; Rahmani et al., 2024).

b. Lack of Vocational Guidance: The absence of adequate counseling and career planning services for youth, leaving them ill-equipped to navigate professional pathways (ILO, 2020; Lindhardt et al., 2022).

c. Early School Leaving: High dropout rates driven by a complex interplay of individual, familial, economic, environmental, and social factors (Berlin et al., 2020; OECD, 2021; Rahmani et al., 2024).

d. Mismatch Between Education and the Labor Market: The systemic failure of the education system to produce outputs consistent with labor market requirements. This encompasses the detachment of educational processes from real-world work environments, the "vicious cycle" created by a lack of prior work experience and skill gaps, and a pervasive deficit in information regarding labor market dynamics (Braziene et al., 2013).

4.3. Economic Factors

Economic conditions exert a direct influence on the opportunities available to youth regarding employment and continued education.

a. High Unemployment Rates: The intensified difficulty of securing employment in regions characterized by high youth unemployment (ILO, 2020). Furthermore, high inflation rates negatively impact labor markets by inducing macroeconomic imbalances.

b. Low Income Levels, Low-Wage Labor, and Poverty: Diminished labor motivation resulting from inadequate income levels and wages, coupled with substandard working conditions, the absence of job security, precarious low-wage flexible employment, and systemic poverty (Alcazar et al., 2020; Bell & Blanchflower, 2011; Cabral, 2018; Fabrizi & Rocca, 2024; Ruesga-Benito et al., 2018).

c. Economic Crises: The contraction of employment opportunities during global, regional, or sectoral economic crises. Additionally, the inability of families to provide financial support during downturns and the "scarring effect" observed when youth who lose their jobs during a crisis fail to reintegrate into the active labor market afterward (Carcillo et al., 2015; Caroleo, 2020; Rodriguez-Modroño, 2019; Scarpetta et al., 2010).

d. Educational Costs: The prohibitive costs associated with university or vocational training, which act as a barrier to educational participation (Bietenbeck et al., 2020).

4.4. Social and Cultural Factors

Societal values and cultural norms also play a significant role in contributing to NEET status.

a. Societal Expectations: Pressures exerted on youth to achieve specific milestones of success by a certain age (Furlong, 2006; Furlong & Cartmel, 2007).

b. Gender Roles and Social Norms: Societal and cultural pressures that encourage women to remain at home or abstain from professional life. This includes the impact of marital status and the "invisible labor" performed by women in domestic chores (Fremstad et al., 2023; Kang & Youn, 2024; Karaoğlan et al., 2023; Lüküslü & Çelik, 2022; Rodriguez-Modroño, 2019).

c. Social Exclusion: The marginalization and stigmatization by society of young people who are neither in employment nor in education (Bruno et al., 2014; Yates & Payne, 2006).

d. Immigration and Integration Challenges: Difficulties faced by migrant youth in integrating into the educational system and labor market, including language barriers and ethnic discrimination (Alcazar et al., 2020; Luthra & Sottie, 2019).

e. Pandemics: Epidemic diseases, notably the COVID-19 pandemic, can adversely affect NEET rates by contracting employment opportunities and disrupting educational continuity (Aina et al., 2025; Brunet, 2020; Gustavsson & Jonsson, 2024).

f. Forms of Discrimination in the Labor Market: Various types of systemic discrimination—including those based on ethnic identity, cultural background, religious belief, age, and gender—manifest within labor markets, impacting both youth unemployment and NEET rates (Kutsyuruba et al., 2019; Zuccotti & O'Reilly, 2018). For instance, age-based exclusion (viewing youth as "inexperienced") or biased hiring practices against minority groups significantly elevate NEET levels.

4.5. Political, Structural, and Legal Factors

Government policies and systemic structures also significantly contribute to the prevalence of NEET status.

a. Inadequate Social Policies: A deficit in targeted employment and educational programs specifically designed for youth (Eurofound, 2016).

b. Scarcity of Internship and Employment Opportunities: Limited availability of professional openings that allow youth to gain essential practical experience (ILO, 2020).

c. Regional and Local Inequalities: Disparities in regional development, residing in areas below the poverty threshold, and the constrained opportunities inherent in rural life versus the comparative advantages provided by urban centers in terms of employment and education (Bynner & Parsons, 2002; OECD, 2021; Simões, 2018; Wickremeratne & Dunusinghe, 2018).

d. Legal and Institutional Regulations in Labor Markets: Institutional frameworks that induce labor market rigidity, making hiring and firing processes more arduous, as well as minimum wages set above equilibrium levels. Such regulations tend to prolong the job-seeking duration for youth, thereby reducing their probability of employment and leading to elevated youth unemployment rates (Brzinsky-Fay, 2017; Eurofound, 2012; Kang & Youn, 2024; Saczyńska-Sokół, 2018).

4.6. Familial Factors

The domestic environment and kinship dynamics play a pivotal role in the trajectory of youth toward NEET status.

a. Low Socioeconomic Status and Parental Education Levels: Financial deficiencies within the family can severely constrain access to educational or vocational opportunities and often precipitate early school leaving (Alfieri et al.,

2015; Bradshaw et al., 2006; Karaoğlan et al., 2023; Kevelson et al., 2020; Karyda, 2020).

b. Lack of Parental Support: This includes broken family structures (divorce), parental neglect, excessive pressure, misinformation, a deficit in guidance, or persistent intra-familial conflicts (Furlong, 2006; Pitkänen et al., 2021).

c. Overprotective Parenting: An overprotective upbringing may hinder the development of autonomy, leading to diminished social skills and heightened emotional fragility in the individual (Borovoy, A., 2008; La Rosa et.al., 2025; Wen, 2023;).

d. Familial Unemployment: The presence of unemployment within the household can lead to a lack of professional role models for youth, potentially reinforcing a cycle of economic inactivity (Berloffa et al., 2018; Gregg & Tominey, 2005).

5. POLICY RECOMMENDATIONS FOR THE NEET PROBLEM

In view of the detrimental effects on societal and individual health, supporting individuals in NEET status through various policy interventions has become an imperative. However, the policies and strategies to be implemented must be addressed with a long-term, holistic, and multi-component approach. As a multi-faceted problem involving highly heterogeneous groups, activities directed toward NEETs can either synergistically reinforce one another or, conversely, produce outcomes that undermine their mutual effectiveness. In our view, to achieve successful policies in reducing NEET rates, all strategies should be built upon four main pillars: reform in educational policies, improvement of individual/familial/social relations, harmonization of economic and employment policies, and institutional/financial supports. If the processes within these elements and their interrelationships are organized and structured with a focus on reducing the NEET population, the success rate of the implemented policies will increase substantially.

Numerous policies and strategies aimed at reducing the global NEET population and, accordingly, enhancing labor market dynamics have been put into operation. These interventions vary significantly based on the underlying causes of NEET status, geographic regions, and national contexts, manifesting in diverse contents and strategic orientations (Ak et al., 2021; Eurofound, 2012; European Commission, 2021; KOSAM, 2024; Marques et al., 2025; Parvar & Avcı, 2025; Stea et al., 2024; Şahin, Kocakaya &Akgül, 2021; Tatar & Öztürk, 2024; UNDP, 2025). Building upon the identified drivers of NEET status, we

shall now categorize these high-potential strategies by taking the temporal dimension into account.

5.1. Short-Term Strategies

These strategies aim to achieve positive outcomes within a brief timeframe and are particularly suitable for implementation in contexts with critically high NEET rates. Simultaneously with these short-term interventions, comprehensive awareness campaigns regarding the NEET issue should be organized, and informational and consciousness-raising policies targeting families—which constitute the micro-level power of society—must not be neglected. The European Commission's Youth Guarantee program is among the leading institutions developing policies that emphasize the necessity of implementing these strategies without delay as soon as a young person becomes unemployed or completes their education; it highlights the importance of early intervention by offering a personalized support plan for job searching, education, and internships for every young person while providing financial backing for the process. European Union member states combat youth unemployment and NEET status at various levels by adapting the Youth Guarantee Program to their own national contexts. At the core of strategies that can be implemented in the short term lies the strengthening of relationships between education and training systems, within which the education system should be enriched with projects focused on entrepreneurship and innovation, vocational competencies must be increased, and youth should be equipped with contemporary skills. To address the lack of professional experience among youth, internship and apprenticeship programs should be incentivized, support programs for youth to establish their own businesses must be developed through consultancy and mentoring services, financial aid programs should be expanded, and new institutions should be established with specialized personnel to accelerate and facilitate job placement.

5.2. Medium-Term Strategies

These strategies aim to improve and enhance the labor market by making systematic changes over a longer horizon than short-term programs, with the primary objective being the alignment of the national education system with labor market demands. The curricula at every educational stage across the country should be updated according to the skills required by production sectors and must be perpetually revised to maintain their relevance. To make this process efficient, an effective labor market database should be established, specifically focusing on the identification of youth with high NEET potential. Furthermore, centers and units should be established to provide general

guidance to youth and specialized support for NEETs in their career planning, staffed by experienced career experts tailored to each level of education. Active labor force participation must be ensured for women, who constitute a significant weight in NEET rates in terms of gender, by providing support in areas such as entrepreneurship, flexible working hours, remote work, and childcare. Finally, special incentive measures should be implemented in regions and cities with high NEET concentrations, and regional development programs should be institutionalized to address these disparities.

5.3. Long-Term Strategies

The defining characteristic of long-term strategies is to generate permanent solutions to prevent NEET rates from rebounding and to ensure these processes evolve into self-sustaining cycles. The focal point of these strategies is the reconciliation of labor supply and demand within labor markets and the assurance of market efficiency. Within this framework, economic sectors should be diversified and restructured in accordance with contemporary needs. Elements inducing labor market rigidity must be eliminated, and regulations should be designed to facilitate an easy entry into the workforce for youth. Furthermore, flexibility-oriented regulations should be implemented within the context of the requirements brought by globalization, and the financial structure of the social security system must be adapted to this flexibility. Radical reforms in the education system are necessary to plan an educational process focused on the 'professions of the future' while improving the existing system. For the solution proposals listed here to succeed, it is an absolute necessity to establish an effective performance monitoring and evaluation system to measure and track success. Fluctuations in NEET rates emerge as the primary key performance indicator (KPI) in this regard. Beyond this, various performance indicators such as the number of youth participating in educational programs, the number of youth applying for or benefiting from entrepreneurship supports, and youth labor force participation rates can be developed. If these indicators and other relevant labor market data are analyzed regularly, and strategies are reviewed and adjusted based on this data, the policies will achieve success.

6. CONCLUSION AND EVALUATION

Equating the NEET problem solely with the individual choices of youth would be an excessively reductionist approach that undermines mitigation efforts, as the structural roots of the issue are far more profound. This study analyzes the NEET phenomenon—which increasingly assumes the character of a structural and socio-economic crisis threatening global labor markets—and

offers comprehensive policy recommendations for its resolution. Beyond being a mere labor market ailment, NEET status defines a phenomenon characterized by numerous individual, social, and economic negative impacts along with cumulative disadvantages. The findings indicate that NEET status signifies not only a current loss of GDP for national economies but also long-term costs such as the waste of human capital, a decline in social morale, and the disruption of the intergenerational transfer of social welfare, all of which exert significant pressure on economic policies and labor market strategies.

Emphasizing that the NEET population is not absolutely homogeneous, this study highlights the critical importance of differentiated policy designs for various sub-groups; since each NEET sub-group possesses distinct characteristics, needs, and tendencies, designing a one-size-fits-all policy is a challenging endeavor. Given that certain groups within the NEET category cannot be adequately covered by standard labor market policies, an effective policy mix can only succeed if designed through an interdisciplinary approach and an integrated prevention model. In this context, improvements to the entrepreneurship ecosystem must be coupled with educational enhancements, radical reforms should be instituted to reduce the number of female NEETs marginalized by traditional gender roles, and economic sectors must be diversified while managing regional and national migration flows.

While short-term policies may provide temporary declines in NEET rates, a permanent reduction is only possible through long-term and deep-rooted structural reforms centered on policies that establish vertical and horizontal integration between education and labor markets. General and vocational education systems, designed according to the current and near-future needs of the business world, must equip NEET youth with continuous and self-regenerating skill sets, thereby facilitating their transition into the labor market.

Ultimately, the success of the struggle against the NEET problem does not depend on a single institution or sector; the state, private sector initiatives, and non-governmental organizations all share pivotal roles. NEET youth are not merely simple factors of production but social actors who play a vital role in the country’s future and serve as the cornerstones of a resilient welfare society. A perspective focused on NEET youth forms the basis of a sustainable and inclusive development vision, and resolving this multidimensional problem will not only enhance economic efficiency but also contribute to the resolution of deep-seated socio-psychological societal issues.

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Chapter 2

From Brain Drain to Brain Circulation Economic Effects of High-Skilled Labour Migration in Turkey

Atakan DURMAZ[1]

Introduction

Developments in communication and telecommunication technologies and the decline in transport costs have improved migrants' relations with their home countries. This development has led to a change in the negative view of brain drain that existed in the 1970s and 1980s since the 1990s (Johnson and Regets, 1998; Meyer, 2001). The strengthening of migrants' relations with their home countries has brought the idea that the knowledge, skills and experience gained in the country of origin can be used in the economic development of the sending countries. Studies conducted in this period focused on the effects of migration on the economic development of sending countries. One of the most controversial issues in this period is that migrant remittances can be an important source of external resources for the economic growth of migrant countries and that migrants can act as a bridge between their countries and their homeland (Portes, 2001; Adams 2003; Vertovec, 2004; de Haas, 2005; Agunias, 2006). At the same time, some developing countries have implemented various incentive policies for the return of the expatriate population. Examples of countries that have been successful in encouraging reverse brain drain have led to the emergence of the concept of "beneficial brain drain" (Yoon, 1992:5). Useful brain drain is the result of an interaction between migrants and residents in the home country. Meyer and Brown (1999) show that diaspora networks make a significant contribution to achieving the economic growth targeted by the home country. Kapur (2001) found that countries with large populations such as China and India benefit more from their diasporas. The findings show that not all developing countries can effectively utilise diaspora networks. However, when the studies in the literature are evaluated in general, it can be said that researchers in the diaspora form a functional bridge between the two countries, because diaspora members have knowledge about the educational

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systems, bureaucratic structures, political situation, approaches of politicians and cultural differences of the two countries (Lowell & Gerova, 2004; de Haas, 2006; Seguin et al. 2006; Katseli et al. 2006).

Some studies in this direction show that international migration and human capital mobility lead to an increase in the scientific and technological capacities of sending countries (Saxenian, 2005; 2006; Agunias and Newland, 2007; Wickramasekara, 2011; Tejada et al., 2013). Recent studies on the contribution of skilled migrants to their home countries reveal a new actor called "Scientific Diaspora" (Barre et al., 2003; Seguin et al., 2006; Tejada and Bolay, 2010). Scientific diasporas, which are defined in these studies as communities of scientists and engineers living abroad and aiming to contribute to the development of their homeland or region, especially in the fields of science, technology and education, are seen as actors enabling knowledge circulation (Foray, 2004; Seguin et al., 2006; Tejada, 2012).

In summary, the debates on this issue can be categorised under two main headings: classical approaches and innovative approaches. The classical approaches consist of the "internationalist" model, which argues that science is the common property of humanity and that the brain can migrate to the areas where its marginal benefit is the highest and can move like other factors of production, and the "nationalist" model, which opposes this mobility because the migration of strategic manpower capital, which is already limited in developing countries, to developed countries would be a great loss for the development strategies of developing countries and would cause the gap between them and developed countries to widen. Innovative approaches, on the other hand, consist of the "beneficial brain drain" or "brain gain" model, which argues that the developments in communication technology can accelerate the transfer of knowledge, which is an important factor in the development of countries, and the "brain circulation and scientific diaspora" models, which argue that qualified people can contribute to economic development by maintaining their relationship with their homeland despite the physical migration.

In the context of the increasing importance of human capital in knowledge societies and global competition, this study aims to examine the economic effects of highly skilled labour migration in Turkey from the perspective of transition from brain drain to brain circulation. In the study, firstly, the theoretical framework of the concepts of brain drain and brain circulation is discussed and then the effects of these phenomena on economic growth and development are analysed. In the case of Turkey, the historical development, causes and consequences of highly skilled labour mobility are examined, and

the effectiveness of existing policies is evaluated. Within the scope of the study, the potential of diaspora networks, factors encouraging reverse brain drain and international examples of successful practices are analysed comparatively. This study aims to contribute to the scientific, technological and economic development of Turkey by developing sustainable policy recommendations that can transform Turkey's brain drain problem into brain circulation.

Classical Approaches on the Effects of Brain Drain

The first static economic analyses that emerged in the mid-1960s on the welfare effects of skilled labour migration on the welfare of sending countries focused on the labour market of the sending country and tried to analyse the welfare effects based on assumptions about the way wages are determined in the labour market. In this period, there was not only a flow of brain drain from developing countries to developed countries, but also a flow of brain drain among developed countries. However, the fact that developed countries are in a position to compensate for this brain drain with their own internal dynamics, and that they can also supply the qualified labour force they need from outside when necessary, caused the developed countries in the classical period not to see this issue as an important problem. This is also evident from Grubel and Scott (1966), one of the most important studies on this issue in the classical period. In this study, the migration of skilled labour was analysed under the assumptions of a perfectly competitive labour market. According to this study, in a situation where wages equilibrate at a point where the marginal productivity of labour is equal to the marginal productivity of labour, the reduced labour supply as a result of migration will not lead to an increase in wages in the labour market. Therefore, it is stated that the migration of skilled labour in the sending country does not have any welfare effect on the rest. Based on this result, Grubel and Scott (1966) argued that both sending and receiving countries do not need to implement any policy against skilled labour migration and that the "laissez-paisser" (let them pass) philosophy should be adopted.

However, this approach has been criticised on the grounds that perfectly competitive markets are an exceptional case and that the situation regarding the welfare effects of skilled migration will change when market imperfections are actually taken into account. In particular, when factors such as the difference between the social and private marginal product of labour and the size of public subsidies for the training of skilled labour are considered together, the conclusions that the welfare effects of skilled labour migration are neutral have lost validity. In line with these debates, the negative effects of skilled labour

migration on the welfare of sending countries have come to the forefront in the models that have emerged since the early 1970s.

The second important pillar of the classical models is the model of Bhagwati and Hamada (1974), based on the general equilibrium theory of the labour market in sending countries. In this model, the effects of skilled migration on the employment structure of the sending countries are analysed based on the wage formation in the labour market of the sending countries and the disturbances in the financial structure of the education system.

In this period, the general opinion in the literature on the effect of migration on the labour market is that migration will reduce unemployment in an environment of unemployment. However, within the framework of this model, it is emphasized that the effect of skilled migration on unemployment may vary depending on the elasticity of demand for skilled labour as a result of the expected wage increase. According to the study, if the elasticity of demand for skilled labour is less than 1, the increase in wages will cause a smaller decrease in employment than this rate, while if the elasticity of demand is greater than 1, the increase in wages of skilled labour will cause a greater decrease in employment than this rate. As a result, the expected increase in wages due to the decreasing supply of skilled labour with migration will lead to a decrease in employment.

Bhagwati and Hamada (1974) argue that skilled migration will have negative effects on the welfare level of developing countries through unemployment and education costs. Accordingly, in a situation where education is financed by public resources, there is a significant transfer from developing countries to developed countries.

Looking at the classical period in general, it is understood that two views emerged to explain the effects of skilled labour migration in this period when the neoclassical economic perspective was dominant (the mobility of factors of production was effective on factor prices). The first of these is the "internationalist" approach, which argues that qualified brain drain has positive effects on the world economy, and the second is the "nationalist" approach, which argues that the human capital stock will decrease as a result of the loss of qualified labour force through migration, which will negatively affect the economic growth of countries.

Internationalist Approach

According to the proponents of the internationalist approach, the most important result of skilled labour migration is the increase in the level of output worldwide as the labour force, which is one of the factors of production, goes to

the place of optimum productivity. As a result, the increase in the media worldwide positively affects the production of the countries that provide skilled labour migration (Johnson, 1968). The internationalist approach asserts that people are free to utilise the opportunities they encounter in order to improve their living standards and increase their welfare levels. According to Johnson (1965, 1967 and 1968), who is one of the representatives of this approach, nationalism and nationalism-related understandings are outdated concepts and people take into account their personal gains rather than the social costs they will impose on the world in general when making a decision to migrate to increase their welfare level.

In general, it is believed that migration decisions taken with the aim of increasing personal welfare have a positive impact on the personal earnings of the qualified migrant. This is especially the case when migrants from developing countries have income differences between their country of origin and the country to which they migrate (Johnson, 1968: 79).

Studies on this approach have generally emphasised that in the long run, the whole world will be positively affected by migration flows and therefore, sending countries should not pay too much attention to the loss of labour force.

In their study, Grubel and Scott (1966) acknowledge that changes in the marginal product of the amount of labour left behind due to migration flows are likely to affect income redistribution, but argue that this effect can be ignored since the skilled labour migrating from developing countries represents a numerically small group. Although under the same assumptions as this study, Berry and Soligo (1969), in their study on migration flows of non-negligible size, concluded that the welfare level of the labour force left behind would decrease. This makes the assumption that skilled labour flows are a group that can be ignored less credible at a time when skilled labour flows from developing countries to developed countries are increasing every year (Cervantes and Guellec, 2002).

Another issue emphasised by the proponents of this approach is whether the country that the skilled labour force leaves with migration is harmed by this situation. As a result, investments are made in human capital as in all other factors of production. If skilled labour migrates, it means that this investment pays off in the destination country. According to Johnson (1965), if all or part of the education of the skilled labour force is financed by taxes paid by the public, everyone who migrates gives the education investment from the country of origin to the country of migration as a gift. In other words, while the country of origin gains the opportunity to obtain the high income that emerges without any investment, the country of origin loses the opportunity to get the return on its

investment9. In the study, it is stated that in order to compensate for this situation, it is possible to impose compulsory service conditions on migrants or to compensate the loss directly by making the migrants or the employers or governments in the country of migration indebted to the sending country (Johnson, 1965: 302).

In conclusion, the proponents of this approach consider skilled labour migration as a phenomenon that can maximise the welfare of the world and argue that it will be very beneficial for the whole humanity in general. In addition, although it may lead to compensable and relatively insignificant problems for the sending countries, it has many positive aspects and benefits in economic, social and cultural terms. These positive aspects and benefits can be listed as follows (Oğuzkan, 1996: 234):

- Thanks to the superior working conditions and opportunities in the country of migration, the migrant skilled labour force will be able to present the results of its studies to the benefit of the whole world and at the same time to the benefit of its own country through publication.
- The achievements of the migrant skilled labour force in the country of destination bring prestige to their own country.
- The migrant skilled labour force can better evaluate the needs and problems of their own country in the country of destination from an independent point of view.
- The stay of the skilled labour force in the home country where there are no suitable conditions may cause negative externalities.
- The fact that the migrating skilled labour force sends some of what they save from their earnings to their relatives in the sending country is an important gain for developing countries.

Skilled migrants returning to their home countries can transfer the knowledge, skills, experience and technology they have acquired abroad to their home countries and increase productivity and economic development there (Lowell and Findlay, 2001: 2).

Nationalist Approach

According to the nationalist approach, while the negative effects arising from the loss of skilled labour affect the sending countries in the short run, the increase in production in the global economy due to the mobility of skilled labour affects these countries only in the long run and indirectly (Watanabe, 1969). The proponents of this approach, unlike the proponents of the internationalist approach, respect the freedom of movement and freedom of work of individuals, but have different views on the rights of scientists and

other skilled labour to migrate to other countries. From the point of view of developed countries, if these qualified migration movements are concentrated in the areas where the domestic labour force works, countries are not indifferent to the resulting effects. Patinkin (1968) argues in his study that from the world welfare perspective of the internationalist approach, the gains of national states gain more importance due to the fact that nation states can implement fiscal policies to correct the distribution of income in the free market within their borders by using instruments such as progressive income taxes and transfer payments when necessary, but there is no administration that can do this at the international level (Patinkin, 1968: 101).

Another criticism of the internationalist approach is related to the possibility of skilled labour in developing countries to create positive externalities. Accordingly, the skilled labour force in developing countries is too small a group to have a significant impact on welfare. Positive externalities arise because the social returns to education are greater than the private returns to individuals.

In the absence of externalities, the most important cost of skilled labour migration for sending countries is the public and private investment in the education of migrants. When calculating the loss of national income of sending countries, the present value of the expected future income of migrants should also be taken into account (Watanabe, 1969). Grubel and Scott (1966) argue that if the marginal productivity of migrants is equal to the income they earn in their countries of destination, the sending countries will not suffer any income loss due to this migration movement. However, this argument has been criticised for reasons such as differences in the measurement of marginal productivity, neglecting the costs arising from the relocation of skilled labour, neglecting the tendency of skilled labour to save a large part of their income (Güngör, 2003: 14).

The internationalist approach has been criticised not only for its argument that the loss of skilled labour reduces the welfare of developing countries, but also for its focus on the steady state of labour movements in the long run, ignoring the transitional dynamics of economic adjustments between the absence of migration flows in the short run and the onset of migration flows in the long run.

In addition to this, the different levels of skilled labour availability (scarcity or surplus) in sending countries are crucial in determining the severity of the impact of the loss of skilled labour due to migration flows on the national economy. The substitution of migrants with less skilled labour due to migration flows imposes a cost on the economies of sending countries. The reason for this

is the decrease in the positive externality created by this pool due to the decrease in the qualified labour pool of qualified people (Watanabe, 1969: 410).

According to Baldwin (1970), if migration flows take place in skilled labour groups that are more abundant in the labour market of the country, the economy of the country may suffer less loss from these migration movements. The widespread higher education system in many developing countries has led to an increase in qualified labour force in these countries. However, the wrong education policies of some countries have led to the training of people in different fields and numbers instead of training people with the qualifications and numbers that these countries need. In other words, there has been a mismatch between the needs of labour markets and the labour force trained. From this point of view, skilled labour migration is considered as a phenomenon that helps to eliminate structural defects in the labour market. In global terms, this can be considered as a positive situation that helps to prevent brain waste. However, from the point of view of the emigrating country, it is revealed that the resources used in the training of these qualified people are wasted, and more importantly, the qualified labour deficit in the fields that the country needs cannot be closed, and therefore, although the global economy is positively affected by this situation, the country's economy is negatively affected.

Bhagwati (1976) states that the phenomenon of brain drain can directly or indirectly affect the welfare level of countries from four main points: unemployment, income distribution and inequality, national income and qualified labour force. Accordingly, it is of utmost importance for countries to have a qualified labour force with scientific equipment and technological developments in order to sustain their economic growth. In this sense,100 the loss of qualified labour force of developing countries through brain drain is a situation that will hinder the development of these countries in the long run. However, when analysing the effects of brain drain on welfare level, three main aspects of brain drain should be taken into account. Firstly, skilled migrants return to their home countries from time to time. This has a positive effect on the net income levels of developing countries. Secondly, skilled labour migrating to a country with better working conditions can make significant contributions to the welfare level of the country when they return with the experience and knowledge they have gained there. And finally, remittances of migrants to their home countries are extremely important for the economies of developing countries. In general, however, such stabilising effects do not completely eliminate the negative effects of brain drain in many developing countries (Bhagwati, 1976: 714-716).

As a result, according to the proponents of the nationalist approach, it is not possible to explain the negativities caused by brain drain with views such as universality of science, free movement of production factors, increasing world welfare, etc. These do not eliminate the negativities that occur especially in developing countries that emigrate, on the contrary, they increase them. Thanks to brain drain, developed countries increase their economic development by organising their migration policies in line with their own needs and interests. In this case, it causes the level of development between developed countries and developing countries to increase to the detriment of developing countries.

New Approaches on the Effects of Brain Drain

In the 1960s and 1970s, many theoretical studies on skilled labour migration focused on the negative effects of this international migration phenomenon on developing countries. However, in the following periods, technological developments, advances in communication technology, and the decrease in travel costs have increased the interactions between countries. This situation has led to the emergence of studies aimed at investigating the positive effects of these movements, such as the possibility that international migration flows in this period may create positive externalities, which were also discussed in the previous period but could not be sufficiently matured, and the diasporas (scientific diasporas) formed by qualified labour force abroad provide information flow with those in the homeland. The approaches to positive externalities put forward in this period are in line with a new growth model called endogenous growth models101 that includes technology and learning (Aghion and Howitt, 1998).

New approaches to the effects of brain drain flows have put the phenomenon of education at the basis of their models, as in the classical approaches, but from a different perspective. Studies that emphasize the effect of skilled labour migration on human capital formation argue that skilled labour migration will increase growth by increasing the human capital stock in the sending country (Mountford, 1997; Stark et al, 1998; Vidal, 1998; Beine et al, 2001; Beine et al, 2002). According to this view, if the return on education is higher in a receiving country than in a sending country, the probability of migration is based on the principle that the number of people continuing their education will increase since the expected return or return on human capital will increase (Gökbayrak, 2006: 133). Considering that only a portion of educated people can migrate, even in the presence of migrants, the human capital stock of the sending country will increase and this will have a positive effect on the economic growth of the sending country.

The views that evaluate the brain drain within the framework of the new approach are generally categorised under two headings. The first one is the "beneficial brain drain" or "brain gain" approach, which argues that the possibility of migration will have a positive effect on increasing the level of education, which in turn will increase the economic growth of the country, and the second one is the "brain circulation and scientific diaspora" approach, which is a new approach to international skilled labour migration that includes the effects of brain circulation, reverse brain drain and scientific diasporas and networks on the sending countries.

Beneficial Brain Drain and Brain Gain Model

According to these approaches, developing country economies that are open to migration flows (either sending or receiving) have more opportunities to acquire innovations. The possibility of earning higher wages abroad leads individuals in the sending country to increase their investment in education, which will ultimately have positive effects on the economic growth of the country.

In their study, Stark et al. (1998) argue that skilled labour migration can have positive effects on the sending country, based on the thesis that the positive externalities created by having higher human capital will contribute positively to the national economy. Beine et al. (2001), on the other hand, argue that migration flows have both positive and negative effects on the economy of sending countries in their study in which they formulate the effects of the increase in human capital stock102 as the transfer of qualifications from one generation to another generation. Accordingly, while migration flows have a negative impact on sending countries by causing them to lose skilled labour (drain effect), they also have a positive impact in terms of encouraging the formation of human capital stock (brain effect). How these movements will affect the economy in general depends on which of these two effects will be more dominant (Beine et al., 2001: 287-288).

Unlike the classical skilled labour migration models, these models adopt the assumption that skilled labour migration is not necessarily permanent migration. In the studies conducted in this direction, studies in which temporary migration comes to the fore in skilled labour flows gain weight. Based on this point, Vidal (1998) argues in his study that the next generation will be more educated through intergenerational human capital transfer and that the negative effects arising from traditional human capital acquisition (cheaper for receiving countries and more expensive for sending countries) can be prevented through what he calls the "spillover effect". Accordingly, given that migrants will

eventually return to their home countries, the human capital transferred from generation to generation will have a spillover effect in the sending country, thus having a positive impact on the human capital and growth of developing countries.

Another assumption of the new approaches on the brain drain phenomenon that the possibility of migration will have positive effects on the economies of these countries by increasing the human capital of the sending countries is that not all of the increased qualified labour force can migrate. While this situation is considered as a selection failure for the receiving countries in terms of new approaches, it is considered as a factor that contributes to making migration beneficial for the sending countries (Stark et al., 1998: 364-365).

According to Stark et al. (1997), firms seeking to employ foreign skilled labour offer the same wage to all migrants, taking their educational level as given, without paying attention to the differences in the qualifications of the labour force they initially employ. This situation causes less qualified labourers to receive higher wages than expected. Over time, firms recognise the difference and offer the appropriate wage and the marginal benefit of migration for the less qualified starts to decline. This situation may cause them to return to their country, albeit with a limited103 probability. The return of these people is perceived as a positive situation for the sending country, as they return more qualified and experienced than before migration (Stark et al., 1997: 228-233).

The expectation that skilled labour migration, which was put forward in the classical studies, would create pressure on wages to rise by reducing unemployment in sending countries, changes depending on the need for skilled labour. However, Stalker (2000), in his study on two of the important source countries of skilled labour migration such as India and the Philippines, shows that the emerging situation points to the opposite of the theoretical expectations. According to this study, although there is a significant amount of migration abroad, due to the fact that the education systems of these countries supply more qualified labour (scientific and technical staff) than the demand of the labour market, there is no decrease in unemployment and thus no increase in wages as a result of migration (Stalker, 2000: 79).

Lacuesta (2006), in his study, examined whether migrants contribute to the human capital of the country within the skilled labour force, which he divided into three groups as temporary migrants, permanent migrants and non-migrants from Mexico. In the study, contrary to previous studies, he emphasised that the contribution of return migrants to the human capital stock of the country cannot compensate for the human capital lost due to migration movements. The reason for this situation is the decrease in the number of return migrants. However, the

study emphasizes that despite the negative impact of skilled labour migration on the human capital stock, the remittances sent can increase the welfare level and productivity of those left behind, and therefore, skilled labour migration has not only negative effects but also positive effects on the sending country.

Batista et al. (2007), in their study on Cape Verde, the most brain-draining country in Africa, concluded that the probability of future migration positively affects the level of education. Accordingly, a 1 unit increase in the probability of future migration leads to a 1.9 unit increase in the enrolment rate (secondary school). In addition, about 40 per cent of the working-age population cites the possibility of future migration as the reason for completing university. In the study of Batista et al. (2012) on the same country, it is stated that a 10-unit increase in the probability of future migration leads to a 4-unit increase in the schooling rate (secondary school). In both studies, contrary to the classical approaches, it is emphasised that brain drain is not a serious problem, and that migration movements contribute positively to the human capital stock in the country, therefore, sending countries should stay away from policies that restrict migration movements.

Among the new approaches, there are also studies that have reached findings on the negative effects of skilled labour migration for the sending countries around the education phenomenon. In their study, Hague and Kim (1995) find that the human capital fluidity arising from migration will reduce the average level and growth rate of human capital in sending countries and underline the need for sending countries to shift their resources primarily to basic education, given that those with higher levels of education will be more likely to migrate. Wong and Yip (1999), on the other hand, conclude that if the rate of accumulation of human capital in sending countries is low, migration will reduce the living standards of those left behind by reducing their lifetime incomes. At the same time, although the migration of skilled labour has a raising effect on the wages of the remaining skilled labour force, it will cause the wages of the unskilled labour force to fall, ultimately leading to a slowdown in the growth rate of the country's national income (Wong and Yip, 1999: 725). However, the fact that the data used by both studies are not suitable and unreliable for comparison has caused the results of these studies to be quite mixed and uncertain.

Schift (2005) argues that skilled labour migration is unlikely to produce the results predicted by other studies on the growth rates and welfare levels of sending countries. According to this study, first of all, quality/skill is not homogenous. Therefore, since individuals with higher qualifications will be more likely to migrate, the qualification level of the labour force left behind in

the sending country will be relatively lower. Moreover, since not only highly qualified labour but also unqualified labour will emigrate from the sending country, the incentive effect of qualified labour on education is lower than expected. In addition to this, the expected return of education is highly uncertain as the success status of the individual, the status of employment opportunities abroad in the future, changes in migration policies in the receiving countries, etc. will affect the migration decision. Moreover, increasing the human capital stock in the sending country disproportionately to the physical facilities may create a brain waste (dumping) situation. In addition to all these situations, increasing the resources allocated to education in the sending country in order to increase the qualified labour force105 may have a negative impact as it will mean an increase in public and private expenditures and will reduce the expenditures for other goods and services through the exclusion effect. Considering all these negative effects, Schift argues that, contrary to the new approaches, policies that prevent skilled labour migration should be taken (Schift, 2005: 30-31).

The thesis of the new approaches on the effects of skilled labour migration on sending countries that the possibility of migration will increase the human capital stock and thus the growth of the sending country by encouraging education, reveals that education and qualification are not done with the aim of staying in the home country, but with the expectation of migration. At this point, considering on the one hand the attractive working conditions of the developed countries which are the recipients of migration and on the other hand the difficulty of retaining the qualified labour force of the sending countries with their current situation, it can be said that the increase in the human capital stock does not mean anything for economic growth unless an environment is created to utilize this capital. As long as an environment to utilise this human capital stock cannot be created, the sending countries will enter into a vicious circle in which they will bear more costs with the migration of the said labour force.

Brain Circulation and Scientific Diaspora

Developments in communication and telecommunication technologies and the decrease in transport costs have increased migrants' ties with their home countries. This situation has led to a change in the negative perspective towards brain drain in the 1970s and 1980s since the 1990s (Johnson & Regets, 1998; Meyer, 2001). The increase in migrants' relations with their home countries has brought along the idea that the knowledge, skills and experience gained in the country of origin can be used in the economic development of the sending countries. The studies conducted in this period generally focused on the effects

of migration on the economic development of sending countries. In particular, the fact that remittances sent by migrants can be an important foreign resource for the economic growth of the sending countries and that migrants can act as a bridge between their home countries and their homeland is one of the most discussed issues in this period (Portes, 2001; Adams, 2003; Vertovec, 2004; de Haas, 2005; Agunias, 2006).

In this period, some developing countries have tried to encourage the return of their population abroad through various policies they have implemented.106 The fact that countries that have been successful in the policies they have implemented to encourage return have also made significant economic breakthroughs has led to the emergence of the concept of "beneficial brain drain" in the literature (Yoon, 1992: 5). In general, beneficial brain drain deals with the interaction between migrants and those who remain in their home countries. In their study, Meyer and Brown (1999) revealed that especially established "diaspora networks" have significant contributions to the economic growth targeted by the home country in terms of beneficial brain drain. Kapur (2001), on the other hand, states in his study that developing countries with large populations outside their countries such as China and India will benefit more from their diasporas than other countries, in other words, not all developing countries can benefit to the same extent from the diaspora networks they create. However, when the studies on this subject are evaluated in general, it is seen that diaspora researchers can be a good bridge between the two countries because they have knowledge of the culture and language of both their homeland and the country they are in, as well as the educational systems, bureaucratic structures, political situations and potential attitudes of politicians, etc. of both countries (Lowell and Gerova, 2004; de Haas, 2006; Seguin et al. 2006; Katseli et al. 2006). Some studies in this direction argue that international migration and human capital mobility lead to an increase in the scientific and technological capacities of sending countries (Saxenian, 2005; 2006; Agunias and Newland, 2007; Wickramasekara, 2011; Tejada et al., 2012).

Recent studies on the contributions of skilled migrants to the homeland have highlighted a new actor called "scientific diaspora" (Barre et al., 2003; Seguin et al., 2006; Tejada and Bolay, 2010). Scientific diasporas, which are defined as communities organised by scientists and engineers living abroad and aiming to contribute to the development of their homelands or regions, especially in the fields of science, technology and education, are seen as actors that enable the circulation of knowledge towards the homeland (Foray, 2004; Seguin et al., 2006; Tejada, 2012). As a result, the reduction in transport and communication costs due to technological developments enables migration countries to replace

the human capital stock that they have lost in physical terms in various ways. In particular, countries that have intensively emigrated skilled labour and scientists in the past are trying to make use of their diasporas to turn this situation in their favour.

Highly Skilled Labour Migration in Turkey

Turkey's relationship with migration dates back to the 19th century, when the migration of educated individuals began as a response to political instability and social turmoil, particularly during the decline of the Ottoman Empire. Individuals in the Ottoman Empire sought opportunities to escape restrictive environments that inhibited intellectual and professional development. Erel's work highlights how cultural capital shifted among migrants negotiating their status in both immigrant and host societies and illustrates the continuing trends of skilled labour leaving the country (Erel, 2010). This basic context illustrates how early social and economic conditions set a precedent for later developments. The process that started with Turkey's sending labourers to Germany and other Western countries, especially in the 1960s, paved the way for the migration of skilled individuals (Sarı, 2023). Towards the end of the twentieth century, Turkey experienced significant political turbulence, including military coups and increasing authoritarianism. These conditions created an environment that forced many professionals to seek better opportunities abroad.

The 1980s marked a significant change in the Turkish economy with the adoption of neoliberal policies that contributed to unequal socioeconomic conditions. These transformations, initially aimed at modernisation, worsened inequalities, which pushed skilled professionals, especially in academia and health, to migrate in search of more favourable working conditions abroad (Özbilgin, 2025). Özbilgin argues that economic deregulation and restrictions on academic freedom were instrumental in shaping the academic diaspora of Turkish academics seeking more egalitarian professional environments (Özbilgin, 2025). This period thus set the stage for an increasing flow of well-educated individuals from Turkey seeking stability and autonomy in their careers.

From the 1990s to the 2000s, this brain drain increased with many Turkish academics and professionals moving to Western countries, particularly Europe and the United States. Simultaneously, structural adjustments made after the 2001 economic crisis had profound effects on labour markets, further encouraging medical doctors and healthcare professionals to pursue opportunities abroad (Yılmaz & Aydın, 2023). The increasing dependence on for-profit health systems in Turkey has marginalised public health workers,

prompting many to consider migration as a viable solution (Ulupınar et al., 2024). This pattern continued over the following decades, as scientific studies reflected growing disillusionment among educated youth facing limited career prospects coupled with bureaucratic inefficiencies (Berse et al., 2024).

Recent studies emphasise that contemporary migration of health workers is influenced by a mix of economic, social and psychological factors. An alarming percentage of medical students express intentions to migrate due to workplace violence and perceptions of inadequacy in the national health system (Emiral et al., 2024). Studies examining the mental health of medical professionals also emphasise that stress, anxiety and low job satisfaction are critical determinants of migration intentions and exacerbate the brain drain crisis (Emiral et al., 2024; Sancak et al., 2023). According to the Turkish Statistical Institute data, the number of higher education graduates going abroad has increased by 15% each year since 2020 (İşcan & Demirel, 2021). In the context of the 2020s, the COVID-19 pandemic has further intensified these trends. The health sector faced unprecedented pressures, leading many health workers to reconsider their employment conditions and re-migrate, highlighting how global health crises can accelerate migration flows (Demirtaş-Milz et al., 2024). The impact of these dynamics on Turkey's health systems raises debates on the long-term consequences of permanent brain drain, which weakens national capacity to effectively address public health needs (Berşe et al., 2024).

Furthermore, gender dynamics also play an influential role in brain drain; recent studies have shown that women are increasingly attracted abroad due to professional opportunities that are less available to them domestically due to persistent inequalities in the labour market (Elveren & Toksöz, 2019). As Turkish women constitute a significant portion of the healthcare workforce, the intersection of gender and occupational motivations complicates the narrative surrounding Turkey's migration crisis. Many women's decision to relocate abroad is often based on concerns for personal security, professional development and family well-being, revealing the complex socio-economic fabric underlying this phenomenon (Erensü, 2025; Bergh & Plessis, 2012).

Economic conditions have an important place among the reasons for highly qualified labour migration in Turkey. High unemployment rates and the lack of sufficient employment opportunities for qualified labour force lead these individuals to seize opportunities abroad. According to 2022 data, the youth unemployment rate in Turkey has risen to 22 per cent, while the unemployment rate at higher education level was recorded as 14.7 per cent (Gençbaş et al., 2024). This situation has increased the desire of young people in Turkey to find jobs abroad, especially after receiving education in fields such as engineering

and basic science (İlkay & Atik, 2019). Moreover, highly skilled labour migration is directly linked to the quality of Turkey's education system. By 2023, 30% of individuals graduating from universities in Turkey want to study or pursue a career abroad (Özdemir et al., 2022). This rate shows that the quality of education, employment opportunities and social conditions in Turkey are insufficient. According to the Global Competitiveness Index, Turkey ranked 111th among 137 countries in the quality ranking of the education system (Şahin & İnce, 2023). These numbers make it easier for highly qualified individuals to go abroad in search of better education and career opportunities.

The increase in brain drain also affects Turkey's international competitiveness. While many developed countries offer various incentives to attract skilled labour, Turkey's policies remain insufficient. Nevertheless, Turkey's opportunities for highly skilled labour, such as tax incentives and research funds, are quite limited compared to other countries (Aydın, 2023). The orientation of the highly skilled labour force abroad also affects the social and cultural lives of individuals. A survey conducted among young professionals in Turkey revealed that 65 per cent of them stated that overseas experience is important for personal and professional development (Taşdemir, 2023). This situation allows highly qualified individuals to reshape their social ties and cultural identities abroad. Especially educated Turkish individuals stand out with their capacity to contribute to Turkey's social and economic development through their experiences abroad (Acar & Yabanova, 2017).

In conclusion, highly skilled labour migration in Turkey is a reflection of historical, socioeconomic and cultural dynamics. This process is of great importance not only for individuals but also for the country's overall development strategies. Therefore, it is necessary to review existing policies, develop more effective incentive mechanisms and take urgent steps to improve the education system (Köse et al., 2021). Turkey should develop long-term and sustainable strategies to reverse the brain drain and attract highly skilled labour.

Turkey's Brain Circulation Policies

Turkey's brain drain policies have been included in various government programmes and development plans since the 1960s. In the first development plans, the importance of brain drain was emphasised and it was stated that some measures should be taken to prevent it (DPT, 1963). However, concrete steps were not taken in this period and the problem of brain drain was not addressed comprehensively.

Since the 1990s and 2000s, a paradigm shift has been observed in Turkey's brain drain policies. In this period, the migration of qualified individuals abroad

was supported and their return to Turkey was encouraged through specific programmes (Kaya, 2010). This approach recognises that brain drain is an inevitable phenomenon and aims to maximise the benefits of this phenomenon.

Turkey's brain circulation policies have become an important agenda item especially in recent years in line with the goal of increasing the country's scientific and technological capacity. Brain circulation refers to the orientation of individuals with high academic and scientific potential towards education and research opportunities in the international arena. This process has a critical importance in terms of transferring the knowledge and experience of scientists who migrate from Turkey to abroad, as well as academics who return or collaborate abroad.

Brain circulation policies in Turkey focus on increasing interactions with the scientific diaspora, encouraging the return of Turkish scientists who studied abroad and strengthening cooperation with Turkish academics abroad. The first step of these policies was taken to meet international standards in higher education and research. Turkey's modern education structure, especially since the beginning of the 21st century, has collaborated with many international universities and explored opportunities to study in developed countries (Ahıskalıoğlu et al., 2017). In this context, the Turkish government has offered incentives to students studying abroad through scholarships and other support mechanisms, thus utilising brain drain as an opportunity.

Strengthening the communication networks between Turkish academics abroad and Turkey will accelerate the transfer of knowledge and experience. For example, Turkish universities regularly communicate with Turkish academics working abroad to develop and finance joint research projects (Öncel et al., 2013; Kılıçaslan et al., 2017). In addition, the Turkish Scientific and Technological Research Council (TÜBİTAK) provides funding for various projects in cooperation with Turkish researchers working abroad (Kuduban, 2021). Such collaborations increase the scientific productivity of Turkish scientists at both local and international level.

An impressive part of brain circulation policies is the integration of scientific research and technology development activities in Turkey with research conducted abroad. Aiming to increase the number of articles published in scientific journals, Turkey has resorted to following international scientific journal indices when necessary to support these policies (Bektaş et. al., 2012). In order to increase the visibility of Turkish science in international standards, it is made attractive for foreign investors. In addition, the experience gained by Turkish scientists in universities and research centres abroad is expected to increase their participation in Turkey upon their return.

Repatriation policies are an important part of Turkey's science policies, which aim to integrate the experiences gained abroad into domestic research and education. In this context, the Turkish government has adopted long-term strategies such as "Turkey's Vision 2023" to ensure the integration of academic achievements abroad into the Turkish scientific community (Şahin & İnce, 2023). Creating a favourable working environment that encourages the return of Turkish scientists abroad is critical to increase the opportunities they find when returning and to transfer the next generation of research to Turkey.

Another important issue is that the factors affecting Turkey's brain circulation are supported by innovative approaches and reforms in education policy. With strategies such as reforms in Turkey's higher education system, student exchange programmes and increasing international cooperation, Turkish academics are provided with opportunities to receive more qualified education (Akgün & Güner, 2022). International collaborations, especially through programmes such as Erasmus+, encourage students and academics to study abroad and increase Turkey's international visibility in these fields.

Another issue related to brain drain is that universities and research institutions in Turkey are increasing their need for Turkish scientists living abroad. This is because Turkish scientists working abroad gain knowledge and skills that will contribute to scientific and technological progress in Turkey (Mengeş, 2024). The knowledge, new methods and research techniques that Turkish scientists will acquire during their time abroad will be critical for the development of Turkish institutions upon their return.

In conclusion, the effectiveness of Turkey's brain circulation policies can be further enhanced by the return of Turkish academics abroad, reforms in the education system and international cooperation. This process is important for Turkey to realise its vision of developing its scientific and technological capacities. Managing the brain drain and realising its strategic goals in this field will help Turkey gain more visibility in the international scientific community and increase the participation of future scientists.

Turkey's Current Brain Drain Policies

Turkey has developed various policies to combat brain drain and attract qualified human resources to the country. One of the most important of these policies is the TOKTEN programme, launched by the United Nations Development Programme in 1977, which aims to enable Turkish experts abroad to transfer their knowledge and experience to Turkey. Initiatives such as the "International Leading Researchers Programme" and the "International Young Researchers Programme" run by TÜBİTAK encourage researchers to return to

Turkey by providing financial support and research opportunities. Launched in 2017, the Turquoise Card scheme aims to attract highly qualified foreign labour. However, the effectiveness and scope of these policies have been limited, and the Turquoise Card programme in particular has not attracted the expected interest. Although Turkey's brain drain policies show efforts to bring qualified human resources to the country, the difficulties encountered in implementation and limited impact reveal the need for more comprehensive and effective strategies in this field.

TOKTEN Programme

TOKTEN (The Transfer of Knowledge Through Expatriate Nationals) is a programme established by the United Nations Development Programme (UNDP) to reverse the negative effects of brain drain. This programme, which was first implemented in Turkey in 1977, was designed as an effective tool for transferring needed knowledge and expertise from abroad (United Nations Development Programme [UNDP], 2013).

Under the TOKTEN programme, Turkish citizens living abroad were invited to various projects, conferences and seminars to contribute their expertise to public and private institutions in Turkey. Between 1994 and 2003, approximately 200 Turkish experts participated in the TOKTEN programme and contributed to various scientific activities in the country (Kaya, 2010). Although this programme was an important step to reduce the negative effects of brain drain, its scope and effectiveness remained limited.

TUBITAK Supported Programmes

The Scientific and Technological Research Council of Turkey (TÜBİTAK) has developed various programmes to attract and retain qualified Turkish citizens living abroad. These programmes offer research grants, housing support and other incentives to encourage the return of Turkish researchers and scientists (TÜBİTAK, 2021a).

TÜBİTAK's "International Leading Researchers Programme" (2232-A) and "International Young Researchers Programme" (2232-B) provide financial support and research opportunities for experienced and young researchers to carry out their work in Turkey, respectively. According to TÜBİTAK's statistical report, between 2010-2019, the number of applicants to TÜBİTAK 2232 programmes increased from 15 to 243, while the number of supported researchers increased from 12 to 127 (TÜBİTAK, 2021b).

Turquoise Card

The Turquoise Card is a policy introduced by Turkey in 2017 to attract highly skilled foreign workers. The card provides foreign nationals with permanent residence and work permits, as well as the possibility to bring their family members to Turkey (Ministry of Labour and Social Security [MoLSS], 2017).

The Turquoise Card programme is based on a point system that assesses applicants' qualifications such as education, professional experience and language skills. However, the implementation of the Turquoise Card has been limited, with only two people receiving the card as of 2023 (Kaya, 2023). This situation calls into question the effectiveness and attractiveness of the programme.

CONCLUSION

Brain drain is an important problem affecting Turkey's economic and social development. Especially since the 1960s, the migration of highly qualified labour force abroad has negatively affected the scientific, technological and economic capacity of the country. The migration of skilled labour and academics abroad hinders Turkey's innovation, research and development activities and hampers its long-term development goals.

High unemployment rates, inadequate employment opportunities, low quality of education and inadequate working conditions in Turkey lead highly qualified individuals to prefer to work abroad. This situation poses a serious risk for economic growth and sustainable development. Brain drain, especially in critical sectors such as health and education, reduces the quality of public services and reduces international competitiveness.

However, since the 1970s, with technological developments and the strengthening of communication infrastructure, new approaches to brain drain have emerged. The concepts of brain circulation and scientific diaspora encourage the return of highly qualified individuals to their home countries or the flow of knowledge. In this context, Turkey needs to develop comprehensive and integrated policies to address the brain drain problem.

It is important for Turkey to develop long-term and sustainable strategies to reverse the brain drain and attract highly qualified labour force. In this context, reviewing existing policies, creating more effective incentive mechanisms and improving the education system are among the urgent priorities.

TÜBİTAK-supported programmes (International Leading Researchers and Young Researchers Programmes) and initiatives such as the Turquoise Card aim to attract qualified foreign and Turkish experts. However, the effectiveness and

scope of these policies have been limited. Policies encouraging the return of Turkish scientists and academics abroad are aimed at strengthening international co-operation and communication in scientific research and technological developments.

It is planned to increase academic mobility through reforms in the higher education system, international partnerships and student exchange programmes. In this way, it is aimed to bring the experience of scientists and students abroad to Turkey. In order to increase the motivation of employees in the health and academic sectors and to prevent emigration, it is recommended to improve working conditions, increase wages and career opportunities.

In order to solve Turkey's brain drain problem, policies should be developed not only to prevent migration but also to turn brain drain into an opportunity. An integrated approach should be adopted with innovation and research-oriented policies, international co-operation and diaspora management strategies in line with scientific and technological developments.

Increasing research and development (R&D) investments, developing the innovation ecosystem and providing entrepreneurship support are important for Turkey to reach international standards in science and technology and increase its competitiveness. Establishing sustainable communication and cooperation networks with Turkish scientists and academics abroad, facilitating knowledge and experience transfer, and encouraging joint projects should be among the strategic priorities.

Reforms should be made in the education system, especially in the fields of higher education and vocational education, in order to train qualified labour force in line with the needs, and policies should be developed to prevent or reduce the outflow of this qualified labour force abroad. Reducing unemployment rates among young people and highly qualified workers, increasing career opportunities and improving the quality of life stand out as key strategies to reduce brain drain.

In conclusion, Turkey needs to develop comprehensive, sustainable and integrated policies to solve the brain drain problem and promote brain mobility. The successful implementation of these policies will increase Turkey's international competitiveness, ensure sustainable development in the field of science and technology, and make it possible for the country to maximise the benefit of its human capital by transforming brain drain into brain mobility.

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Chapter 3

Surveys in Social Science Research

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Abstract

This study presents a methodological evaluation of the survey technique, one of the most widely used quantitative data collection tools in social sciences, by analyzing it comprehensively. The survey technique is frequently preferred in various disciplines of social sciences due to its capacity to provide reliable, generalizable and standardized data. However, the effectiveness of this technique, beyond theoretical knowledge, depends on meticulously planned question design, correct sample selection and compliance with ethical principles. In this study, the historical development and theoretical background of the survey technique are detailed, and the processes of questionnaire formulation, implementation, data collection and analysis are discussed. The sampling of other field applications, especially the "Life Satisfaction Survey" conducted by the Turkish Statistical Institute, sheds light on the practical use of the technique. In addition, the advantages and limitations of the questionnaire are explained in detail and solutions are proposed for the difficulties that may be encountered in practice. For future research, the impact of technological developments on the survey technique and the use of digital tools are proposed.

Keywords: Questionnaire, Social Sciences, Data Collection, Sampling, Question Design, Field Research

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Introduction

The primary aim of this study is to examine in detail the historical development and theoretical foundations of the survey technique in the social sciences, to comprehensively explain the processes of constructing surveys, their modes of application, and the stages of data analysis, and to provide methodological guidance to researchers for a more accurate and effective use of the survey technique, thereby offering a meaningful contribution to the social science literature. As is well known, the social sciences constitute a broad set of disciplines that aim to understand and interpret the behaviors, attitudes, and thoughts of individuals, groups, and societies in depth. The effectiveness of the methods used to study human behavior and social phenomena directly influences the quality and validity of scientific research. In this regard, the collection of accurate and reliable data is of critical importance for the success of research conducted in the social sciences. Researchers employ various tools and techniques to collect data, including observation, interviews, focus group studies, secondary data, and surveys. Each of these data collection tools carries its own advantages and limitations and is selected based on the purpose of the research, the target population, and the specific characteristics of the data collection process. Among these tools, the survey technique—particularly preferred in quantitative data collection—holds an indispensable position in various fields of the social sciences. The survey technique aims to measure individuals' opinions, attitudes, and experiences through a predetermined and standardized set of questions. Through this method, researchers can reach a large number of participants in a relatively short period of time and systematically analyze the data collected from them to obtain generalizable results. Furthermore, the ability to administer surveys anonymously allows participants to provide more sincere and realistic responses, thereby enhancing the reliability of the data obtained. With advances in technology, the survey technique has undergone a significant transformation from traditional paper-based forms to online applications. Today, online surveys allow researchers to easily reach large participant groups with diverse demographic characteristics. The use of surveys has become increasingly widespread across various subfields of the social sciences—such as sociology, psychology, public administration, educational sciences, economics, business, and political science—thereby reinforcing the importance of the survey technique and making it indispensable for researchers working in these fields. In addition, the practical use of the survey technique and its contributions to research are demonstrated through the field implementation of the "Life Satisfaction Survey (LSS)" regularly conducted by the Turkish Statistical

Institute. Indeed, at the core of social science research lies the collection of meaningful and reliable data concerning human thoughts and behaviors. The success of the research process is directly linked to the accuracy and effectiveness of the data collection tools employed. Therefore, this study focuses on the "survey technique," one of the most widely used data collection tools in the social sciences.

1. CONCEPTUAL AND HISTORICAL BACKGROUND OF THE SURVEY TECHNIQUE

A survey is a data collection technique that aims to obtain quantitative indicators regarding the characteristics of a given population by systematically collecting data from a sample representing that population. The use of the term "systematic" is deliberate here, as it meaningfully distinguishes surveys from other information and data collection techniques (Groves et al., 2004, p. 2). In another definition, a survey is described as a tool for collecting data in a regular and systematic manner through questions directed at individuals within a particular universe or sample, based on hypotheses or questions constructed around a specific topic or research problem (Armağan, 1983). It serves to gather information from responses obtained from the target population in order to gain insight into a particular issue and to understand various opinions and experiences. The fundamental purpose of a survey is to conduct a comprehensive analysis through multiple data points and obtain generalizable results. In another definition, according to Thomas (1998, pp. 162–163), a survey is a set of questions designed to understand and describe individuals' living conditions, behaviors, beliefs, and attitudes, and it is one of the most commonly used tools for collecting data in various research studies. Although the survey technique is one of the most frequently used quantitative data collection tools in the social sciences today, its historical origins are quite old. While structured surveys in the modern sense became part of scientific research beginning in the 19th century, the foundations of this method extend much further back—to Ancient Egypt, Rome, China, and Medieval Europe. Various population and land censuses conducted in Ancient Egypt responded to the need for systematic information gathering to maintain the administrative and economic order of the period. From as early as the 3000s BCE, particularly cattle and human censuses were conducted in connection with functions such as tax collection and military mobilization (World History Encyclopedia, 2023). The Wilbour Papyrus, dated to the 12th century BCE, contains detailed records on the ownership, size, productivity, and users of agricultural lands in a certain

region (Katary, 2014, p. 201). The activities of land survey experts known as "rope stretchers" are considered historical precursors of the types of questions found in contemporary survey forms in terms of spatial data collection (Brock, 2004, pp. 1–2). Similarly, in Ancient Rome, extensive population and property censuses were conducted at regular intervals to collect information from citizens. The first census was initiated in the 6th century BCE during the reign of King Servius Tullius and later continued every five years during the Roman Republic by officials called "censors" (Livy, 1922). These censuses not only included information on Roman citizens' names, ages, family status, wealth, and social classes but also provided essential data for societal functions such as military service and voting rights (Adams, 2010). This systematic approach to information gathering serves as a historical example of how the survey technique was used at the level of state organizations.

In China, the population censuses conducted particularly during the Han Dynasty (206 BCE – 220 CE) stand out as some of the most comprehensive data collection initiatives recorded in history. A census carried out in 2 CE recorded more than 57 million individuals and more than 12 million households (Office for National Statistics, 2016). These extensive censuses documented not only population figures but also tax liabilities, land ownership, migration patterns, and local administrative structures (Wu et al., 2019, p. 6755). The *Kuodi Zhi*, prepared during the Tang Dynasty (7th century), was a detailed compilation of geographical and economic data and represents one of the written examples of the "survey-like" practices of the era (Twitchett, 1992, p. 87).

In Medieval Europe, the most notable example of systematic information collection is the "Domesday Book," initiated in 1086 by William I in England. This comprehensive record documented the size of lands, their owners, tenants, agricultural tools, livestock numbers, and economic capacity across various regions of England, forming an administrative basis for improving the tax system and regulating property relations (Darby, 1977). Through this method, data were collected within a specific systematic framework, covering many types of questions found in today's survey forms, and decision-making processes were supported by data. These practices, extending from Ancient Egypt to Medieval England, shed light on the evolutionary development of the survey technique in terms of systematic, purposeful, and organized information gathering, even though they did not involve structured forms and statistical analyses in the modern sense. These data collection practices, shaped throughout history by administrative needs, experienced an evolutionary leap in

the first half of the 20th century with the development of scientific social research techniques. The acceptance of the survey as a modern social science research tool was largely achieved through the works of Paul Lazarsfeld in the 1930s and 1940s. Lazarsfeld institutionalized the use of surveys in empirical social research; through the application of panel surveys and statistical analysis techniques in areas such as public opinion, media effects, and voter behavior, he revealed the methodological power of surveys in the social sciences. In particular, "The People's Choice" (1944), prepared by Lazarsfeld together with Berelson and Gaudet, was used to examine voter behavior during the 1940 presidential elections in the United States. This study is considered one of the turning points in establishing scientific foundations for public opinion research. Moreover, the "Bureau of Applied Social Research," founded by Lazarsfeld at Columbia University in 1944, became one of the first systematic research institutions examining the effects of media and public opinion through surveys (Jerabek, 2001, pp. 232–235).

In conclusion, systematic information collection practices conducted in different geographies and for different purposes have constituted the foundational building blocks in the evolution of the survey toward its modern definition. Thus, the survey has become not only a data collection tool but also a historical and scientific instrument used across a wide range of domains—from administrative decision-making processes to public opinion research.

2. TYPES OF SURVEYS AND MODES OF ADMINISTRATION

Surveys can be used in descriptive, exploratory, and explanatory research. Through this technique, individuals' thoughts, attitudes, behaviors, or perceptions can be measured using standardized questions. One of the most important characteristics of surveys is their structured and systematic nature. This enables researchers to reach larger samples and draw statistically meaningful inferences. Surveys are generally classified into closed-ended, open-ended, and mixed types. Closed-ended surveys require participants to select one of the predetermined response options. Such surveys are useful for collecting quantitative data and may include questions in "Yes/No" or "Agree/Disagree" formats. Open-ended surveys, on the other hand, allow participants to answer questions in their own words and are ideal for collecting qualitative data. Mixed surveys include both closed-ended and open-ended questions and aim to collect either quantitative or qualitative data. Surveys can be administered in several different ways. These modes of administration are as follows:

a) Drop-Off and Pick-Up Surveys: This method is used when participants are concentrated in a particular area. The questionnaire is delivered by hand and collected after a specified period. Although easy and quick to administer, it may result in low return rates.

b) Face-to-Face Survey Administration: In this method, the questions on the questionnaire are asked by trained interviewers, and the responses are recorded on the form. Establishing direct communication allows both the researcher and the participant to clarify and review the issues being addressed. According to Suchman and Jordan (1990), this method enables the researcher to gain insight not only into what is said but also how topics are approached and discussed.

c) Mail Surveys: This method is based on sending the prepared questionnaires to participants physically via postal mail and receiving them back through the same channel once completed. This form of administration was widely used particularly in periods or regions where internet access was limited. For instance, in the 1980s, it was found that approximately 70% of surveys conducted in the United States were administered by mail (Dillman, 1991, p. 226). Although its use has declined today with the rise of digital tools, it is still preferred in some cases (e.g., regions with limited internet access or individuals with low technological interaction).

d) Online Surveys: Advances in digital technologies and their increasing use, particularly in communication, have created a unique opportunity for online surveys to be used in social research. In recent years, the use of online surveys in the investigation of social issues has increased significantly. This method provides rapid access to data while substantially reducing the cost of conducting surveys on a global scale (Couper and Miller, 2008). Three common options exist for this method: email, websites, and mobile phones. Online surveys are highly useful when the sample is large and geographically diverse. However, there are several limitations to their use. For example, not everyone has internet or mobile phone access; thus, online surveys cannot be used for all population groups. In addition, individuals with internet or mobile phone access may differ from the general population and therefore may not fully represent it (Kumar, 2019, p. 54).

e) Telephone Surveys: With the widespread use of telephones, surveys conducted through samples based on telephone directories became common in marketing and public opinion research, especially from the first half of the 20th century onwards. However, according to Groves et al. (2004, p. 55), although telephone surveys may have a higher representativeness rate compared to face-to-face or drop-off methods, people in low-income or remote rural areas are less

likely to have telephones in their homes. Therefore, for example, when conducting a telephone survey on the percentage of individuals receiving unemployment benefits, the results are likely to be lower than the actual rate, resulting in coverage bias in the statistics.

In conclusion, each method has its own advantages and disadvantages. For instance, in face-to-face interviews, participants are more likely to understand the questions accurately. In mail and online surveys, costs are lower. Therefore, the appropriate method should be selected based on the research objective, the structure of the sample, and the available resources.

3. SURVEY DEVELOPMENT STAGES

The effectiveness of obtaining productive results through the survey technique, which is used as a tool for collecting data in fields such as social sciences, marketing, education, and health, depends on the careful and systematic planning and execution of multiple stages. Moreover, for a survey to produce reliable and valid data, a meticulously planned and structured process is required. In this sense, each stage of survey development—from conceptualization to data collection and analysis—must be aligned with the overarching research objectives and methodological standards. A lack of attention to any of these steps may compromise the integrity of the data and reduce the overall quality of the research. Therefore, understanding and implementing the sequential phases of survey development is fundamental for producing meaningful, interpretable, and scientifically rigorous findings. This process consists of the following main stages:

3.1. Determining the Purpose of the Research

Every scientific research process begins with a clearly and precisely defined research purpose. Identifying the research purpose not only determines the direction and scope of the study but also influences all methodological decisions—from the selection of data collection tools to the analysis process (Neuman, 2010, p. 99). Particularly in structured data collection tools such as surveys, an insufficiently defined research purpose may directly affect the content of the questionnaire and lead to invalid or unreliable data production (Karasar, 2012, p. 66). There are several fundamental questions that must be addressed when determining the research purpose: “Why is this research being conducted?”, “Which questions are being addressed?”, “What results are intended to be obtained?”, and “For whom are the research results important?” (Punch, 2005, p. 21). However, before designing the questions, the essential

question that must be answered is “What is the answer?”. In other words, if the researcher clearly determines what kind of response(s) they expect from the respondent, they will design the potential research questions in a way that elicits these responses. Therefore, rather than first focusing on what the question(s) should be, the researcher should consider what the answer(s) should be. The answers to these questions help narrow the scope of the study, enable better focus, and allow the content of the questionnaire to be structured according to the research purpose. Indeed, the purpose of the research is a fundamental determinant that directly affects the scope, type (open-ended/closed-ended), length, and order of the survey questions (Babbie, 2021, p. 244). Determining the research purpose is also directly related to the theoretical framework of the study. In this regard, the researcher must analyze the gaps in the existing literature, define the original contribution of their work, and relate this contribution to concrete research questions (Kumar, 2019, p. 56). In this way, a meaningful and structured research process can be conducted based not only on practice but also on theoretical foundations. On the other hand, the research purpose also has an ethical dimension in addition to its scientific dimension. When the researcher clarifies which information will be collected and why, it becomes easier for participants to provide informed consent, and trust is built throughout the research process (Creswell & Creswell, 2018, p. 93). Particularly in surveys involving sensitive topics, clearly presenting the research purpose is an important factor that encourages voluntary participation.

3.2. Criteria for Determining the Target Population and Sample

One of the fundamental conditions for obtaining reliable, valid, and generalizable results in scientific research is to define the target population correctly at the outset and to identify an appropriate sample from within this population (Karasar, 2012, p. 111). The target population refers to the entire group of individuals, groups, or institutions about which the research aims to draw conclusions. Because reaching the entire population is usually impractical, a sample—a smaller subgroup that reflects the characteristics of the population—is used (Neuman, 2010, p. 237). The sample must be sufficiently representative to allow generalizable statistical results. In this sense, representativeness matters not only for analytical validity but also for the scientific credibility of the findings. Internal validity is linked to the internal consistency of the sample, while external validity relates to its ability to represent the population (Creswell & Creswell, 2018, p. 148). Sampling methods are shaped by the research purpose, the structure of the population, and

feasibility considerations. They are generally classified into two categories: probability and non-probability sampling. Probability sampling methods—such as simple random, systematic, stratified, and cluster sampling—are used when the likelihood of each unit being included in the sample is known. These methods are preferred when statistically robust and generalizable results are required. Non-probability sampling methods—such as convenience, purposive, or quota sampling—are common in exploratory studies, when time and resources are limited, or when in-depth insights are sought from a specific group (Punch, 2005, p. 103). However, these methods limit generalizability and increase the risk of sampling bias.

Determining an appropriate sample size must also be carefully planned. Factors such as margin of error, confidence level, population size, and the type of sampling method should be considered. The widely used table developed by Krejcie and Morgan (1970) provides recommended sample sizes for different population sizes (Table 1). For example, for a population of 1.000.000 individuals, a sample of at least 384 participants is adequate at a 95% confidence level and a 5% margin of error (Krejcie & Morgan, 1970, p. 608). This approach is often used as a standard reference in large-scale field studies conducted by public institutions, municipalities, and central administrative bodies.

A key principle in sampling is representativeness: the sample must accurately reflect the main characteristics of the target population—such as age, gender, socioeconomic status, education level, or geographic distribution.

Otherwise, sampling bias may emerge, undermining both internal and external validity and preventing generalization of the findings (Babbie, 2021, p. 208). For this reason, stratified sampling is frequently used in social sciences. In this method, the population is divided into homogeneous subgroups (e.g., age groups, regions, gender), and the sample is created by selecting proportional or equal numbers from each stratum, ensuring balanced representation and more accurate interpretations (Kumar, 2019, p. 92). This approach not only enhances representativeness but also improves the precision of statistical estimates by reducing sampling error. Stratification is particularly valuable in societies with significant socio-demographic diversity, where simple random sampling may overlook important subpopulations. Beyond its technical aspects, the sampling process must also comply with ethical principles. When working with vulnerable groups—such as children, the elderly, individuals with disabilities, or migrants—ethical approvals and additional safeguards may be required to prevent harm, ensure informed consent, and maintain confidentiality (Creswell

& Creswell, 2018, p. 172). Moreover, transparency in explaining the purpose, scope, and potential risks of the research to participants strengthens ethical integrity and promotes trust. Thus, sampling is both a methodological and ethically sensitive stage that must be conducted with great care.

Table 1. *Determining Sample Size from a Given Population*

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Source: (Krejcie & Morgan, 1970, p. 608) (N= is population size. S= is sample size.)

3.3. Preparing Survey Questions

One of the most critical stages affecting the success of a survey is question design. Survey validity and reliability depend on the structure of the questionnaire. Ambiguous, leading, or overly complex questions may negatively affect the accuracy of the results (Aiken, 1997, p. 112). Questions must be prepared in accordance with the research objective—simple, clear, concise, unbiased, and in a format that participants will not have difficulty answering. In this respect, survey questions are classified into three groups

according to their content, purpose, and form (Balcı, 2025, p. 154). Based on their content, questions are divided into four categories as factual questions, behavior questions, attitude and opinion questions, and knowledge questions (Gökçe, 2012, p. 106). Factual questions are aimed at learning individuals' personal and social characteristics such as age, gender, marital status, occupation, and education. Behavior questions are designed to determine which behaviors individuals exhibit, how frequently, and in what manner. Attitude and opinion questions aim to learn individuals' thoughts, attitudes, beliefs, and intentions regarding a specific topic. Knowledge questions, on the other hand, measure individuals' level of knowledge about a predetermined subject. The questions included in a questionnaire may serve different purposes during the research process. In this context, questions are examined in three basic groups as screening questions, probing questions, and verification questions (Gökçe, 2012, p. 107). Screening questions are used to determine whether the participant falls within the scope of the research. Whether the interview continues or ends depends on the responses to these questions. For instance, in a study targeting only individuals with children, the participant is first asked whether they have children; if the response is negative, the interview is terminated. Probing questions are used to deepen unclear, incomplete, or superficial answers provided by the participant. These questions help reveal the underlying reasons for individuals' attitudes or behaviors (Neuman, 2010, p. 444). When the researcher wants to obtain more detailed and explanatory information, they may ask follow-up questions such as "Could you explain why you think this way?" or "What else can you say about this issue?" Verification questions are used to assess the consistency of previous answers and to measure the reliability of responses, especially in topics where sensitivity or inaccurate statements are more likely. These questions are typically asked again in a different form after some time to check the consistency of the responses.

In terms of form, survey questions appear in two types: closed-ended and open-ended. Closed-ended questions, also known as structured questions, allow participants to provide quick and reliable responses while enabling researchers to analyze data easily. Burgess (2001, p. 8) categorizes closed-ended questions into several types such as single-choice, multiple-choice, ranking, and rating-scale questions. Open-ended questions consist of an unstructured question sentence and an open response area. They leave a space for interpretation without directing the participant. Mertens (1998, p. 119) emphasizes that administering a questionnaire composed of unstructured questions to small groups can significantly help identify appropriate response categories for

closed-ended questions. Open-ended questions can be grouped into three categories: interpretation, listing, and completion questions (Mertens, 1998, p. 120). Interpretation questions aim to obtain more neutral and detailed responses and typically include a limited response area. Listing questions allow open-ended responses to be systematically classified, analyzed, and organized.

Figure 1. *Listing Questions*

For example: In your opinion, what are the top three most important problems that Türkiye is currently experiencing?

1. .....
2. .....
3. .....

Figure 2. *Fill-in-the-Blank Questions*

For example: How many years have you been working in your current profession? Please write it in years. .....

Survey forms may consist solely of closed-ended or open-ended questions, or they may be prepared in a semi-structured format in which both types of questions are used together. When deciding on the type of questions to include, various factors are considered, such as the content of the question, participants' motivation to complete the survey, interviewers' coding abilities, the statistical methods the researcher intends to apply, and the amount of time allocated for preparing and administering the survey. There are several important points to consider when determining the question types. For example, in situations where the survey takes a long time or participants are reluctant to respond, closed-ended questions may be more advantageous. Such questions may also reduce the likelihood of participants providing misleading information due to interviewer influence, compared to open-ended questions. Additionally, the predetermined response options in closed-ended questions help minimize errors that may occur during data entry and coding processes. However, poorly designed response options may make it difficult to obtain accurate information.

On the other hand, there are several important considerations in preparing survey questions: the respondent's anonymity must be protected; each question should address only one issue; questions should be short and easily understood by all respondents; consistency in meaning and structure should be ensured across questions; questions not based on facts or requiring respondents to guess

should be avoided; leading or confirmatory expressions should not be used; questions that exceed the respondent's level of knowledge should not be asked; and control questions placed in different parts of the survey should be used to test the consistency of responses. Ultimately, adherence to these principles will increase the accuracy of the survey and enhance the reliability of the data provided by the participants.

3.4. Pilot Study

The pilot study conducted prior to the administration of the survey enables the questionnaire to be tested in terms of validity, reliability, and functionality (Karasar, 2012, p. 165). Through the pilot study, the researcher can measure the duration of the survey, test the clarity of the questions, and identify potential logistical or technical problems that may arise during administration. The primary purpose of the pilot study is to assess whether the survey questions can be correctly understood by the target population and to revise them as necessary, thereby giving the survey its final form (Creswell & Creswell, 2018, p. 153). In this context, the pilot study is more than a "pre-test"; it is a fundamental stage for ensuring the scientific validity of the survey (Neuman, 2010, p. 232).

Babbie (2021) emphasizes that pilot studies are also important for testing the reliability of measurement instruments. The internal consistency coefficient (such as Cronbach's Alpha), calculated from the obtained data, provides an opportunity to evaluate the relationship between the questions. Modifying or removing questions with low reliability is crucial for maintaining the methodological integrity of the research (Babbie, 2021, p. 273). The pilot study also provides an opportunity for interviewer training. Allowing administrators to practice how to administer the survey form and how to communicate with participants strengthens the standardization of the survey process (Kumar, 2019, p. 122). Thus, variations in interpretation or errors in prompting that may arise during fieldwork are minimized. This approach contributes to the transparency of the research process (Cohen et al., 2018, p. 233).

In conclusion, the pilot study is not merely a "rehearsal," but a strategic step that safeguards the methodological consistency of the research and enhances the overall process. Administering the survey directly in the field without conducting a pilot study may lead to irreparable errors in terms of data quality.

3.5. Data Collection

The data collection process is a fundamental stage that directly influences

the feasibility and validity of scientific research. In studies conducted using the survey technique, data collection must be carried out in a planned and systematic manner, and the strategies used must be appropriate both to the nature of the method and to the characteristics of the target population (Karasar, 2012, p. 172). The approach used at this stage is decisive in terms of producing analyzable data. The first step in the process is determining the mode of administration. Surveys administered face-to-face, online, by telephone, by mail, or through mixed methods each have advantages and limitations. For example, face-to-face surveys provide more in-depth information and reduce the risk of participants misinterpreting the questions; however, this method is more costly and time-consuming (Neuman, 2010, p. 246). Online surveys, on the other hand, allow researchers to reach large participant groups at low cost; however, digital inequality may create representativeness challenges (Couper & Miller, 2008, p. 831).

Another important consideration in the data collection process is participant confidentiality and adherence to ethical principles. Ensuring voluntary participation and protecting personal information are required by both national ethical regulations and international research standards (Creswell & Creswell, 2018, p. 171). This is especially important for surveys addressing sensitive topics, as it enhances the legitimacy and social acceptance of the research (Cohen et al., 2018, p. 95).

Methodological risks such as interviewer effects and respondent biases must also be considered. For example, in face-to-face surveys, the interviewer's demeanor, facial expressions, or tone of voice may influence the participant. Similarly, participants may tend to provide socially desirable answers (Babbie, 2021, p. 293). Therefore, the data collection process should be conducted using standardized protocols, and all administrators should receive the same training. To increase participant motivation and response rates, persuasive invitation messages, short completion time, and user-friendly survey design should be used (Dillman, 1991, p. 228). Moreover, reminder messages are an effective strategy for increasing response rates in online surveys.

Ultimately, data collection is not merely a technical process; it is a holistic stage that directly affects the reliability, validity, and ethical responsibilities of the research. Careful planning of this process, selecting the administration method appropriate to the research questions, and adhering to ethical standards are prerequisites for conducting high-quality research.

3.6. Data Analysis

Data analysis is the stage in which the information collected through the survey technique is systematically examined, answers to the research questions are produced, and meaningful conclusions are drawn. The aim of this process is to transform raw data into meaningful information and to make scientific inferences (Karasar, 2012, p. 183). Since survey data generally consist of quantitative data, the selection of statistical analysis techniques must be planned according to the purpose of the research, the sample size, and the types of variables. Before proceeding with data analysis, missing, contradictory, or erroneous data should be identified and excluded from the analysis if necessary (Creswell & Creswell, 2018, p. 185). This increases the reliability of the dataset and establishes a robust foundation for the analysis (Babbie, 2021, p. 297).

The methods used in data analysis are generally divided into two main categories: descriptive and inferential statistics. Descriptive analyses summarize the data and reveal distribution patterns using statistical measures such as frequency, percentage, mean, and standard deviation (Neuman, 2010, p. 316). These analyses are particularly useful for visualizing participants' demographic profiles or their basic responses to survey questions. Inferential analyses, on the other hand, are used to test research hypotheses or examine the relationships between variables.

In conclusion, the transformation of data obtained through the survey technique into scientific value depends on the careful selection and application of appropriate analysis methods. It must be remembered that the data analysis process is not limited to statistical calculations; rather, it aims to produce meaningful and valid results that answer the research questions.

3.8. Reporting

The reporting process is the final stage in which all findings of a scientific study are presented in a systematic, clear, and understandable manner. In this section, the data collected through the survey technique, the tools used for data collection, how the data were analyzed, and the results obtained are presented in detail (Karasar, 2012, p. 201). An effective research report typically includes the following main components: research problem and purpose, methodology and data collection tools, characteristics of the population and sample, data analysis methods, presentation of findings, discussion and conclusions, and recommendations. These sections should be written in a logical order and in a manner consistent with one another (Creswell & Creswell, 2018, p. 192).

Research findings should be reported in a clear, unbiased manner and

supported by straightforward graphical presentations. Tables and graphs are important for reducing data volume, facilitating comparisons, and making interpretation easier for the reader (Punch, 2005, p. 148). Each table and graph should be presented with a clear title and supported by explanatory captions. The data source must always be indicated beneath these visuals. Another important point in the reporting process is ensuring that interpretations remain faithful to the data. The researcher should analyze and evaluate findings solely within the scope of the obtained results and base interpretations on objective, logical, and literature-supported reasoning (Babbie, 2021, p. 317; Cohen et al., 2018, p. 233). In this context, comparing research findings with previous studies and discussing their contributions is essential for scientific integrity.

Another element to consider in the reporting process is ethical responsibility. The privacy of participants must be respected, anonymization methods should be used, and the report must not include any information that could directly identify any individual or institution (Cohen et al., 2018, p. 103).

In the conclusion section, the findings obtained should be summarized, and both theoretical and practical recommendations should be presented based on these findings. Recommendations must be directly related to the findings and should contribute meaningfully to the knowledge base in the relevant field (Kumar, 2019, p. 165). In this way, the report serves not only to present the current study but also to guide future research in the field.

4. FIELD RESEARCH EXAMPLES RELATED TO THE SURVEY TECHNIQUE

The practical power of the survey technique in the social sciences can be understood more clearly through concrete field examples. In this context, systematic field studies conducted at both national and international levels clearly reveal the functionality of the survey technique in data collection, analysis, and policy-making processes. The examples presented below are significant in showing how surveys are designed in line with different institutional structures and research objectives, and which sampling and data collection techniques are adopted. At the same time, these applications shed light on aspects of the survey that must be taken into consideration in terms of validity and reliability.

4.1. TURKSTAT Life Satisfaction Survey

The Life Satisfaction Survey (LSS)[2], regularly carried out by TURKSTAT (Turkish Statistical Institute) since 2003, is one of the exemplary applications that demonstrate the effectiveness of the survey technique in field research. The study is conducted with a comprehensive sample in order to measure individuals' satisfaction levels regarding different areas of life, and the findings obtained serve as an important data source in social policy-making processes. The sample in which the survey is to be administered is determined by means of a multi-stage cluster sampling method based on the Nomenclature of Territorial Units for Statistics (NUTS), and each year it covers approximately 10,000 households. In this way, the research findings have the capacity to represent Türkiye as a whole (TURKSTAT, 2025). The data collection process is carried out through face-to-face interviews by TURKSTAT's trained interviewers, which is considered an important factor that enhances data quality. The questions addressed to participants are generally structured using a five-point Likert scale, and individuals are asked to rate their satisfaction with basic public services such as health, education, security, transportation, social security, and justice. In addition, multidimensional topics such as overall happiness, satisfaction with social environment, economic satisfaction, trust in the state, and expectations for the future are also measured within the scope of the study (TURKSTAT, 2025). The survey forms are filled in using information technology–supported electronic devices, which ensures that the data are transferred directly into digital media and minimizes the margin of error. The data obtained in the study are analyzed using statistical software and transformed into reports that are shared with the public. Through frequency analyses, mean distributions, cross-tabulations, and sometimes multivariate analyses, the results are evaluated in detail; in this respect, the LSS not only produces empirical data but also contributes to monitoring the social effects of public policies. For example, according to the 2024 data, the overall happiness rate of individuals was measured as 49.7%, and this rate showed a decline compared to the previous year. In the same report, the decrease in individuals' satisfaction with their economic situation was directly associated with the perceived overall life satisfaction (TURKSTAT, 2025). The LSS is an exemplary application that demonstrates how the survey technique can be used systematically and professionally as a scientific research tool. The structuring of the questionnaire in line with its purpose, the selection of a highly

[2] https://data.tuik.gov.tr/Bulten/Index?p=Yasam-Memnuniyeti-Arastirmasi-2024-53785

representative sample, the observance of ethical principles in data collection, the emphasis placed on interviewer training, and the conduct of analyses with statistical accuracy make this study a model from a social scientific perspective. The publication of the results within the framework of an open data policy ensures that these data are available for secondary analyses by researchers and decision makers (Babbie, 2021, p. 294). In this regard, the LSS constitutes one of the institutionalized and statistically standardized examples of the survey technique in Türkiye and serves as a valuable guide for social scientists who wish to conduct field research.

4.2. OECD – Better Life Index

The Better Life Index (BLI)[3], developed by the OECD, is an international survey that has aimed since 2011 to measure the quality of life of individuals living in member and partner countries based on their subjective evaluations. The BLI considers individuals' subjective assessments of their quality of life in dimensions such as income, housing, jobs, community, education, environment, civic engagement, health, life satisfaction, safety, and work–life balance. Within the framework of these dimensions, individuals can provide evaluations concerning the country or region in which they live; moreover, they are able to determine the relative importance of each dimension by assigning their own weights, thereby making subjective prioritizations (OECD, 2023). The survey is conducted through the OECD's interactive online platform, and users can create their own country profiles. This feature underlines the participant-centered and customizable nature of the survey, while also allowing for global comparisons. The OECD BLI represents one of the most widely used digitalized versions of the survey technique and serves as an example for contemporary field studies in terms of data security, user-friendly interface, and accessibility.

4.2.1. Eurobarometer – European Union Public Opinion Research

The Eurobarometer[4] survey series, conducted by the European Commission since 1973, is a long-standing field research program that aims to systematically monitor the opinions, attitudes, and perceptions of the public in EU member states. Conducted several times a year, the surveys are shaped in line with topics that reflect the social agenda and cover numerous dimensions such as migration, climate change, digitalization, health, education, the economy, and satisfaction

[3] https://www.oecd.org/en/data/tools/oecd-better-life-index.html
[4] https://europa.eu/eurobarometer/screen/home

with public services (European Commission, 2024). The sample is determined in each country using a stratified random method to ensure representativeness, and face-to-face interviews are conducted with approximately 1,000–1,500 people. The questions are structured in multiple-choice and Likert-type scales. In demonstrating how surveys can be used as policy-shaping tools, Eurobarometer is similar to TURKSTAT's LSS. Furthermore, Eurobarometer reports published each year are widely used as references not only in scientific research but also in the fields of media and public administration.

4.2.2. KONDA – "Lifestyles in Türkiye" Research

The "Lifestyles in Türkiye"[5] research, conducted in various years by KONDA Research and Consultancy, is one of the original field applications that has examined individuals' identities, lifestyles, religious beliefs, cultural orientations, and political tendencies within a sociological framework since 2008. The study is carried out with a sample of 6,000–7,000 people, designed to reflect Türkiye's demographic and cultural diversity. A multi-stage stratified sampling method is used in the selection of the sample at the levels of provinces, districts, and neighborhoods (KONDA, 2025). The survey form is semi-structured, containing both closed-ended and open-ended questions, and qualitative and quantitative data are collected together. Interviewers conduct the interviews face-to-face, and the data obtained from the field are later evaluated through content analysis and statistical methods. This study, which constructs a typology of lifestyles in Türkiye, also provides data for the scientific examination of social polarization, forms of belonging, and social differences in public opinion. In this respect, it reveals the power of the survey technique in cultural analyses as well.

4.2.3. Istanbul Planning Agency – Urban Agenda Research

Among the up-to-date and representative field studies conducted at the urban scale, the Urban Agenda Research[6] carried out by the Istanbul Planning Agency (IPA), affiliated with Istanbul Metropolitan Municipality, is particularly noteworthy. These studies aim to measure the satisfaction levels of residents of Istanbul regarding topics such as economic conditions, transportation, environment, social services, and women's experiences of urban life. IPA conducts these studies at regular intervals and in a systematic manner. The

[5] https://hayattarzlari.com.tr

[6] https://ipa.istanbul/yayinlarimiz/266/kent-gundemi-arastirmalari-2024

surveys are usually administered to a sample of between 1,500 and 2,000 people using the computer-assisted telephone interviewing (CATI) method. In selecting the sample, a proportional stratified sampling technique is adopted based on variables such as gender, age, educational level, and geographical distribution. This method aims to produce a representative dataset that reflects Istanbul's socio-demographic diversity. The questions in the survey form are designed to be both closed-ended and, in some studies, open-ended. Participants' evaluations of urban services, their perceptions of public policies and social programs, and their everyday life practices are measured in this way. The focus of the research on current issues ensures that these datasets can be used directly in local government decision-making processes (IPA, 2024). The IPA Urban Agenda Research not only monitors local public opinion trends but also presents a sustainable measurement framework for tracking urban quality of life. In this respect, it constitutes a strong example of how the survey technique can be applied in large metropolitan areas and allows public policies to be guided on a citizen-based foundation.

4.3. The Diversity of Survey Technique in Practice: A Comparison of TURKSTAT and Other Studies

For the survey technique to produce reliable, valid, and highly representative results in field research, success depends not only on how the survey is administered but also on the scale of the study, the structure of the sample, the data collection technique, and the rigor of the analysis. In this regard, TURKSTAT's Life Satisfaction Survey, OECD's Eurobarometer–Better Life Index surveys, KONDA's Lifestyles in Türkiye research, and IPA's Urban Agenda Research conducted at the local level are important in showing how the survey technique is implemented at different levels and in different contexts. Each of these studies reveals how the survey technique differs and develops in both national and international contexts. Moreover, these surveys illustrate how institutional priorities, socio-demographic structures, and policy agendas shape the design, scope, and analytical depth of field studies. They also highlight how technological tools—from computer-assisted personal interviews to digital data platforms—transform the way data are collected and processed. The diversity they display in terms of methods used, data collection tools, and analytical approaches offers researchers insights into which model might be more suitable for their own work. These examples also demonstrate that the survey technique not only produces quantitative data but is also used as a strategic tool for evaluating social trends, quality of life, and public policies. Furthermore,

institutionalized survey mechanisms such as those conducted by TURKSTAT and OECD provide longitudinal data that enable researchers to monitor changes over time and assess the effects of policy interventions. The comparatively structured Table 2 presented below enables these studies to be compared with one another in terms of sample size, mode of data collection, scope of questions, and areas of academic contribution. In this respect, the table also serves a function of building a bridge between theoretical knowledge and practical application, guiding both researchers and policymakers on how to design methodologically robust and context-sensitive field studies.

Research Title	Conducing Institution	Sample Size	Data Collection Method	Scope of Questions	Publication Period/ Frequency	Area of Academic Contribution
Life Satisfaction Survey	Turkish Statistical Institute	≈10,000 households	Face-to-face survey	Overall happiness, satisfaction with public services, social environment, future expectations	Conducted annually since 2003	Public service evaluation, social statistics
Better Life Index	OECD	Millions of online participants (country-based)	Interactive online platform	Quality of life (11 dimensions: income, education, health, environment, safety, etc.)	Continuously updated online platform	International comparative quality-of-life studies
Eurobarometer – EU Public Opinion Survey	European Commission	1,000–1,500 individuals per country	Face-to-face interviews	Public services, EU policies, security, economy, democracy	Several times per year	EU citizen perception and policy analysis
Lifestyles in Türkiye	KONDA	≈6,000 individuals (nationwide)	Face-to-face interviews	Identity, culture, religion, lifestyle, social values	2008, 2015, 2018, 2022, 2025	Cultural analysis in Türkiye

Quality of Life in Istanbul Survey	Istanbul Planning Agency (IPA)	≈20,000 households (Istanbul-wide)	Mixed method (telephone, online, face-to-face)	Housing, transportation, environment, public services, social relations, economic situation	Conducted annually since 2022	Urban policy evaluation and urban planning

Table 2. *Comparative Overview of Selected Survey-Based Field Studies**

*****This table presents a comparative overview of major national and international surveys that utilize the survey technique in field research. The comparison includes sample size, data collection methods, thematic scope, publication frequency, and academic contribution areas.

Drawing on Table 2, the comparative examination of survey-based field studies conducted by different institutional structures demonstrates that the survey technique is not merely a data collection tool, but also a powerful method for analyzing the structural tendencies, needs, and satisfaction levels of societies. The five research examples reviewed reveal the multi-level applicability of this technique: while TURKSTAT monitors public satisfaction with public services at the national level, the OECD and the European Commission produce structural frameworks for global comparisons; KONDA and the Istanbul Planning Agency, on the other hand, develop targeted survey strategies aimed at deeply understanding social behavior patterns and local living conditions. Each study highlights different dimensions of the survey technique within its own context of application and offers significant methodological diversity in terms of sampling techniques, questionnaire design, and data analysis approaches. In this regard, it is clear that the survey technique is not a fixed structure but a flexible tool that can adapt to the purpose and scope of the research. Therefore, for researchers who aim to conduct reliable field studies in the social sciences, such applications not only serve as models but also provide methodological flexibility and enhance the ability to interpret data.

5. ADVANTAGES AND LIMITATIONS OF THE SURVEY TECHNIQUE

The survey technique, widely used as a data collection tool in the social sciences, provides significant advantages to research owing to its capacity to produce quantitative data and its flexibility in reaching large sample groups.

Nevertheless, as with any research method, it possesses inherent advantages as well as limitations. One of the most prominent advantages of the survey technique is its ability to collect systematic and standardized information from a large number of respondents within a relatively short period (Neuman, 2010, p. 171). Particularly when applied in geographically dispersed or heterogeneous societies, surveys offer strong potential for generating highly generalizable data. Moreover, the structured nature of surveys facilitates the data analysis process and enables the production of statistically meaningful findings. This characteristic makes surveys especially suitable for generating datasets appropriate for multivariate statistical analyses, such as correlation, regression, and factor analysis (Creswell & Creswell, 2018, p. 154). The administration of surveys in electronic formats further contributes to reductions in time and cost, minimizes input-related errors, and allows direct transfer of data into statistical software programs (Bryman, 2016, p. 217), thereby enhancing both data security and analytical efficiency. Despite these advantages, the survey technique also encompasses certain structural limitations. A primary limitation is that respondents' answers may not always accurately reflect their true attitudes or behaviors. This risk, known as social desirability bias, refers to individuals' tendency to provide responses that they believe will be socially approved, which may compromise the validity of data—especially in surveys addressing sensitive topics (Tourangeau & Yan, 2007, p. 859). Another limitation stems from the possibility that respondents may misunderstand questions or interpret them differently, leading to inconsistencies and reducing the homogeneity of the dataset. Standardized survey forms may inadvertently exclude contextual explanations or nuanced information that respondents could otherwise provide, thus constraining the depth of analysis particularly in studies involving complex social phenomena (Punch, 2005, p. 110). Additionally, improper sampling procedures or inadequately representative samples can severely hinder statistical generalizability. In the case of online surveys, factors such as digital inequality, voluntary response bias, and reduced representativeness may also adversely affect data reliability (Dillman et al., 2014, p. 99). In conclusion, the survey technique constitutes an effective method for obtaining rapid, comprehensive, and measurable data in social science research. However, a systematic examination of both its advantages and limitations is essential to ensure scientific rigor. Survey studies that are not complemented by qualitative data collection methods may overlook certain complex social dynamics; therefore, combining survey techniques with qualitative approaches often yields more holistic and in-depth insights.

Ultimately, the effectiveness of the survey technique depends on careful planning of its design and implementation processes, adherence to ethical principles, and the establishment of a methodological framework capable of minimizing its inherent limitations.

CONCLUSION

This chapter has examined both the theoretical and practical dimensions of the survey technique, which is widely used in social science research. Throughout history, survey practices have evolved in response to changing societal needs and have ultimately become one of the central data collection tools in modern research designs. The prominence of surveys in the social sciences stems from their ability to systematically and reliably measure individuals' attitudes, behaviors, and perceptions across large and diverse populations. One of the primary advantages of surveys is their capacity to collect standardized data from broad participant groups in a rapid, cost-effective, and replicable manner. The possibility of administering surveys anonymously further enhances data quality by encouraging respondents to provide more sincere and realistic answers. Moreover, with the expansion of digital technologies, online survey platforms have significantly reduced geographical limitations, enabling researchers to access more heterogeneous and extensive populations. This development has further strengthened the relevance and applicability of the survey technique in contemporary social research. Nonetheless, the survey method is not without limitations. Low response rates, superficial answers, ineffective question design, and the tendency of respondents to provide socially desirable answers can undermine the validity and reliability of survey data. Therefore, the careful construction of questionnaires—using clear, comprehensible, and unbiased items—along with the selection of an appropriate administration method and adherence to ethical principles are essential for the success of survey-based studies. The Life Satisfaction Survey conducted by TURKSTAT illustrates how the survey technique can be implemented effectively and systematically in practice. With its carefully structured sampling design, well-trained interviewers, coherent question formats, and rigorous analytical framework, this survey demonstrates the method's capacity to generate high-quality data. Similarly, international and national surveys such as the OECD Better Life Index, the European Commission's Eurobarometer series, KONDA's Lifestyle Research, and the Istanbul Planning Agency's Urban Agenda Studies reveal how the survey technique can be adapted to different contexts—international, national, and

local—and tailored to distinct research aims. Looking ahead, the future of the survey technique will be shaped by ongoing technological advancements. Artificial-intelligence-assisted question design, mobile-based survey platforms, digital interfaces, and automated data processing systems are transforming survey administration into a more dynamic, accessible, and efficient process. However, this digital transformation also introduces new methodological and ethical challenges, including digital inequality, representativeness issues, data security concerns, and potential algorithmic bias. For this reason, researchers must embrace innovative technologies while simultaneously adopting strategies that safeguard representativeness, ensure inclusiveness, and protect data privacy. Particularly in the era of online surveys, alternative data collection methods should be planned to avoid excluding individuals with limited internet access or low digital literacy. The findings of this chapter suggest that surveys should not be viewed merely as data collection tools, but also as strategic instruments for policy development, monitoring public satisfaction, and enhancing participatory governance processes. Accordingly, policymakers—especially within public institutions and local governments—should systematically analyze survey results and integrate these insights into decision-making processes. For researchers, moving beyond traditional questionnaire formats and employing mixed-methods, flexible, and multidimensional data collection strategies is strongly recommended. Additionally, strict adherence to ethical principles and the protection of respondent confidentiality are indispensable for ensuring the credibility of survey research, particularly when dealing with sensitive subjects. In conclusion, this chapter has provided a comprehensive assessment of the survey technique, integrating its historical and theoretical foundations with contemporary field applications. The survey will undoubtedly remain a fundamental tool for generating social scientific data due to its systematic structure, broad applicability, and adaptability. However, maintaining this methodological strength will depend on carefully designed implementation processes, responsiveness to technological innovations, and a strong ethical foundation. Through its holistic analysis, this study aims to offer researchers a robust methodological framework for effectively employing the survey technique in future social science research.

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Chapter 4

The Role of the Iso 56001:2024 Innovation Management System From the Perspective of the Efqm Excellence Model: A Theoretical Review

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1. INTRODUCTION

Contemporary organizations, confronted with global competition, digital transformation, sustainability pressures, and rapidly evolving stakeholder expectations, can no longer rely solely on improving operational efficiency. Instead, they are required to build organizational structures that are capable of continuously generating innovation, fostering learning, and enabling transformation. In this context, the concept of organizational excellence has evolved beyond traditional quality and performance-oriented approaches, transforming into a holistic management paradigm that encompasses long-term value creation, adaptability, and organizational resilience.

The EFQM Excellence Model, which is widely applied in the field of organizational excellence, aims to assess organizations' leadership, strategy, stakeholder relationships, and performance results from a holistic perspective. In particular, the most recent revisions of the EFQM Model conceptualize excellence not merely through the lens of past performance outcomes, but through an emphasis on future readiness, transformation capability, and sustainable value creation (EFQM, 2020; EFQM, 2024). This shift has further highlighted the central role of innovation in the journey toward organizational excellence.

At this point, the ISO 56001:2024 Innovation Management System standard aims to transform innovation from a collection of ad hoc activities into a systematic, repeatable, and governance-integrated management discipline (ISO, 2024). ISO 56001 addresses innovation from a management system perspective by emphasizing strategic alignment, leadership ownership, a supportive organizational culture, and structured value creation processes.

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In this study, the role of the ISO 56001:2024 Innovation Management System within the context of the EFQM Excellence Model is examined through a theoretical framework. The primary aim of the study is to explore how the innovation management approach proposed by ISO 56001 supports the Direction, Execution, and Results dimensions of the EFQM Model, and to assess the contributions of this interaction to the organizational excellence journey. Accordingly, the study adopts a conceptual and theory-driven approach based on a comprehensive review of the relevant literature.

2.ORGANIZATIONAL EXCELLENCE AND INNOVATION MANAGEMENT: A CONCEPTUAL BACKGROUND

Organizational excellence refers to an organization's systematic capability to enhance its capacity for creating sustainable value for stakeholders in alignment with its strategic objectives. While this approach is historically associated with traditional quality disciplines such as Total Quality Management (TQM), continuous improvement, and performance management, its contemporary interpretation has expanded to encompass leadership, organizational culture, ecosystem relationships, and transformation capabilities (Oakland, 2014; EFQM, 2024). Excellence models provide organizations not only with a means to assess "how well they are performing," but also with a structured framework for designing "how they can perform better."

Innovation, in its broadest sense, refers to the implementation of a new or significantly improved product, service, process, marketing method, or organizational method (OECD/Eurostat, 2018). This definition emphasizes that innovation is not limited to R&D-driven technological advancements, but also encompasses a wide spectrum including business model innovation, organizational innovation, and service innovation. The relationship between innovation and organizational success has been positioned at the core of competitive advantage and growth dynamics since Schumpeter's conceptualization of "creative destruction" (Schumpeter, 1934). Nevertheless, the sustainable creation of value through innovation typically depends less on isolated "brilliant ideas" and more on the development of organizational systems and capabilities that enable continuous and systematic innovation (Teece, 2007; Tidd & Bessant, 2018).

Therefore, the relationship between organizational excellence and innovation management is bidirectional. The excellence approach provides the governance structures and managerial discipline required to render innovation measurable and manageable, while innovation management enriches the excellence journey by moving it beyond a static compliance-oriented perspective toward one

characterized by transformation and future readiness (Crossan & Apaydin, 2010; EFQM, 2024).

3.THE EFQM EXCELLENCE MODEL: CONTEMPORARY APPROACH AND ITS LINK TO INNOVATION

The EFQM Model provides a holistic reference framework for assessing and enhancing organizations' capacity to achieve sustainable success. In its contemporary interpretation, the model emphasizes a purpose-driven organizational orientation, leadership behaviors, interaction with the stakeholder ecosystem, value creation mechanisms, and transformation capability (EFQM, 2024). The EFQM approach conceptualizes performance not solely in terms of financial and operational results, but also through intangible yet critical outcomes such as stakeholder perception and trust.

From the EFQM perspective, innovation typically manifests across three interconnected dimensions. First, within the Direction dimension, innovation is linked to the organization's purpose and strategy. Second, within Execution, innovation is integrated into processes, business models, capabilities, and collaborative ecosystems. Third, within the Results dimension, innovation performance and stakeholder value creation are systematically measured (EFQM, 2024). Within this framework, EFQM positions innovation not as a "nice-to-have" activity, but as an integral component of the organizational value creation system.

Nevertheless, while EFQM, as an assessment and guidance model, provides a strong articulation of what should be examined and emphasized, it does not aim to define the day-to-day operational discipline and detailed requirements of innovation with the depth of a formal management system standard. At this point, ISO 56001 gains significance as a management system infrastructure that concretizes and operationalizes the innovation-related objectives articulated by EFQM.

4.ISO 56001:2024 INNOVATION MANAGEMENT SYSTEM: PURPOSE, RATIONALE AND SCOPE

ISO 56001:2024 is a standard that defines the requirements for establishing and operating an innovation management system within organizations (ISO, 2024). While the ISO 56000 family provides a common language for innovation management concepts and principles, ISO 56001 specifically aims to ensure that innovation is managed in a systematic manner through a management system logic (ISO, 2020; ISO, 2024). Within its standard approach, innovation is conceptualized as an integrated system that begins with leadership

commitment and organizational context analysis, aligns with strategic orientation, manages end-to-end processes from idea to value creation, incorporates portfolio and resource management, measures performance, and continuously reinforces organizational learning cycles.

The common High-Level Structure (HLS) logic of management system standards enhances the integrability of ISO 56001 with other management systems (ISO, 2024). This is particularly important for organizations that employ multiple management systems in an integrated manner as part of their EFQM excellence journey. The fundamental contribution of ISO 56001 lies in institutionalizing innovation by moving it beyond the level of intent and embedding it within governance, process management, performance measurement, and continuous improvement dimensions. In doing so, the standard aims to transform innovation performance from an individual-dependent phenomenon into a sustainable organizational capability (Tidd & Bessant, 2018; ISO, 2024).

5.THE ROLE OF ISO 56001:2024 IN EFQM PRACTICES: A COMPLEMENTARITY PERSPECTIVE

While the EFQM Model addresses innovation as an integral component of excellence, ISO 56001 brings innovation into the discipline of a formal management system. Therefore, within EFQM practices, the role of ISO 56001 should be understood not merely as an additional certification standard, but rather as an institutionalization mechanism that enables the sustainable implementation of EFQM's strategic and cultural framework in practice (EFQM, 2024; ISO, 2024).

ISO 56001 translates the purpose-driven orientation and strategic direction emphasized in the Direction dimension of the EFQM Model into a more concrete operational model through innovation strategy, innovation objectives, and the governance structures required to achieve them (EFQM, 2024; ISO, 2024). In this way, innovation moves beyond being a strategic intent articulated in policy documents and becomes a managed domain supported by practical elements such as defined roles and responsibilities, decision-making mechanisms, resource allocation, and innovation portfolio management.

The process-based approach of ISO 56001 systematizes innovation-specific value creation mechanisms within the Execution dimension of the EFQM Model. By defining stages such as idea generation, evaluation, experimentation and learning, scaling, and value realization, the standard supports the transformation of innovation into a repeatable organizational capability (Tidd & Bessant, 2018; ISO, 2024). Furthermore, the management of partnerships and

external stakeholder contributions within the innovation ecosystem establishes a strong parallel with the EFQM Model's stakeholder ecosystem perspective (EFQM, 2024).

The measurement and evaluation logic of ISO 56001 enables innovation outcomes within the Results dimension of the EFQM Model to be monitored not only through quantitative metrics, but also through stakeholder perception and value creation perspectives. The definition of innovation indicators, the balancing of the innovation portfolio, and the institutionalization of learning outcomes contribute to the evidence-based approach that is frequently required in EFQM assessments (ISO, 2024; Oakland, 2014).

6. A THEORETICAL ROADMAP FOR EFQM–ISO 56001 INTEGRATION

The effective positioning of ISO 56001 within EFQM practices begins with defining innovation as a strategic capability and framing it through a perspective of purpose and value creation, an approach that is fully aligned with EFQM's purpose-driven governance philosophy (EFQM, 2024). Subsequently, the scope and boundaries of the innovation management system should be clearly defined, specifying which domains of innovation (such as product, service, process, business model, or organizational innovation) are to be prioritized and for which stakeholders value creation is intended (OECD/Eurostat, 2018; ISO, 2024).

In the subsequent step, leadership and governance mechanisms should be designed, including the establishment of innovation committees, portfolio management boards, decision-making authorities, and resource allocation processes. This governance infrastructure requires a configuration that is aligned with the EFQM Model's expectations regarding leadership behaviors and managerial maturity (EFQM, 2024). In parallel, innovation-enabling elements within the organizational culture—such as psychological safety, learning agility, and space for experimentation—should be strengthened, thereby supporting EFQM's focus on cultural transformation (Edmondson, 1999; Crossan & Apaydin, 2010).

By linking the process components of ISO 56001 with the findings of EFQM self-assessments, organizations can identify where innovation-related processes are weak and where they demonstrate strength. In this way, improvement areas identified through the EFQM RADAR logic can be translated into concrete actions using the requirement-based structure of ISO 56001. Moreover, the measurement of innovation performance should not be limited solely to output metrics; instead, it should be monitored through multidimensional indicators

such as capability development, learning outcomes, portfolio balance, and stakeholder value creation (ISO, 2024; OECD/Eurostat, 2018). This approach is consistent with EFQM's evaluation logic, which considers results through both performance and perception perspectives (EFQM, 2024).

7. DISCUSSION: THEORETICAL CONTRIBUTIONS AND POTENTIAL LIMITATIONS

The theoretical analysis presented in this section demonstrates that complementing the EFQM Model's holistic perspective on organizational excellence with the systematic innovation management approach of ISO 56001 provides a rational foundation for integration. In one sense, the EFQM Model encourages organizations to ask the right questions for achieving excellence, while ISO 56001 translates these questions—specifically in the domain of innovation—into manageable and structured processes. This complementarity is particularly significant in enabling innovation to evolve from an individual-dependent capability into an institutionalized organizational capacity (Tidd & Bessant, 2018; ISO, 2024).

Nevertheless, this study constitutes a theoretical evaluation and does not include direct empirical testing. Future research could more concretely demonstrate the effects of this integration on performance and stakeholder value by comparatively examining the outcomes of ISO 56001 implementation in organizations with high levels of EFQM maturity. Furthermore, as sectoral differences (such as public sector, manufacturing, services, energy, and healthcare) may lead to distinct patterns in innovation management practices, it should be recognized that integration models may require contextual adaptation across different organizational settings (Teece, 2007; OECD/Eurostat, 2018).

8. CONCLUSION AND EVALUATION

This study has examined the role of the ISO 56001:2024 Innovation Management System within EFQM Excellence Model practices through a theoretical framework, and has discussed why the combined use of these two approaches can be both rational and value-creating. The resulting conceptual insight suggests that while the EFQM Model provides organizations with a holistic direction and assessment framework for their organizational excellence journey, ISO 56001 offers an operational infrastructure that transforms innovation into a systematic, measurable, and sustainable management capability (EFQM, 2024; ISO, 2024).

When examined in detail, the EFQM Model's emphasis on purpose, leadership, stakeholder ecosystems, and transformation demonstrates a strong

alignment with ISO 56001's requirements related to innovation strategy, process management, portfolio approach, resource allocation, and performance measurement. This alignment supports organizations in positioning innovation not merely as an activity of creative idea generation, but as an integral component of corporate governance and value creation systems. Consequently, innovation moves beyond being a matter of "accidental success" or isolated project-based initiatives and becomes a cornerstone of sustainable excellence within the EFQM logic.

Moreover, gaps frequently observed in EFQM assessment processes—such as the presence of strategic intent without a robust implementation system, or the achievement of outputs accompanied by limited learning and repeatability—can be more effectively addressed through the management system approach of ISO 56001. By clearly defining the governance and processes of innovation, ISO 56001 enables the improvement cycles envisioned within the EFQM RADAR logic to be strongly reflected in the innovation domain. Consequently, organizations can strengthen not only their innovation capability, but also stakeholder trust, corporate reputation, and sustainable performance dimensions.

In conclusion, the interaction between the EFQM Model and ISO 56001 holds significant potential to make the organizational excellence journey more systematic and sustainable. Realizing this potential requires organizations to align innovation with strategy, transform leadership and organizational culture, define innovation processes, and manage innovation performance through multidimensional indicators. Future research that examines the effectiveness of this theoretical framework through case studies and quantitative analyses across different sectors would make valuable contributions to both the academic literature and managerial practice.

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Chapter 5

Stress Sources of Officer-Class Seafarers: An Evaluation within the Framework of International Maritime Conventions

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Occupational Stress Sources of Officer-Class Seafarers

The maritime profession involves a high level of psychosocial risk due to irregular working hours, limited rest opportunities, demanding environmental conditions, and long-term separation from family (Oldenburg & Jensen, 2019; Jepsen, Zhao & van Leeuwen, 2015). These factors combine to create multiple stressors that affect both short-term performance and long-term psychological and physiological health of seafarers (Carotenuto et al., 2012; Iversen, 2012). Intensive shift systems, especially night work, cause circadian rhythm disruption, decreased alertness, impaired decision-making, and increased accident risk due to human error (Allen, Wadsworth & Smith, 2008; Hystad & Eid, 2016). These effects have been confirmed in the literature through objective sleep–alertness assessments as well as subjective fatigue reports (Nielsen, Berg & Eid, 2013). Research shows that irregular shifts and excessive hours not only lead to short-term attentional deficits but also chronic fatigue, immune suppression, and psychological tension (Oldenburg, Baur & Schlaich, 2010).

Physical and environmental stressors also significantly affect seafarers' health and performance. Noise, vibration, ship motion, and high temperatures increase physiological and cognitive workload, disrupt sleep, and reduce decision-making capacity (Oldenburg & Jensen, 2019; Carotenuto et al., 2012). Thermal strain and heat exposure especially in engine rooms are associated with dehydration, elevated cognitive load, and emotional tension (Oldenburg, Baur & Schlaich, 2010). Bridge studies similarly show that chronic noise and vibration correlate with stress, sleep problems, and decreased performance (Hystad & Eid, 2016). These stressors contribute not only to acute fatigue but

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also to long-term health problems such as hearing loss, hypertension, headaches, and musculoskeletal issues (Carotenuto et al., 2012).

Social and psychosocial stressors further complicate the maritime risk profile. Limited shore leave, restricted social interaction, and prolonged family separation increase loneliness, low morale, anxiety, and burnout (Sampson & Ellis, 2019; Abaya, Koyama & Kitamura, 2021). Multinational crew structures introduce language barriers, cultural differences, and communication challenges, which can undermine psychological safety and safety culture (MacLachlan & Kavanagh, 2012; Iversen, 2012). Social isolation and interpersonal conflict have been found to reduce motivation and job satisfaction among seafarers (Sampson & Ellis, 2019). Strengthening onboard social cohesion and psychosocial support systems is therefore essential.

With rapid digitalization and automation, new forms of psychosocial pressure have emerged. Increased monitoring technologies, digital reporting systems, and the expectation of constant connectivity contribute to technostress, performance anxiety, and reduced job satisfaction (Xiao, Cooke & Chen, 2020). These stressors may increase the likelihood of early exit from the profession, especially among younger seafarers (Lefkowitz & Slade, 2019). Although international regulations aim to protect seafarers' rest and well-being, inconsistent implementationparticularly in small and medium-sized companies creates disparities in working conditions (Oldenburg & Hagen, 2021).

Effective maritime risk management therefore requires human-centered interventions. Examples include optimized work–rest scheduling, engineering solutions for reducing noise and heat exposure, intercultural communication training, confidential psychosocial support lines, and structured adaptation programs for automation technologies (MacLachlan & Kavanagh, 2012; Hystad & Eid, 2016).

In summary, the maritime sector faces combined psychosocial and physiological risks due to shift patterns, long working hours, environmental challenges, social isolation, organizational pressures, and technological transformation (Carotenuto et al., 2012; Oldenburg & Jensen, 2019). Addressing these human factors is essential not only for seafarer well-being but also for operational safety (Nielsen, Berg & Eid, 2013). The literature shows comprehensive evidence on fatigue, environmental stressors, and social isolation; however, research on modern technological stressors and multicultural crew dynamics remains limited, indicating a need for further systematic studies (Xiao, Cooke & Chen, 2020; Oldenburg & Hagen, 2021).

Beyond psychosocial and environmental stressors, organizational factors play a central role in shaping human performance in maritime operations.

Classic human factor studies have shown that deficiencies in safety culture, communication patterns, and leadership behavior substantially influence the likelihood of accidents at sea (Hetherington, Flin & Mearns, 2006). Organizational pressures such as commercial deadlines, inadequate manning levels, and poor safety reporting mechanisms exacerbate stress, reduce compliance with safe operating procedures, and impair decision-making under time pressure. These findings are reinforced by evidence demonstrating that strong safety leadership, participatory management, and transparent reporting systems significantly mitigate fatigue-related risks and enhance situational awareness among seafarers (MacLachlan & Kavanagh, 2012). Such research underscores that human error is rarely an individual fault but is instead embedded within broader systemic and organizational contexts.

Another critical dimension highlighted in the literature concerns training quality and human–technology interaction. The increasing complexity of ship systems has led to greater cognitive workload, especially during navigation, emergency response, and monitoring tasks (Grech, Horberry & Koester, 2008). Inadequate training in automation, poor interface design, and limited opportunities for simulation-based learning can lead to information overload, reduced vigilance, and error-prone responses in high-risk scenarios. Studies indicate that tailored human-factor–oriented training, particularly simulation scenarios focusing on fatigue management, intercultural communication, bridge resource management, and automation reliance, significantly improve operational performance and reduce the incidence of human-error events (Hetherington et al., 2006; Grech et al., 2008). These results highlight that human-centered design and continuous training are essential pillars for improving both well-being and safety performance in modern maritime operations.

The stressor classification presented in Table 1 was developed as a result of a systematic and in-depth literature review. The study comprehensively reviewed internationally peer-reviewed articles, reports, and key reference works published in the fields of maritime studies, maritime safety, organizational behavior, occupational health and safety, ergonomics, and marine psychology. During the literature review, studies presenting findings related to stress, fatigue, workload, decision-making, psychosocial risks, and safety performance of officer-class seafarers were identified; recurring themes, conceptual similarities, and causal relationships were analyzed comparatively. The findings were grouped using a thematic analysis approach, and stress factors showing similar content were grouped together and structured under six main categories and thirty key stressors. This method ensured that stress sources

were addressed not randomly or intuitively, but within a framework that is literature-based, conceptually consistent, and supported by empirical findings (Kitchenam and Charters, 2007; Okoli and Schabram, 2010).

Table 1. Occupational Stress Sources and Sub-Dimensions of Officer-Class Seafarers: Findings of a Systematic Literature Analysis

Category	Stressor	Definition	References
Time/Workload and Decision Requests	Excessive working hours and intensive watch schedules	Excessive working hours and intensive shift schedules are among the most critical sources of stress and fatigue for officer-class seafarers and are recognized as an unsolved problem that continues to contribute to maritime accidents. This stressor arises from a combination of two main components: excessive working hours and intensive shift systems. Excessive working hours cause seafarers to be subjected to prolonged and high workloads (there are studies indicating that seafarers, in particular, face long working hours and high workloads).	Wang et al. (2021); Rajapakse et al. (2023); Galić et al. (2023); Ervasti et al. (2021); Caruso. (2014); Yancheshmeh et al. (2020); Wagstaff et al. (2011); Rivera et al. (2020); Oldenburg et al. (2019)
	Night shifts and circadian rhythm disruption	Night shifts are work performed during the night hours as part of a routine. Night shifts are a common practice in modern workplaces with 24-hour operations, such as global maritime. Circadian Rhythm is a roughly 24-hour cycle of physiological and behavioral changes in humans, governed by a biological clock called the brain's suprachiasmatic nucleus (SCN).	Zhao et al. (2023); Rajapakse et al. (2023); Galić et al. (2023); Kim et al. (2024); Oldenburg et al. (2021); Vinagre-Ríos et al. (2021)
	Continuous vigilance and decision-making pressure on the bridge	Situational Awareness (SA) is defined as "being aware of what is happening around you and understanding what this information means to you now	Cavaleiro et al. (2020); Sandhåland et al. (2015); Atik (2020);

		and in the future." Sustained attention is the act of maintaining this awareness without interruption.	Ronca et al. (2025); Ronca et al. (2023); Sandhåland et al. (2015);
	Heavy workload during port operations and restricted waterways	Heavy Workload in Port Operations refers to the intense mental, physical, and temporal pressure experienced by navigational personnel (especially pilots and bridge crews) during the entry, maneuvering, loading/unloading, and exit of ships from a port. Seafarers face various stressors, including high workloads and long working hours, which can lead to low job satisfaction and poor mental health.	Hu et al. (2017); Zhuang,et al (2024) ; Liu, T et al. (2021); Feng et al. (2020); Chang et al. (2024);
	Reduced crew size and multitasking requirements	The trend toward reducing the number of personnel required for a ship's operational duties, typically through increased automation and technology. Impact: Potentially increases the need for multitasking and intensifies workloads for the remaining crew. Seafarers are required to perform multiple tasks simultaneously to manage an increased or intensified workload on board. Considered a significant contributing factor to maritime accidents because it can lead to deviation from procedures and increased cognitive load.	Bielić et al. (2020); Zhao et al. (2023); Ronca et al. (2023); Rajapakse et al. (2022); Hannaford et al. (2021); Kooij et al. (2021);
Role, control, and autonomy	Bureaucratic and administrative overload (ISM,	Bureaucratic and administrative overload in the maritime industry refers to the	Karahalios. (2025); Batalden et al.

	PSC, flag/class inspections)	excessive time and effort that shipboard personnel (especially officers) spend on regulatory requirements such as paperwork, record keeping, and inspection preparation, rather than on performing operational duties.	(2014); Størkersen et al (2017); Biočić et al. (2023); Størkersen et al (2021);
	Role conflict and ambiguity (safety vs. efficiency; management vs. crew alignment)	A situation where a seafarer feels pressured to fulfill multiple, conflicting, or incompatible tasks and expectations simultaneously. The most common conflict in maritime situations occurs when shipboard crews, due to company management or operational pressures, are forced to compromise between full compliance with safety procedures and the expectation of completing tasks quickly and efficiently.	Boström et al (2022); Brooks et al. (2022); Lundh et al. (2021);
	Perceived injustice in promotions, wages, or scheduling	The definition of "perceived injustice" in relation to promotions, pay, or scheduling (shift/shift work) systems is based on the theory of organizational justice, which is discussed in the social psychology and organizational behavior literature. Perceived injustice is a cognitive and emotional judgment that arises when an employee evaluates the way they are treated (rewards and outcomes) by the organization, and the processes used to achieve these outcomes, as unfair or unethical compared to other employees or accepted norms.	Ilias et al. (2022) Maria et al. (2025) Oldenburg et al. (2021); Lefkowitz et al., 2015
	Limited decision latitude and low autonomy at sea	Limited Decision Latitude, a significant source of psychosocial stress	Oldenburg et al. (2021); MacLachlan &

		experienced by seafarers, particularly officers and ratings, refers to the low degree of control and freedom an individual has over how they perform their job duties, manage their time, or find solutions to encountered problems. Low autonomy, a key component of the Job Demand-Control model in occupational psychology, is concentrated in a closed, hierarchical environment like a ship, creating psychological strain and distress in seafarers. Studies indicate that this condition is a significant cause of psychological distress in both Officer Ratings (combined with risky work situations and challenging working conditions) and Ratings (due to the complexity and lack of variety in low-skilled jobs).	Kavanagh, 2012 Xiao et al., 2020
	Stress from adapting to automation and new technologies	As the maritime industry undergoes a radical transformation driven by digitalization and automation, technostress is one of the most significant psychosocial challenges seafarers face, negatively impacting their mental health. Technostress is primarily the stress resulting from the rapid integration of artificial intelligence (AI)-powered autonomous systems and advanced digital technologies (big data analytics, the Internet of Things (IoT), etc.) into ship operations, resulting from the burden of adaptation and learning on seafarers. This creates pressure on seafarers	Kumar (2024) Lagdami (2024) Xiao et al., 2020 Bayrak, D., & Muslu, A. (2025)

		to constantly learn the functionality of new systems, while also being fueled by factors such as constant connectivity (techno-overload and techno-invasion) brought on by technology and the disruption of work-life balance.	
Physical environment and fatigue	Noise, vibration, and vessel motion	Noise, vibration, and ship motion (rocking) are among the most fundamental environmental stress factors that directly affect seafarers' working and living conditions at sea. They represent a complex set of challenges that negatively impact both physical and psychological health and can contribute to maritime accidents. Noise, originating from ship engines, engine rooms, and propeller cavitation, is a significant cause of discomfort, reaching particularly high levels in areas such as living quarters and the bridge, impairing seafarers' communication skills, concentration, and, consequently, work performance. Vibration, which accompanies this noise, is another physical pollutant that radiates from the ship's structure and machinery, affecting seafarers' entire bodies and can lead to chronic fatigue, sleep disturbances, and musculoskeletal disorders, particularly with long-term exposure. Finally, ship motion (rocking, rolling, and pitching) occurs at varying degrees of intensity depending on sea conditions, creating an unstable sense of balance at	G. Rutkowski et al. (2024) Carotenuto et al., 2012 Sampson, H., Turgo, N., Cadge, W., Gilliat-Ray, S., & Smith, G. (2023) Febriyanto, K., Guedes, J. C. C., & Mourão, L. J. R. D. N. C. (2024)

		sea, leading to seasickness, fatigue, and significant deterioration in sleep quality.	
	Heat stress and thermal discomfort, particularly in the engine room	In the maritime industry, enclosed and hot work environments such as the engine room, which houses a ship's propulsion and operational systems, are the focal point of Heat Stress and Thermal Discomfort, one of the most significant environmental stressors that seriously threaten the physical and mental health of seafarers. The high heat load resulting from the continuous operation of main engines, boilers, and auxiliary machinery in the engine room, combined with the often-inadequate ventilation systems and the high ambient humidity in tropical regions, causes temperature and humidity levels in work areas to rise to dangerously high levels. This leads to Heat Stress, where the body's ability to maintain normal temperature is exceeded, posing an immediate physiological risk.	Batalden, B. M., & Sydnes, A. K. (2014). McLellan (2002) Anton et al. (2025) Biočić, T., Frančić, V., Hasanspahić, N., & Maglić, L. (2023)
	Adverse sea and weather conditions, poor visibility	Adverse sea and weather conditions and poor visibility are environmental factors that seriously jeopardize navigational safety in maritime operations. These conditions, often resulting from a combination of natural events such as strong winds, high waves, heavy rain, fog, snow, or storms, negatively impact a ship's stability, maneuverability, and navigational instrument accuracy. Reduced visibility	Størkersen, K. V., & Thorvaldsen, T. (2021). Qiuyu et al. (2024) Boström, M., & Österman, C. (2022). Yuen, K. F., Loh, H. S., Zhou, Q., & Wong, Y. D. (2018).

		reduces the effectiveness of navigational aids such as radar, AIS, and visual observation, increasing the risk of collisions, groundings, or technical malfunctions.	
	Sleep disruption, alarms, and short irregular sleep cycles	Sleep disruption occurs when a person's sleep duration and quality fall below optimal levels, or when the rhythmic structure of the sleep-wake cycle is disrupted. This can be caused by interrupted sleep throughout the night, frequent awakenings, or interruptions to the natural flow of sleep due to alarms. Such interruptions, particularly seen in shift work or in the shipboard environment, disrupt the day-night cycle (circadian rhythm).	An, J., Liu, Y., Sun, Y., & Liu, C. (2020). Brooks, S.K., Greenberg, (2022)
	Limited rest and recreational facilities onboard	Limited recreational and rest opportunities on board pose significant challenges for seafaring personnel not only physically but also on a psychosocial level: during long stays, access to rest areas is limited, common areas are cramped, privacy is scarce, and designated areas for sports or leisure activities are often lacking or dysfunctional.	Lundh, M., Lützhöft, M., Rydstedt, L., & Dahlman, J. (2011) Vlachos, I., Pantouvakis, A., & Karakasnaki, M. (2022).
Social isolation, relationships, and support	Long-term separation from family and social isolation	Social isolation, experienced through prolonged separation from family and social circles, is a multifaceted phenomenon that can have devastating effects on an individual's psychological resilience, particularly in closed and long-term work environments like maritime. Seafarers are unable to leave their homes during months-long voyages, and their ability to	Markkula (2025) Prabowo, H., Fatimah, F., Fauziah, A., Prabawati, I., & Chrisnatalia, M. (2019, October)

		communicate directly with family and friends is often limited; this leaves them unable to meet both their emotional and social needs.	
	Cross-cultural communication difficulties and misunderstandings	Multinational crews on modern ships create social isolation and difficulties in Language Barriers, This is a major communication challenge, which can lead to loneliness and social shyness. Cultural Differences, This hinders communication and hinders integration. Isolation and Loneliness, Reduced crew sizes, long working hours, and distance from family can lead to high levels of loneliness and mental health problems among seafarers. Preventive Training, Seafarers are strongly encouraged to learn about cultural differences and receive cross-cultural awareness training.	Kumar, P. (2018). Canımoğlu, R., & Yıldırım, U. (2023). Gabedava, G., & Hu, Y. (2025). Riyanto, B vd. (2023). Galešić, A. D., & Tominac Coslovich, S. (2019).
	Mobbing, authority gradient, and toxic relationships onboard	Mobbing is a widespread psychological harassment problem on ships. Young Officers and Cadets, they are the most frequently exposed to mobbing, leading to short careers. Inexperienced and single seafarers are also at high risk. Mental Health Impact, Mental health issues (stress, mobbing, burnout) increase the risk of a maritime accident approximately 2.5 times more than physical issues. Hierarchy Barrier, High authority barriers prevent subordinates from reporting critical errors to their superiors, which is a major cause of accidents.	Uğurlu, Ö. Vd. (2023). Şenbursa, N. Vd. (2025). Boström, M., & Österman, C. (2022).

	Limited shore leaves and restricted social opportunities	Limited shore leaves and restricted onboard social opportunities refer to the insufficient time and limited access that seafarers have to disembark for rest, family interaction, and community engagement, as well as the lack of meaningful social, recreational, or cultural activities available to them while at sea, a condition that can contribute to decreased morale, social withdrawal, and increased psychological strain over prolonged voyages.	Oldenburg, M., & Jensen, H. J. (2019). Brooks, S. K., & Greenberg, N. (2022). Lin, Y. H. Vd. (2025). Hayes-Mejia, R., & Stafström, M. (2024).
	Inadequate internet or communication accss with family	Inadequate Internet and Communication Access with Family refers to the inadequacy of the digital connectivity infrastructure or communication capabilities necessary for regular and high-quality communication with family members during sea voyages. This inadequacy can result from factors such as limited bandwidth, frequent disconnections, costly communication systems, or a lack of appropriate onboard equipment and environments. This can lead to crew members lacking emotional support, increasing feelings of longing, increased stress levels, and, in the long term, diminished psychological resilience.	Nittari, G., Gibelli, F., Bailo, P., Sirignano, A., & Ricci, G. (2024) Jensen, R. B. (2021) Oldenburg, M., & Jensen, H. J. (2019).
Organizational Justice, Contract, and Culture	Contract uncertainty, voyage extensions, and delayed repatriation	Contract uncertainty refers to the situation in which the initial terms of the employment contract signed by seafarers in the maritime industry are clearly unpredictable due to operational conditions,	Gekara, V. O., & Sampson, H. (2021). Hebbar, A. A., & Mukesh, N. (2020). Gupta, M. (2023).

		economic fluctuations, lack of business planning, or employer-broker coordination issues. This uncertainty can manifest itself in areas such as unclear contract terms, variable wage and hour arrangements, port permits, crew change plans, or ambiguities in return conditions. It hinders personnel from planning for the future and undermines their perception of job security.	Şenbursa, N. (2024).
	Perceived neglect or indifference from company management	This refers to a situation where ship crew members feel that management doesn't care enough about them, that their needs and feedback aren't considered, or that their problems are ignored. This perception is fueled by factors such as delayed requests, unfair workload distribution, unclear decision-making processes, lack of support, and weak institutional attention to crew welfare. Ultimately, it can lead to a loss of trust, a weakened sense of belonging, and increased stress, negatively impacting both morale and operational performance.	Hollander, J. Vd.(2025). Gerou, A. Vd.(2025). Smith, G. Vd.(2023). Arslan, A. (2013). Kim, J. H., & Jang, S. N. (2018).
	Exposure to disrespectful behavior or workplace violence	Exposure to disrespectful behavior or workplace violence refers to direct exposure of shipboard personnel to behaviors that violate respect and safety in the workplace, such as verbal or physical assault, threats, humiliation, yelling, exclusion, bullying, or harassment. Such negative experiences can be triggered	Fort, E. (2024). LeClercq, D. (2024). Österman, C., & Boström, M. (2022).

		by hierarchical pressure, cultural differences, communication problems, or management weaknesses, and can undermine personnel's perception of psychological safety, leading to stress, fear, loss of motivation, and a deterioration of the culture of trust within the team.	
	Continuous monitoring and promotion-related performance pressure	Constant monitoring and promotion-driven performance pressure refers to the constant evaluation of shipboard crews through digital systems, audit reports, company tracking mechanisms, or supervisor feedback, and the need to maintain consistently high performance, particularly in anticipation of promotion. This pressure is compounded by factors such as low tolerance for error, frequent audits, competitive promotion processes, and constant monitoring of performance indicators.	Jeon, H. (2023). Bolat, F. (2013). Fan, S., & Yang, Z. (2023). Endri, E. (2024).
	Fear of criminalization or personal liability after incidents	Fear of criminalization or personal liability following incidents is considered one of the greatest obstacles to establishing a "Just Culture," particularly in high-risk industries like shipping. This is the exact opposite of a system that requires "mechanisms aimed at eliminating fear and sanctions" while maintaining accountability for reporting safety issues.	Putra, A. M., Arce, M. C., & Baumler, R. (2024) Ian et al. (2005) Karakasnaki, M., Polemis, D., & Gerou, A. (2025)
Safety, Health and other threats	Fatigue-induced safety pressure and fear of human error	In a highly dangerous and demanding profession like maritime, fatigue-related safety pressure and the fear of human error are key	Brooks, S.K., Greenberg (2022) Hope, S., Øverland, S.,

		challenges that contribute significantly to accident risk. Insufficient sleep time on board, environmental factors such as ship noise, and unsatisfactory sleep quality due to excessive workload are among the primary causes of fatigue (as defined by the IMO), which can impair virtually all physical and mental abilities, such as strength, speed, reaction time, and decision-making.	Brun, W., & Matthiesen, S. B. (2010). Sampson, H., Turgo, N., Cadge, W., Gilliat-Ray, S., & Smith, G. (2023)
	Exposure to hazardous cargo and chemical materials	Exposure to hazardous cargo and chemicals is a critical problem in the maritime industry and port environments, leading to catastrophic losses for both the environment and personnel health and safety.	Arslan, A. (2013). Kim, J. H., & Jang, S. N. (2018). Sanz-Trepiana, L., Bost, E., Jégo, C., Lucas, D., & Fort, E. (2024).
	Piracy, robber and physical security threats	Piracy, robbery, and physical security threats constitute multidimensional risk categories that directly endanger the security of ships, crews, and commercial operations in the maritime sector. In the literature, piracy is defined as armed attacks, hostage-taking, or forcible seizure of goods, particularly by organized groups on the high seas, for economic gain.	Bouejla, A., Chaze, X., Guarnieri, F., & Napoli, A. (2014). Pristrom, S., Yang, Z., Wang, J., & Yan, X. (2016) Tumbarska, A. (2018).
	Limited medical facilities and health anxiety onboard	Limited medical facilities and the health anxiety experienced by shipboard crews are two critical, mutually reinforcing risks in modern maritime shipping: the lack of full-time physicians or limited medical equipment on board many cruise ships, ferries, and cargo ships strain onboard capacity	Gheorghe, L. (2024). Oldenburg, M., Rieger, J., Sevenich, C., & Harth, V. (2014). Battineni, G., Chintalapudi, N., Gagliardi,

		for acute cardiovascular events, trauma, or sudden illnesses, leading to the need for more frequent and urgent medevacs.	G., & Amenta, F. (2023).
	Quarantine, pandemic restrictions, and confinement at sea	Quarantine at sea, pandemic restrictions, and stranding at sea for the duration of a voyage refer to the restriction of landing permissions for ship crews during any wave of infectious disease or global health crisis, their adherence to isolation protocols, and their prolonged absence from the ship to continue their duties at sea. While implemented for health safety reasons, this process can lead to limitations on freedom of movement, reduced social contact, interruption of interaction with the outside world, and uncertain voyage duration.	Toygar, A., & Yıldırım, U. (2023). Eli D. Lazarus et al. (2021) Adekola Oyenuga (2024)

The table presented in this study offers a conceptual classification framework aimed at systematically and holistically identifying the sources of stress experienced by officers and seafarers in their professional lives. By bringing together stress factors scattered throughout the maritime literature and often addressed in individual studies, the table structures these factors under six main categories and a total of thirty stressors. In this respect, the table is not merely a descriptive listing; it also serves as an analytical tool addressing the phenomenon of stress in the maritime sector from a multidimensional and interdisciplinary perspective (Oldenburg et al., 2019; Brooks & Greenberg, 2022; Sampson et al., 2023).

The main categories in the table cover stressors arising from officers' operational responsibilities under the headings of time, workload and decision demands, role, control and autonomy, and physical environment and fatigue. Elements within these categories, such as long working hours, shift work, constant pressure for attention and decision-making, intensity in port operations, reduced crew structure, and multiple task requirements, directly affect safety performance, particularly through increased cognitive load, distraction, and

chronic fatigue (Wagstaff et al., 2011; Caruso, 2014; Hu et al., 2017; Zhao et al., 2023; Ronca et al., 2023). The literature frequently emphasizes that these stressors increase the likelihood of error, weaken situational awareness, and constitute one of the primary causes of maritime accidents (Sandhåland et al., 2015; Cavaleiro et al., 2020; Galić et al., 2023). In this context, the table aligns with contemporary safety approaches that conceptualize human error not merely as an individual failure, but as a consequence of structural and organizational conditions (Størkersen et al., 2017; Boström & Österman, 2022).

Another important contribution of the table is that it makes visible psychosocial stressors under the headings of social isolation, relationships and social support, and organizational justice, contracts, and corporate culture. Long periods of separation from family, limited shore leave, inadequate communication infrastructure, and cultural and linguistic barriers created by multinational crew structures are widely associated with loneliness, emotional exhaustion, and reduced psychological resilience among officers (Oldenburg & Jensen, 2019; Prabowo et al., 2019; Kumar, 2018; Nittari et al., 2024). Moreover, mobbing, steep authority gradients, and toxic onboard relationships particularly affecting junior officers have been identified as critical psychosocial risk factors that undermine wellbeing and career sustainability in maritime professions (Uğurlu et al., 2023; Şenbursa et al., 2025; Boström & Österman, 2022). Organizational stressors such as contract uncertainty, extended voyages, delayed repatriation, perceived injustice, and perceived indifference from company management further transform stress from an individual issue into a structural and corporate-level problem (Gekara & Sampson, 2021; Hebbar & Mukesh, 2020; Oldenburg et al., 2021; Hollander et al., 2025).

Finally, stressors categorized under safety, health, and other threats demonstrate that officers operate under a persistent perception of risk. Fatigue-induced safety pressure, fear of human error, exposure to hazardous cargo and chemical substances, piracy and physical security threats, limited onboard medical facilities, and extraordinary situations such as pandemics constitute structural risks that threaten both physical and mental health (Hope et al., 2010; Bouejla et al., 2014; Oldenburg et al., 2014; Lazarus et al., 2021; Sanz-Trepiana et al., 2024). These stressors also illuminate barriers to the establishment of a Just Culture, as fear of post-incident punishment and criminalization discourages error reporting and weakens organizational learning processes (Ian et al., 2005; Putra et al., 2024; Karakasnaki et al., 2025).

In summary, this table provides a holistic, evidence-based, and multidimensional framework for understanding the stress sources of officer-

class seafarers, serving as a strong reference point for both academic research and policy-oriented managerial interventions. The classification presented functions as a foundational conceptual map for the discussions, regulatory evaluations, and model proposals developed in subsequent sections of this book.

Preventive and Regulatory Approaches to Stress Sources of Officer-Class Seafarers within the Framework of International Maritime Conventions

International maritime conventions address the sources of stress experienced by officer-class seafarers not directly through the concept of "stress," but by regulating the structural, organizational, and operational conditions that give rise to this stress. Regulations, particularly in the areas of working and rest periods, job descriptions, safety management, health and welfare conditions, and reporting culture, demonstrate that stress is treated not as an individual weakness, but as a systemic human factor risk. This approach is consistent with contemporary safety understandings that place the human element at the center of ensuring sustainable safety in maritime operations (Hetherington, Flin & Mearns, 2006).

Regulations aimed at preventing stressors related to time, workload, and decision-making demands are primarily shaped within the scope of the STCW Code and the Maritime Labour Convention (MLC 2006). Section A-VIII/1 of the STCW aims to prevent fatigue, loss of concentration, and impaired decision-making quality by limiting officers' working and rest periods. The literature emphasizes that long working hours, shift work, and circadian rhythm disturbances significantly increase the risk of accidents, especially during night shifts (Allen, Wadsworth & Smith, 2008; Jepsen, Zhao & van Leeuwen, 2015; Oldenburg & Jensen, 2019). This framework, supported by IMO Fatigue Guidelines, necessitates that companies base fatigue management not on individual resilience, but on corporate planning and organization (Hystad & Eid, 2016).

Regulatory interventions addressing stress factors stemming from role ambiguity, low autonomy, and administrative burden are primarily covered under the ISM Code. The ISM Code aims to institutionalize safe operation at the company level by clarifying job descriptions, clearly distributing responsibilities, and standardizing reporting processes. However, the literature indicates that when ISM practices become overly bureaucratic, they create an additional administrative burden on officers, increasing psychological pressure (Hetherington, Flin & Mearns, 2006). This, combined with role conflicts and perceived injustice, leads to a loss of motivation and weakened organizational

commitment (MacLachlan & Kavanagh, 2012; Lefkowitz, Slade & Redlich, 2015).

Regulations aimed at preventing stressors stemming from the physical environment, health, and fatigue are addressed under the SOLAS Convention and MLC 2006. Factors such as noise, vibration, ship movements, and heat stress are known to impair sleep quality, reduce cognitive performance, and lead to chronic health problems in the long term (Carotenuto et al., 2012; Oldenburg, Baur & Schlaich, 2010). The accommodation, rest areas, and medical care provisions of MLC 2006 offer structural measures aimed at mitigating the impact of these stressors. Furthermore, it is emphasized that increased cognitive load under adverse weather conditions and navigational difficulties increases the risk of human error (Nielsen, Berg & Eid, 2013).

Conventions play an indirect but critical role in the context of psychosocial stressors and perceptions of organizational justice. Long periods of separation from family, limited leave, and inadequate communication opportunities are among the key factors that weaken the psychological resilience of officers (Abaya, Koyama & Kitamura, 2021; Sampson & Ellis, 2019). Within multinational crew structures, issues such as authority gradients, mobbing, and toxic communication undermine psychological safety and increase stress levels (Iversen, 2012; MacLachlan & Kavanagh, 2012). MLC 2006 and IMO's human factors-focused documents offer a framework that supports the principles of welfare, dignity, and fair treatment against these problems.

Finally, stressors related to safety, health, and emergencies highlight both the limitations and importance of conventions. Hazardous materials, chemical exposure, piracy, and regional security threats, along with limited medical facilities, cause officers to work under a constant perception of risk (Carotenuto et al., 2012; Oldenburg, Baur & Schlaich, 2010; Sampson & Ellis, 2019). Contractual uncertainties, voyage extensions, and repatriation delays experienced during the pandemic clearly demonstrated the vulnerability of the current regulatory framework to psychosocial crises (Oldenburg & Hagen, 2021). This aligns with findings that the fear of post-error punishment weakens the reporting culture and hinders the learning organization concept (Hetherington, Flin & Mearns, 2006).

Overall, international maritime conventions, rather than directly identifying the sources of stress for officers and seafarers, play a preventive role by regulating the structural conditions that give rise to this stress. Regulations concerning working hours, safety management, health and welfare conditions, and the perception of organizational justice reveal that stress is not an individual problem but an institutional and systemic risk area. In this respect, existing

conventions offer a strong, but still developing, regulatory framework for human-centered safety policies and sustainable maritime practices.

Conclusion

The findings presented in this book chapter clearly demonstrate that the stress experienced by officer-class seafarers is a multidimensional, structural, and systemic phenomenon that cannot be explained solely by a lack of individual resilience. The developed stressor classification brings together stress factors addressed under different disciplines in the maritime literature within a holistic framework, showing how operational demands, physical environmental conditions, psychosocial relationships, and organizational structure simultaneously exert pressure on the mental and physical health of officers (Carotenuto et al., 2012; Oldenburg & Jensen, 2019; Brooks & Greenberg, 2022). These findings confirm that risks to maritime safety should be addressed not only through technical or procedural measures, but also through a systems approach that centers the human factor (Hetherington, Flin & Mearns, 2006; Nielsen, Berg & Eid, 2013).

International maritime conventions, rather than directly identifying the sources of stress for officer-class seafarers, assume a preventive role aimed at regulating the structural conditions that give rise to this stress. Regulations under STCW, MLC 2006, the ISM Code, and SOLAS address stress not as an individual vulnerability but as a systemic human factor risk through working and rest periods, safety management, health and welfare conditions, and reporting culture (Allen, Wadsworth & Smith, 2008; Jepsen, Zhao & van Leeuwen, 2015; Oldenburg & Jensen, 2019). However, literature findings indicate that in most cases, the primary cause of persistent stress is not the absence of a regulatory framework, but rather inconsistencies at the implementation level and conflicts of organizational priorities (Hetherington et al., 2006; Størkersen et al., 2017; Oldenburg & Hagen, 2021).

In particular, the fact that regulations regarding workload, shift schedules, and decision-making pressure are effectively relaxed in the face of commercial pressures and operational necessities, while psychosocial stressors such as role ambiguity, administrative burden, and low autonomy are addressed indirectly in regulations, limits the stress-reducing effect of conventions (MacLachlan & Kavanagh, 2012; Lefkowitz, Slade & Redlich, 2015; Xiao, Cooke & Chen, 2020). Similarly, although the Just Culture approach is explicitly supported in IMO documents, the persistence of fear of post-incident punishment and criminalization in the field weakens the reporting culture and the learning

organization concept (Ian et al., 2005; Hetherington et al., 2006; Putra et al., 2024).

In this context, future studies should focus not only on describing sources of stress, but also on empirical research that assesses the actual level of implementation, perceived effectiveness, and impact of international conventions and company policies on the psychosocial well-being of officers (Oldenburg & Hagen, 2021; Brooks & Greenberg, 2022). Systematic examination of discrepancies between the regulatory framework and actual practices on board ships is particularly important, especially in areas such as fatigue management, psychosocial support mechanisms, adaptation to digitalization and automation, and the management of multinational crew structures (Xiao et al., 2020; Sampson et al., 2023).

In conclusion, this study provides a strong theoretical foundation for human-centered maritime safety approaches by addressing the sources of stress for officer class seafarers within a conceptually consistent and multidimensional framework based on the literature. While international maritime conventions provide an important regulatory framework for stress prevention, sustainable safety and crew welfare are only possible through the integration of these regulations with effective implementation, organizational justice, and management approaches that prioritize the human factor (Boström & Österman, 2022; Karakasnaki et al., 2025). Therefore, the future of safety in maritime transport depends not so much on technical competence, but on the extent to which the human element can be placed at the center of the system.

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Chapter 6

Green Tourism and Climate Change: Mitigation and Adaptation

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Abstract

This study examines the adverse impacts of climate change on the tourism industry, as well as the reciprocal effects of tourism-related activities that contribute to climate change. Climate change and the increasing concentration of greenhouse gas emissions have significant impacts on human livelihoods worldwide, and the tourism industry is no exception. Destinations that rely heavily on natural and environmental attractions are particularly vulnerable to the adverse effects of climate change. These impacts include rising temperatures, increased frequency and intensity of floods, wildfires in forested areas, and other climate-related hazards that threaten the sustainability and attractiveness of tourism destinations.

Green tourism can be considered an effective approach to mitigating these hazards by promoting environmentally sustainable practices, such as the development of eco-friendly accommodation and the reduction of long-distance travel that relies heavily on air transportation. In addition, the implementation of innovative technologies and operational strategies within the airline industry aimed at reducing carbon dioxide emissions represents a crucial step toward limiting the environmental footprint of tourism. Collectively, these measures contribute to climate change mitigation efforts and support the long-term sustainability and habitability of the planet for future generations.

Introduction

Climate change is one of the most important facts causing social global concern in today's world. The report of the Intergovernmental Panel on Climate Change (IPCC) indicates that climate change is going to result in the movement of approximately several dozen to over one hundred million people, in addition to extreme poverty only in the next decade (IPCC, 2022). Moreover, many

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industries and sectors will be the victim of climate change. Tourism industry is one of the sectors that is highly affected by the consequences of climate change.

It is undoubtable that the world climate is changing and the natural processes are mainly causing this issue. There are two main reasons of global climate change, first one is the Earth's magnetic field changes and the other is greenhouse gases in the lower levels of Earth's atmosphere (Mikhaylov, Moiseev, Aleshin & Burkhardt, 2020). According to research, the world temperature has increased between 0.5^{o}C to 1^{o}C in the last hundred years. Moreover, the problem of climate change is mainly caused by the anthropogenic sources in the last ten years (Pang, et al, 2013). Alongside the previously mentioned issues, scholars indicate that the rise in the world population, deforestation and economic growth can also be considered as the result of global climate change (Chen, Yu, Zhu, Wang, Niu & Hu, 2015; Cloy, Smith, DellaSala, & Goldstein, 2018). Apart from what is causing climate change, the bitter truth is that, it is happening with a speed and extent that is hard to predict.

The rise of global temperature is closely associated with the rise of greenhouse emission level. As it has been predicted by the IPCC (2011), the weather condition will be serious in near future, and there will be a temperature rise between 1.1^{o}C to 6.4^{o}C by 2100. Multiple conceptualizations of climate change at various increasing temperature levels have been predicted by scholars. In recognition of these factors, the international community has established a global agreement to address climate change. The first global obligation was the "Kyoto Protocol" that was approved in 2005, under the aegis of the United Nations Framework Convention on Climate Change (UNFCC) to dictate the decrease of greenhouse gas emissions to the countries which took part in the agreement (Sonwani & Saxena, 2022).

Tourism industry is a sector that contributes to climate change, with increased air travel, cruise ship emissions and energy consumption by hotels. The contradiction of counting on tourism industry for economic growth while coping with its environmental consequences and carbon footprints draws attention to the significance of green and sustainable practices for this industry.

Climate Change and Tourism: double-edged sword

As a cross-cutting global phenomenon, climate change influences all industries, including tourism, which is particularly sensitive to environmental and climatic conditions. Tourism is both affected by the climate change and contributes to climate change. Therefore, tourism has been considered as a double-edged sword in this section.

Picture 1: Climate Change,
Source: https://climateadaptationplatform.com/climate-change-is-making-extreme-weather-events-more-frequent-intense/

Tourism as a Contributor to Climate Change

As one of the largest and quickly growing industries in the world, tourism is highly contributing to the climate change, by its involvement in the premium energy absorption, waste generation and carbon dioxide emissions through its functions and operations.

One of the highest contributions of tourism to the climate change is the high carbon dioxide emissions of the transportation sector. Air transportation is one of the key pillars of tourism industry. Many national and international travelers use air transportation as a means to travel worldwide. However, apart from being an essential part of the tourism industry, it is considered to be as one of the high contributors to the climate change. Air transportation is considered to have 2.5% contribution to the carbon dioxide emissions of the world (Baumeister, 2020), which might not seem to be an alarming issue, but the speed of its growth, is an alarming issue. Based on the research, there has been a 5% annual growth on the carbon dioxide emissions (Cohen & Higham, 2011; Dubois & Ceron, 2006).

Tourism as a Victim of Climate Change

Tourism is one of the industries that is highly affected by the climate change. The activities which take place in tourism are dependent on weather conditions as well as natural resources. Additionally, based on the nature of tourism, the destination choices can be highly flexible, and might change based on the weather condition. This emphasizes the importance of climate change for

touristic destinations in today's world. The touristic destinations which are affected by the climate change might not be the preferences of tourists in their choices for later travel, specifically for leisure tourists.

Picture 2: Flooded streets of Venice, Italy.
Source: https://travellemming.com/opinion/climate-change-could-ruin-these-tourism-destinations/

As it has been stated by scholars, some countries are highly affected by the consequences of climate change. In countries like Turkey, Greece, Spain, Italy and France for example the rise in the temperature may decrease the tourism demand in the high seasons (Amelung, Nicholls, & Viner, 2007). Apart from the high temperature, the climate change has also influenced the winter tourism. The findings of scholars state that the ski industry is also facing high risk (Pang, McKercher, & Prideaux 2013).

The local ecosystems are also affected by the climate change. Climatic uncertainty is expected to alter precipitation patterns, disrupt traditional tourism seasons, and affect local economies, with islands being particularly vulnerable to the impacts of climate change. The Mediterranean region is amongst the ecosystems that is affected by the climate change. As a popular tourism destination, Mediterranean islands and countries in the region consider tourism as a contributor for their local economies. The undesired climate change results in destination changes for the tourists visiting these popular Mediterranean countries. Scholars state that the temperature increase by 1.3^{o}C, and the precipitation decrease by 15% in the winter season will unpleasantly affect the tourism sector in the region. Moreover, based on the same research, the 2.5^{o}C

rise of average temperature has been estimated compared to 1961-1990 period, in addition to 15 to 20 annual rise in the heat wave days by 2050 (Vourdoubas, 2025).

Picture 3: Temperature rise and fire in Greece, 2024, Source: https://www.voanews.com/a/greek-pm-deplores-worst-climate-conditions-in-4-decades/7835758.html

These undesirable consequences of climate change are becoming more visible in recent years. The rising temperature and heat waves, sea-level rise and floods, droughts and water scarcity are all examples of climate change that affects everyone's lives in different parts of the world. Hence, strict measures must be implemented to lessen the unpleasant impacts of climate change that will highly affect people's lives and will likely affect the tourism industry and local economies of countries.

Green Tourism and Mitigation and Adaptation Strategies

In the long run, sustainable tourism is intended to encounter the social, economic and environmental features of tourism. Ecotourism is also considered to enable local governments to control tourism expansion and grasp local objectives for sustainability that helps in the reduction of consequences for climate change (Sharma, Taheri, Chopra & Parihar, 2025).

In recent years, green tourism has gained increasing attention to reduce the carbon emissions that has been the result of tourist operations and hotel management practices in various countries. Consequently, the concept of green tourism prioritizes the mitigation of environmental harm and the promotion of cultural enrichment that benefits local inhabitants (Ibnou-Laaroussi, Rjoub, &

Wong, 2020). It also helps in reducing the global environmental challenge of climate change by decreasing the effects of pollution and greenhouse gas emissions that are of great importance to mitigate adverse effects on the local environment and to consider its applicability at a global scale.

Some hotel chains and airlines have started to implement different 'green' strategies in the services they offer. Considering the growing importance of green tourism, a number of eco-friendly resorts have been developed, particularly in locations characterized by favorable climatic conditions, such as coastal and mountainous areas. These resorts allow tourists to experience natural landscapes, enjoy scenic environments, and spend their leisure time in close interaction with nature while minimizing negative environmental impacts.

Picture 4: Ecotourism Resort,
Source: https://www.bbc.co.uk/bitesize/guides/zq4hvcw/revision/7

Implementing measures that enable tourism development to align with a net-zero emissions pathway by 2050 represents a significant challenge for destinations (Sharma, Taheri, Chopra & Parihar, 2025). Choosing close markets or domestic markets and using eco-friendly transportation options could be considered as a strategy to fulfill this aim.

Approaches in Green Tourism and Climate Change

The major aspect in the tourism industry is the hospitality industry. The hotel sector need to implement various technologies to reduce the climate change. Value creation throughout the hospitality chain requires the established of smart, integrated ecosystems that is utilized by the entire hotel chain. Additionally, hospitality industry can take advantage of innovative, eco-friendly and sustainable business models that can increase the performance of the hotel and decrease the unpleasant factors that influences climate change. To make it green, various precautions can be made, as an example utilizing smart meters to

improve water efficiency and increase productivity can be considered as a way to save costs and decrease carbon dioxide footprints (Sharma, Taheri, Chopra & Parihar, 2025).

Picture 5: The Parkroyal Hotel in Singapore,
Source: https://thursd.com/articles/park-royal-hotel-singapore

One other important aspect of tourism industry is the transportation. Air transportation is an essential factor for the welfare and mobility of tourists and for tourism industry. Therefore, as an approach for green tourism, scholars have called for different strategies in order to reduce the carbon dioxide emissions in the air transportation sector (Adler & Gellman, 2012). In view of this, under the ICAO framework, airlines may voluntarily compensate for aviation-related carbon dioxide emissions by acquiring eligible emission reduction credits from carbon markets, including those associated with renewable energy initiatives (Zhang, Butler & Yang, 2020). This started from 2021 and is currently voluntary, however it will become obligatory in 2027 for all the airlines to follow, specifically by countries that signed the “Kyoto Protocol”.

The other step that can be taken by the airline companies to make it green and sustainable is the fleet modernization. The new aircrafts have been improved by 70% compared to the ones in the early days. According to Boeing, fleet efficiency has increased at an estimated rate of 2.9% and the company suggested that biofuels may achieve lifecycle carbon dioxide emission

reductions of approximately 50–80% compared with fossil fuels (Boeing Company, 2015). This approach represents a promising strategy that could be adopted by the airline industry to reduce the carbon dioxide emissions and become more eco-friendly.

It is worth mentioning that the airline industry is not the only transportation means used in the tourism industry that affects climate change. Road travel and cruise ships are also considered to be as major contributors to the carbon dioxide emissions globally (IEA, 2015). Therefore, governments should implement and enforce appropriate regulations and precautionary measures to monitor and control emissions from road transportation, particularly by regulating older vehicles with higher pollution levels. Such policy interventions are essential to reduce transport-related emissions and mitigate their contribution to climate change.

Future Directions

Inspiring sustainable and green tourism practices is essential for long-term resilience of the organizations in the tourism industry. Eco-friendly policies, such as energy consumption reduction, offering organic products could be considered as some strategies that could be used by the hospitality industry. Additionally, educating tourists can play a significant role in minimizing the adverse impacts of climate change. Guided tours with environmental awareness tour guides and educated and responsible tourists who respect the local communities and minimize waste constitute important factors in promoting green tourism.

Moreover, one other important factor could be involving local communities in the tourism planning. This strategy can support the needs and perspective of local communities by empowering them to benefit from tourism through agro tourism, local markets and revenue-sharing models that can provide economic benefits to them (Vourdoubas, 2025).

Conclusion

To conclude, it is worth mentioning that the harmful and increasingly perceptible consequences of climate change and greenhouse gas emissions are intensifying at an accelerated rate, exerting profound effects on human livelihoods and well-being. These impacts are also expected to significantly influence the tourism industry, as environmental degradation, extreme weather events, and changing climatic conditions alter tourism demand, destination attractiveness, and industry sustainability.

One of the most important issue in decreasing the high impact of climate change, is educating people, who are considered to be potential tourists, in different countries. The education system of each country can consider the unpleasant effects of greenhouse gas emissions and the effects of climate change on our planet in their education system. Integrating environmental education at an early stage within school curricula can foster the development of environmentally responsible attitudes and behaviors among individuals. As these individuals mature, they are more likely to become environmentally conscious tourists, whose preferences and actions support sustainable practices. Consequently, early environmental education can have a long-term positive impact on the tourism industry by promoting more eco-friendly tourism behaviors and contributing to the sustainability of tourist destinations.

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Chapter 7

Examining the Relationship Between 60-72 Months Old Children's Views on Participation Rights and Their Self-Regulation Skills

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INTRODUCTION

Self-regulation is the ability to regulate cognition, behavior and emotions towards goals (Hofmann et al., 2012). Self-regulation limits children's negative behaviors when achieving goals or following rules (Calkins & Howse, 2004). In early childhood, these regulatory capacities support children's ability to sustain attention, manage impulses, and engage in socially appropriate and goal-directed learning activities, which are foundational for later academic achievement and social competence (Blair & Raver, 2015).

Self-regulation is a broad concept that covers interrelated functions such as executive function, working memory, inhibitory control, executive attention and cognitive flexibility (Savina, 2014). Self-regulation has cognitive, behavioral and emotional dimensions (Calkins & Fox, 2002; Murray et al., 2014). Behavioral regulation is defined as the voluntary modulation of behavior, including the inhibition of dominant responses and the activation of appropriate actions in accordance with contextual expectations (Eisenberg et al., 2004). Cognitive self-regulation refers to the intentional processes through which individuals plan, monitor, and evaluate their thoughts and actions in order to attain self-selected goals (Zimmerman, 2000). Cognitive self-regulation skills begin to develop in early childhood when the brain is significantly shaped (Philpott Robinson et al., 2023). Executive functions, which have positive effects on children's early learning skills (Bull, 2008; Harris, 2016; Zelazo, 2015), consist of attention, working memory and inhibitory control and are included in the cognitive dimension of self-regulation (McClelland & Cameron,

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2012). Executive functions assist individuals in understanding and controlling their reactions to the environment and problem-solving about desired behaviors and outcomes in the future (Montroy et al., 2016).

Attention refers to the ability to selectively focus on relevant information, sustain concentration over time, and remain engaged with a task despite potential distractions (Ruff & Rothbart, 1996). Working memory is the cognitive system that enables young children to hold and manipulate information in mind, follow multi-step instructions, and plan responses while engaged in goal-directed activities (Diamond, 2013). Inhibitory control involves the capacity to deliberately inhibit dominant or automatic responses in order to act in accordance with goals, rules, or situational demands (Carlson & Wang, 2007). Emotional regulation refers to the processes by which individuals monitor, evaluate, and modify their emotional reactions in order to accomplish personal goals and adapt to situational demands (Gross, 1998). Emotional regulation is especially realized through attention and planning processes, inhibition or activation of behavior (Eisenberg et al., 2005).

Early childhood represents a foundational period for the development of self-regulation, as regulatory skills emerging during these years play a central role in supporting multiple domains of development (Diamond, 2013). Children's self-regulation skills contribute not only to behavioural control but also to the development of cognitive processes such as working memory, language, and executive functioning (Vallotton & Ayoub, 2011). A growing body of research demonstrates that early self-regulation skills are strong predictors of later academic achievement, school adjustment, and learning outcomes across the educational lifespan (Moffitt et al., 2011; Morrison et al., 2010). Furthermore, self-regulation skills help children cope with difficulties in early childhood (Loomis, 2021).

Participation is the ability of children to express their views on decisions and actions that concern them (UNICEF, 2009). In early childhood education (ECE) settings participation means being listened to, taking part (Clark, 2005; Kangas et al., 2016) and taking initiative (Weckströmet al., 2017). Children's participation in ECE is achieved when teachers develop an understanding of children's needs, experiences and views (Kanyal, 2014). Therefore, child participation also affects the quality of ECE settings (Lansdown, 2005; Sheridan, 2007). Participation supports children's autonomy (Save the Children, 2010; Soenens et al., 2017) and contributes to their decision-making skills (Perry & Szalavitz, 2006), personal development (Save the Children, 2018) and self-regulation skills (Çelik, 2017). It also improves their cognitive self-efficacy and motivation (Sinclair, 2004). Self-determination theory (Deci & Ryan, 2000)

is one of the theories that focuses on children's motivation (Ryan & Deci, 2017) to become lifelong learners and self-directed individuals. Self-determination refers to attitudes and competencies that enable children to set goals for themselves and try to achieve them (Correai et al., 2023; Deci et al., 1989). According to this theory, when children's autonomy is supported, they gain the ability to organize their own lives and feel competent (Noom et al., 2001). In terms of participation rights, this theory explains that children have the right to make and implement decisions about themselves with their developing capacities (Correai et al., 2023; Deci et al., 1989). Participation takes place in environments where children's self-determination is supported and they can make choices and decisions (Ziemes & Gutzwiller-Helfenfiner, 2019).

Participation is the process of making decisions and involving in the decisions taken. Self-regulation skills such as showing goal-oriented behavior, changing behavior in accordance with feedback, and being related to oneself are included in the concept of participation. In the studies on child participation in the literature, it is seen that the views of preschool teachers (Broström et al., 2015; Correia et al., 2020; Heikka et al., 2022; Waters-Davies et al., 2023) and children (Correia & Aguiar, 2017; Martinez Sainz et al., 2024; Shaik, 2016; Tozduman Yaralı & Güngör Aytar, 2017) are discussed. Some studies conclude that there is a relationship between child participation and children's developmental characteristics such as autonomy (Steinberg & Silk, 2002; Véronneau et al., 2005) and decision-making skills (Perry & Szalavitz, 2006; Save the Children, 2010). Furthermore, teachers' enabling children to take initiative independently, listen to their ideas, and make changes in classroom routines and learning processes accordingly support children's autonomy (Mesquita-Pires, 2012; Sandseter & Seland, 2016) and self-regulation skills (Çelik & Kamaraj, 2020; Kangas et al., 2015). To support children's self-regulation skills, they should be encouraged to make decisions and set goals in preschool classrooms, and they should be given opportunities to think about options and make predictions (Bredekamp, 2017).

Children's right to participate is critical for children to become individuals who are aware of their rights, who can make decisions about issues that concern them, who can express their feelings and thoughts actively and freely, and who can get help when necessary. In the context of the right to participation, self-regulation skills are important for children to become individuals who are aware of their responsibilities, who can self-regulate, and who can manage their emotions, cognitions and behaviors. Revealing the important relationships between these two concepts, which are emphasized to be important in early childhood, is important in terms of emphasizing children's right to participate

from a developmental perspective within the scope of self-regulation skills. It is thought that the results obtained from this study will contribute to improving the quality of learning processes in preschool classrooms and creating effective learning environments. Furthermore, it is thought that it will provide a different perspective to the research dealing with the right to participate, which is important in children's lives and future lives, and self-regulation skills, which constitute an important component of 21st-century skills. However, there is a need for research examining the relationships between children's participation and executive functions and self-regulation skills (Correia et al., 2019). Based on all these, this study aims to determine the relationship between 60-72-month-old children's views on participation rights and their self-regulation skills.

METHODS

Research Design

Correlational survey model was used in this study. The relational survey model is a research model that aims to reveal and determine the degree of change between two or more variables (Karasar, 2016).

Study Group

The study group consisted of a total of 350 children (177 girls and 173 boys) attending 8 independent kindergartens and 5 preschools affiliated with primary schools in a city center in the central aegean region of Turkey and 40 preschool teachers. While 26.6% of the children had no siblings, 47.1% had one sibling, 20.3% had two siblings, and 6% had three or more siblings. Among the teachers of the children in the study, 35% had a seniority of 1-9 years, 52.5% had a seniority of 10-20 years and 12.5% had a seniority of 21 years or more. When the education level of the teachers is analyzed, 85% are bachelor's degree graduates and 15% are master's degree graduates.

Instruments

Personal Information Form: The form developed by the researchers included information such as children's gender, age, number of siblings, seniority of the teacher, and type of graduation.

Participation Right Scale in Preschool Classes (PRSPC) (Child Form): This scale was developed by Koran (2017) in the Turkish Republic of Northern Cyprus to determine children's views on child participation in ECE settings. The scale consists of 23 items and four sub-dimensions: activities, play in learning centers/outdoors, determining classroom rules and procedures, and sharing dimension. The validity and reliability study of the scale in Turkey was conducted by Şallı İdare (2018). As a result of the confirmatory factor analysis (CFA), it was concluded that the four-factor structure was acceptable and the

factor loadings of the items were above 0.32 for all dimensions. The internal consistency coefficients calculated for the scale were α=.64 for the Activities dimension, α=.54 for the Learning centers/outdoor play dimension, α=.59 for the Sharing activities dimension, and α=.56 for the Determining classroom rules and procedures dimension (Şallı İdare, 2018). The items in the scale are scored with 2 points for full participation in decisions made jointly by children and adults, 1 point for decisions made only by children, and 0 points for an option in which the child does not participate because it does not involve participation.

Scale of Self-Regulation Skills for 4-6 Year Old Children (SSRS) (Teacher Form): The scale was developed by Erol and İvrendi (2018) in order to determine the self-regulation skills of 4-6 year old children with the opinion of teachers. The scale has 22 items and is organized as a 5-point Likert scale and numbered as 1=Never, 2=Rarely, 3=Sometimes, 4=Mostly, 5=Always. The highest score that can be obtained from this scale is 110 and the lowest score is 22. The scale consists of 3 sub-dimensions: Inhibitory Control, Attention and Working Memory. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted for the validity of the scale. According to EFA, a 3-factor structure with 22 items explaining 63% of the total variance was obtained. According to CFA, it was determined that the fit indices of the obtained structure were at an adequate level. In the reliability study of the scale, it was determined that the Cronbach Alpha value was .94 in the whole scale, between .87 and .91 in sub-dimensions, and the test split coefficient was .90 (Erol & İvrendi, 2018).

Data collection

Ethical approval for this study was obtained from the Social and Human Sciences Ethics Committee of Afyon Kocatepe University at its meeting numbered 2022-85. School principals and teachers were informed about the aim of the research by visiting the schools. Participants were informed that the data collected would be used only for the aim of the research and would not be shared with any other institution or person. Informed consent forms were given to the volunteer teachers. Voluntary consent forms were also sent to the parents of the children in the study group through the volunteer teachers. Children whose voluntary consent forms were signed by their parents were included in the study.

In addition, it was also taken into consideration whether the children volunteered and wanted to participate before starting the scale application. In this study, the Participation Right Scale in Preschool Classes (Child Form), which was used to determine children's views on the right to participation, was

applied by taking into account the application steps determined by Koran (2017), who developed the scale. The scale was administered in quiet, safe and common areas of the schools. In order to determine children's self-regulation skills, the Self-Regulation Skills Scale for 4-6 Year Old Children (Teacher Form) was given to teachers on behalf of each of the children within the scope of the application for teachers to fill out. Teachers were asked to fill out the form within a week, considering the skills of the relevant child, and it was collected from the teachers by the researcher after one week.

Data Analysis

Descriptive statistics such as arithmetic mean, standard deviation, percentage and frequency were used to determine the demographic characteristics of children and teachers. As a result of the Kolmogorov-Smirnov test conducted to determine whether the data were normally distributed or not, parametric tests were used in statistical analyses since the data were normally distributed. The relationships between children's self-regulation skills and their participation rights were examined using Pearson correlation analysis. Statistical significance level was accepted as $p < 0.05$.

RESULTS

The results of the Pearson Correlation Analysis test conducted to determine the relationship between 60-72-month-old children's right to participation and their self-regulation skills are presented in Table 1 below.

Table 1

Pearson correlation analysis results

SSRS (Teacher Form)		PRSPC (Child Form):				
		Etkinlik	Oyun	Paylaşım	Kural	Toplam
Inhibitory Control	*r*	**,149***	**,134***	,016	**,105***	**,156***
	p	,005	,012	,772	,040	,003
	n	350	350	350	350	350
Attention	*r*	,068	,100	-,090	,007	,039
	p	,206	,062	,092	,902	,467
	n	350	350	350	350	350
Working Memory	*r*	,095	,053	,005	**,108***	,100
	p	,076	,321	,931	,043	,063
	n	350	350	350	350	350
Total	*r*	**,122***	**,121***	-,037	,076	**,112***

	p	,022	,024	,486	,154	,036
	n	350	350	350	350	350

When Table 1 was analyzed, it was determined that there was a positive and low level significant relationship between the total scores of the SSRS and the PRSPC (r=0.112, p<.05). There was a positive and low level significant relationship between the total score of the SCSS and the scores of the Activity and Play sub-dimensions of the PRSPC (r=0.122; r=0.121; p<.05).

It was determined that there was a positive and low level significant relationship between the Inhibitory control sub-dimension of the SSRS and the Activity, Play, Rule sub-dimensions and total scores of the PRSPC (r=0.149; r=0.134; r=0.105; r=0.156; p<.05). A positive and low-level significant relationship was found between the working memory sub-dimension of the SSRS and the rules sub-dimension of the PRSPC (r=0.108, p<.05).

DISCUSSION

Giving children the freedom to make choices, allowing children to make their own decisions, accepting children as individuals, and actively participating in issues that concern them all help children adapt to their surroundings and learn how to regulate their emotions and behavior. The acquisition of self-regulation skills and the realization of the right to participation also depend on children's attention, thoughts, feelings and actions. When children's participation is supported, skills related to self-regulation such as motivation, language skills, cooperation, independence and interaction with others develop (Kangas et al., 2015). In this study, it was determined that there was a positive and significant relationship between children's inhibitory control and their participation in activities and games, the determination of classroom rules and the level of realization of their participation rights in the classroom. It can be said that as children's participation in the classroom and their involvement in the process of determining the rules increase, their inhibitory control also increases. When children make their own decisions in the classroom, they evaluate the options, make the choice they find appropriate and learn to take responsibility as a result of their choices. Children's participation in this process also supports children's self-regulation skills (Pekince, 2022). To support children's participation in ECE classrooms, children's views should be taken into account (Houen et al., 2016; Muela et al., 2019), they should take part in decision-making (Church & Bateman, 2019; Kanyal & Cooper, 2012), daily schedule planning (Theobald & Kultti, 2012) and in the organization of the learning environment (Clement, 2019; Smaree Manassakis, 2019). The findings

of this study are supported by studies that concluded that children's rule-following behavior is higher in classrooms where participation is supported (Zorbay Varol, 2019), and that children have good self-control in classrooms where children are given the opportunity to make decisions and express opinions (Pećnik et al., 2016). Some studies conclude that there is a relationship between children's play and their participation in the classroom (Uren & Stagnitti, 2009) and between their autonomy and playing as they wish in learning centres (Sandseter & Seland, 2016).

In the current study, it was determined that there was no significant difference between children's inhibitory control and their sharing in the classroom. The reason for this situation may be the insufficiency of child participation in the classroom due to teacher authority. There are studies in the literature that conclude that children are involved in decision-making processes in the classroom at a limited level and their participation is insufficient (Ree & Emilson, 2019; Salminen, 2013; Zorbay Varol, 2019). In classrooms with low participation, children may have difficulty performing behaviours such as sharing and cooperation because they are passive. On the other hand, in classrooms with high participation, children's sharing, problem-solving and cooperation skills may increase and their pro-social behaviours may improve (Nah & Lee, 2016; Salminen, 2013).

In this study, no significant relationship was found between children's attention skills and the level of realization of participation rights in the classroom. There was a positive and significant relationship between children's working memory and classroom rules. This may be because children cannot actively use their cognitive processes (Simovska, 2004) in structured environments where the teacher's authority is high and children only follow the instructions. Kangas (2016) examined the effect of a participatory educational environment on young children's self-regulation skills and concluded that participatory practices positively affect children's cognitive processes such as attention, working memory, and thinking. Dunphy (2012) found that participation has a positive effect on cognitive processes such as attention, memory, thinking, and imagination. Supporting executive functions in early childhood is critical, and children with supported thinking skills can plan and organize their activities, maintain attention, and complete tasks. In learning environments where children are passive, this does not happen; children may not be able to use their executive functions because the teacher thinks and plans for them. In environments where children are actively involved, they can use their executive functions effectively (Dawson & Guare, 2010; Galinsky, 2010; Pekince, 2022). Furthermore, teachers' having positive perspectives on

participation (Salminen, 2013; Waters-Davies, 2024; Venninen & Leinonen, 2013) and using participatory and active methods (Clement, 2019; Houen et al., 2016; Wall et al., 2019) will support children's executive functioning skills and self-regulation skills (Galinsky, 2010).

In the current study, it was concluded that there was a positive and significant relationship between children's self-regulation skills and the level of realization of their participation rights in the classroom. As a result, it can be said that as children's participation in the classroom increases, their self-regulation skills also increase. In the study conducted by Kwon et al. (2017), it was concluded that children's emotion regulation is related to their participation, motivation and academic achievement. Williford et al. (2013) concluded that children's interactions with their teachers, peers and participation in classroom activities improve their self-regulation skills. In the literature, it was concluded that participation-based programs (Çelik & Kamaraj, 2020; Freitas Luís et al., 2015; Mesquita-Pires, 2012) positively affect children's autonomy, attention, problem-solving and self-regulation skills. Pekince (2022) stated that the participation-based ECE program supports working memory, preventive control and cognitive flexibility skills in self-regulation skills. The findings of all these studies are consistent with the findings of the current study. Preschool teachers must promote children's autonomy and self-regulation skills by encouraging them to make choices and participate actively in decision-making (Hautakangas et al., 2022; Kangas et al., 2015).

Supporting children's self-regulation skills, which form the basis of their adaptation to school and academic success, is an important investment for children's future lives. Supporting children's self-regulation skills through teachers' environmental, instructional and behavioral interventions will prevent behavioral and emotional problems in the classroom and act as a protective factor against school failure (Savina, 2021).

LIMITATIONS AND IMPLICATIONS

One of the limitations of this study is that children's self-regulation skills were determined based on teachers' views. This may not fully represent the relationship between children's self-regulation and their right to participate in the classroom, as it may reflect a subjective perspective. Therefore, future research should be based on observation of children's processes in the classroom and use more than one assessment tool to obtain more objective results. Second, the fact that the sample of this study consisted only of children attending kindergartens in a city center in a specific region limits the

generalizability of the results. In future research, more comprehensive studies can be conducted by selecting larger samples from different cities and regions. Furthermore, future research can be planned to examine the joint effect of different variables such as parental attitudes, teacher-child interaction, and peer relationships.

CONCLUSION

As a result of this study conducted to examine the relationship between 60-72-month-old children's views on participation rights and their self-regulation skills, it was determined that there was a positive and significant relationship between children's self-regulation skills and the level of realization of participation rights in the classroom. It was found that there was a positive and significant relationship between children's inhibitory control and their participation in activities and games, determination of classroom rules and the level of realization of participation rights in the classroom, and between working memory and determination of classroom rules. There was no significant relationship between children's attention skills and the level of realization of their participation rights in the classroom.

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Chapter 8

Which is More Influential in Ai-Driven Customer Satisfaction Management: Sentiment Analysis or Personality Analysis?

Yeliz BAŞ[1]

1.Introduction

The rapid advancement of technology and the widespread adoption of digitalization have fundamentally transformed customer satisfaction management. Contemporary customers now prioritize not only product and service quality but also personalized experiences, responsive feedback mechanisms, and proactive service offerings. In response to these evolving expectations, businesses are increasingly transcending traditional methods by adopting data-driven and AI-supported solutions to manage customer relationships and secure a sustainable competitive advantage (Verhoef et al., 2009).

Artificial intelligence (AI), leveraging advanced technologies such as machine learning, natural language processing, and deep learning, empowers the analysis of customer data to generate insights at a previously unattainable depth (Davenport et al., 2019). In understanding customer behaviors and satisfaction levels, psychological and emotional factors have gained significant prominence. Consequently, emotion analysis and personality analysis have emerged as pivotal components within AI-supported customer relationship management.

Sentiment analysis (also known as emotion analysis) involves identifying customers' emotional states from their written or spoken expressions. By harnessing diverse data sources—including social media posts, product reviews, and call center recordings—businesses can assess customer sentiments (positive, negative, or neutral) in real time. This capability allows organizations to promptly identify dissatisfaction and address complaints, thereby enhancing the overall customer experience (Pang & Lee, 2008).

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Personality analysis, conversely, elucidates customers' core psychological traits, attitudes, and enduring behavioral patterns. Profiles constructed using established psychological models, such as the Big Five personality theory, yield valuable insights into purchasing habits, brand loyalty, and responsiveness to marketing campaigns (Goldberg, 1990; Matz & Netzer, 2017). AI algorithms can analyze consumers' digital footprints—encompassing social media interactions, purchase history, and browsing behavior—to construct these profiles, facilitating the development of highly individualized customer strategies (Youyou, Kosinski & Stillwell, 2015).

The integration of these two analytical approaches produces a synergistic effect in managing customer satisfaction. While emotion analysis provides immediate, transactional feedback, personality analysis informs the cultivation of long-term customer relationships. Businesses utilize this comprehensive data to personalize experiences, execute targeted marketing campaigns, and strengthen customer loyalty.

From the perspective of overall customer satisfaction, sentiment analysis is often prioritized for several reasons:

It directly measures the customer's immediate emotional state (e.g., joy, anger, disappointment).

It is conducive to real-time feedback mechanisms (e.g., customer support chatbots, call center applications, and review analysis).

It enables AI systems to initiate swift remedial actions (e.g., automatically routing a conversation upon detecting negative sentiment).

Personality analysis, however, holds greater significance for long-term strategy, including customer segmentation, personalized marketing, and user experience (UX) design. It aids in understanding a customer's preferred communication style, decision-making processes, and underlying expectations. This makes it particularly valuable for designing loyalty programs, refining content recommendation systems, and tailoring UX.

In summary, sentiment analysis is critical for immediate intervention and satisfaction recovery, whereas personality analysis is an essential complement for building deeper, more sustainable customer relationships. For systems designed to integrate both support and marketing functions, the combined application of sentiment and personality analysis can achieve holistic success in customer satisfaction management. However, the deployment of these technologies introduces significant ethical and technical challenges. Concerns regarding data security, customer privacy, algorithmic bias, and analytical accuracy must be meticulously addressed in both academic research and practical implementation. Therefore, investigating the impact of AI-driven

sentiment and personality analyses on customer satisfaction, and establishing frameworks for their accurate, ethical, and effective application, is of paramount importance.

2.Customer Satisfaction

Customer satisfaction represents a cornerstone concept within marketing and service management literature, having been the subject of extensive research for decades. Oliver (1997) defines it as a psychological outcome stemming from a cognitive and affective evaluation, whereby a customer assesses the extent to which their pre-consumption expectations of a product or service have been met or exceeded. This evaluation hinges on the discrepancy between expectations and perceived performance, which ultimately determines the satisfaction level.

Kotler and Keller (2016) contend that customer satisfaction transcends mere post-purchase contentment; it is a pivotal determinant of customer loyalty, repeat purchase behavior, and positive word-of-mouth communication. Consequently, it plays an indispensable role in cultivating sustainable customer relationships, which are integral to securing a competitive advantage. In the contemporary marketplace, characterized by intensifying competition and the proliferation of digital platforms, customer expectations have evolved to become increasingly complex and demanding (Lemon & Verhoef, 2016). Within this environment, traditional methods of measuring and managing customer satisfaction are increasingly deemed insufficient. This insufficiency creates a compelling necessity to integrate deeper psychological factors—specifically, customer sentiment and personality—into satisfaction models.

3.Artificial Intelligence and Data-Driven Decision-Making

The convergence of artificial intelligence (AI), big data analytics, and machine learning has fundamentally reshaped the interpretation of customer data and the formulation of strategic decisions (Davenport et al., 2019). By conducting in-depth analyses on both structured and unstructured data from customer interactions, AI provides businesses with real-time and predictive insights. Key subfields such as Natural Language Processing (NLP), voice recognition, and image recognition serve as particularly valuable tools for identifying customer emotional states and personality traits (Cambria et al., 2013). This data-driven approach to decision-making minimizes human bias and error, facilitating the development of more objective and effective strategies. However, the deployment of these technologies necessitates critical attention to data security, ethical guidelines, and algorithmic transparency (Binns, 2018). Ultimately, the success of AI systems is contingent upon both the accuracy of

data collection and processing methodologies and broader customer acceptance of these automated processes.

Over the past decade, rapid advancements in AI have revolutionized customer relationship management (CRM) and marketing strategies. AI comprises a suite of algorithms and models designed to equip machines with human-like capabilities in perception, learning, decision-making, and problem-solving (Russell & Norvig, 2021). Data-driven decision-making refers to the organizational practice of optimizing strategic choices by extracting meaningful insights from large and diverse datasets (Provost & Fawcett, 2013).

The core AI components and their specific applications in customer analysis are as follows:

Machine Learning (ML): ML involves training algorithms on data to recognize complex patterns. It is extensively applied in customer segmentation, purchase prediction, and behavioral analysis (Jordan & Mitchell, 2015).

Deep Learning (DL): Utilizing multi-layered artificial neural networks, DL excels at extracting high-level features from complex data. It is highly effective for sentiment analysis from text and understanding nuances in voice-based customer interactions (LeCun, Bengio & Hinton, 2015).

Natural Language Processing (NLP): NLP enables machines to understand, interpret, and generate human language. It is crucial for analyzing customer feedback channels such as social media posts, product reviews, and call center transcripts (Jurafsky & Martin, 2021).

Data Mining: This discipline focuses on discovering hidden relationships, patterns, and correlations within large datasets, thereby uncovering latent customer trends and market opportunities (Han, Kamber & Pei, 2012).

Artificial intelligence offers significant advantages in the management of customer satisfaction. A primary benefit is its capacity for real-time analysis, which allows for the instantaneous processing of customer feedback and facilitates swift intervention when issues are detected (Pang & Lee, 2008). Furthermore, AI enables a highly personalized customer experience. By leveraging sophisticated recommendation systems tailored to individual preferences and behaviors, businesses can execute more effective and targeted marketing strategies (Gomez-Uribe & Hunt, 2016). Beyond personalization, AI's predictive modeling capabilities empower organizations to forecast critical metrics, including purchase propensity and customer churn risk, enabling proactive retention efforts (Verbeke et al., 2012).

Despite these substantial advantages, the proliferation of AI applications presents significant challenges. Growing dependency on AI has intensified concerns regarding personal data security and privacy. Stringent regulations,

such as the General Data Protection Regulation (GDPR), now mandate transparent, lawful, and ethical data processing practices (Voigt & Von dem Bussche, 2017). Concurrently, burgeoning research into algorithmic bias and fairness highlights the critical need to embed ethical principles into the core of AI design and deployment to prevent discriminatory outcomes and ensure equitable decision-making.

In conclusion, AI and data-driven decision-making have become indispensable for gaining a profound understanding of customer satisfaction and for optimizing strategic business decisions. The technology provides unparalleled capabilities for real-time engagement, personalization, and prediction. However, to harness its full potential sustainably and responsibly, organizations must diligently address the accompanying ethical, legal, and social imperatives, ensuring that technological advancement is aligned with fundamental principles of privacy, fairness, and transparency.

4.Sentiment Analysis and Customer Experience

Sentiment analysis, also known as opinion mining, is a methodological approach that employs Natural Language Processing (NLP) techniques to systematically identify and extract customers' emotional states and subjective opinions from textual or verbal expressions. At its most fundamental level, this analysis classifies texts into positive, negative, or neutral polarities (Liu, 2012). More advanced, fine-grained analyses can discern specific emotional subcategories, such as anger, joy, sadness, or excitement, providing a deeper layer of understanding (Cambria et al., 2013).

Within customer satisfaction management, sentiment analysis serves a critical function across multiple domains. It empowers organizations to respond promptly to customer demands by instantly detecting emotional cues from real-time feedback channels, including social media interactions, product reviews, and call center transcripts (Ghiassi, Skinner & Zimbra, 2013). In the realm of crisis management, a surge in negative sentiment intensity can act as a crucial early-warning indicator, enabling the formulation of proactive intervention strategies to mitigate potential reputational damage (Pang & Lee, 2008). Furthermore, marketing strategies are significantly enhanced by insights derived from sentiment analysis, which guide the design of campaign messages that resonate more effectively with prevailing customer emotions (Wang et al., 2016). Lastly, for product and service development, the systematic analysis of emotional tones within customer feedback pinpoint specific areas requiring improvement with greater accuracy and efficiency (Feldman, 2013).

Sentiment analysis methodologies are broadly classified into three primary approaches:

Lexicon-Based Methods: These methods determine sentiment by identifying the presence and intensity of pre-defined emotional words within a text (Taboada et al., 2011). They operate by referencing a pre-compiled sentiment lexicon, where each word is assigned a specific polarity score (e.g., positive, negative, or neutral). The overall sentiment of a text is calculated by aggregating the scores of the identified words. For instance, in a product review, words like "excellent" (positive) and "terrible" (negative) contribute to a final sentiment score. The primary advantages of this approach are its simplicity, computational efficiency, and its independence from large, labeled training datasets.

Machine Learning-Based Methods (Supervised): This paradigm involves training statistical models on large corpora of texts that have been pre-labeled with sentiment categories by human annotators (Pang, Lee & Vaithyanathan, 2002). The model learns to identify complex patterns and features associated with each sentiment label, enabling it to automatically classify new, unseen texts. This facilitates large-scale analysis of customer feedback, social media monitoring, and review interpretation. The performance of these models is highly contingent on the volume, quality, and diversity of the training data; a robust dataset is essential for ensuring generalizable and accurate predictions.

Deep Learning Methods: These advanced techniques utilize multi-layered neural networks to capture intricate contextual and emotional nuances in text. Models such as Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM) networks, and Transformers have significantly advanced the state-of-the-art.

RNNs process text sequentially, making them suitable for modeling the order of words in a sentence (Elman, 1990). However, they often suffer from vanishing gradient problems, limiting their effectiveness with long texts.

LSTMs are a specialized RNN variant designed to overcome this limitation through a gating mechanism that selectively retains or forgets information, thereby better modeling long-range dependencies (Hochreiter & Schmidhuber, 1997).

Transformer-based models (e.g., BERT) leverage a self-attention mechanism to weigh the importance of all words in a sentence simultaneously, regardless of their position (Vaswani et al., 2017). This allows for a superior understanding of context, including complex elements like sarcasm and implied meaning, and has led to dominant performance in sentiment analysis tasks (Devlin et al., 2019).

In essence, while all three method types aim to classify sentiment, they differ fundamentally in their approach: lexicon methods rely on predefined word lists, machine learning on pattern recognition from labeled examples, and deep learning on learning hierarchical feature representations from data.

4.1.Limitations and Challenges in Sentiment Analysis for Customer Satisfaction Management

Despite their significant advantages in customer satisfaction management, sentiment analysis techniques are fraught with considerable limitations and challenges. These obstacles manifest across both technical and linguistic dimensions, where factors such as sarcasm, contextual ambiguity, polysemy, and linguistic variability can severely compromise analytical accuracy. Furthermore, cross-cultural differences and language-specific nuances present additional hurdles for robust sentiment identification (Mohammad & Turney, 2013).

Difficulty in Detecting Irony and Sarcasm: A primary challenge arises from the models' reliance on the direct emotional valence of words. In ironic or sarcastic expressions, the literal meaning of words directly contradicts the speaker's genuine sentiment. For example, the statement, "This product is great, exactly what my money is worth!" can be interpreted as either positive or negative depending on the context and tone. Such constructions are frequently misclassified by conventional sentiment analysis models (Davidov, Tsur & Rappoport, 2010). Research on Twitter data has demonstrated that sarcastic tweets constitute a major source of classification error (Davidov et al., 2010). This persistent issue underscores the critical need for developing specialized sarcasm detection models and integrating sophisticated contextual analysis techniques to improve accuracy (Wallace et al., 2015).

Context and Semantic Ambiguity: Sentiment analysis systems often evaluate text at the sentence or word level, which fails to capture meaning that is derived from broader context. The sentiment conveyed by a word is highly context-dependent. For instance, the word "cold" may denote a negative quality when describing customer service but a positive, desirable attribute for a beverage. This phenomenon of polysemy poses a significant challenge for lexicon-based and traditional machine learning methods. While deep learning architectures offer improved contextual understanding, their performance remains imperfect. Consequently, scholars have emphasized the necessity of advancing context-aware models, such as those based on the BERT architecture, to better disambiguate meaning and accurately interpret sentiment that is contingent on specific situational contexts (Zhang, Zhang & Liu, 2018).

Linguistic and Cultural Nuances: The expression of sentiment is deeply embedded in language-specific and culture-specific contexts. Identical words or expressions can evoke divergent emotional associations across different cultures (Matsumoto & Hwang, 2013). For instance, expressions deemed positive in Western cultures may be interpreted as neutral or even negative in Eastern cultural contexts . This variability presents a significant challenge for businesses operating in global markets with multilingual customer bases. Furthermore, in cross-lingual sentiment analysis, direct translation often introduces errors and fails to capture critical linguistic subtleties, thereby reducing the reliability of the results.

To mitigate these challenges, researchers are developing culture-sensitive sentiment analysis models. These approaches aim to generate more accurate and reliable outcomes by explicitly accounting for the emotional connotations of expressions within distinct linguistic and cultural frameworks (Balahur & Turchi, 2014). Additionally, advancements in machine translation optimized for sentiment preservation and the application of deep learning models with sophisticated contextual understanding are critical for minimizing translation errors and enhancing accuracy by capturing cultural nuances.

Data Quality and Noise: Data sourced from social media and call centers is typically informal, replete with errors, and inherently noisy. Spelling mistakes, non-standard slang, fragmented syntax, and a lack of context can significantly degrade the performance of analytical models (Speriosu et al., 2011). For example, the accurate interpretation of abbreviations (e.g., "lol," "omg") and emojis is crucial for correct sentiment classification; failure to model these elements adequately leads to increased error rates (Felbo et al., 2017).

A multi-faceted approach has emerged to address noise in unstructured text data. This includes:

Advanced Preprocessing: Techniques for spelling correction and the normalization of slang into standard language (Han & Baldwin, 2011).

Emoji and Symbol Integration: Representation methods that incorporate the sentiment-bearing features of emojis into model training (Felbo et al., 2017).

Robust Embeddings: Subword or character-based embedding models (e.g., FastText) that are inherently more resilient to spelling variations and errors (Bojanowski et al., 2017).

Context-Aware Models: Multilingual Transformer-based models (e.g., BERT, XLM-RoBERTa) leverage transfer learning to more accurately interpret slang and abbreviations across languages. Furthermore, data augmentation strategies that introduce synthetic noise during training can enhance model robustness.

Data Privacy and Ethical Considerations: The collection and analysis of customer data for sentiment analysis must be conducted with stringent adherence to privacy rights and ethical principles. Processing personal data without explicit, informed consent raises serious legal and ethical concerns. This has led to the implementation of stringent regulatory frameworks globally, such as the General Data Protection Regulation (GDPR, 2018) in Europe and the Law on the Protection of Personal Data (KVKK, 2016) in Turkey.

Beyond privacy, algorithmic bias presents a profound ethical challenge, as it can result in the systematic inaccurate or unfair assessment of specific demographic groups (Buolamwini & Gebru, 2018). To address these issues, the field is adopting several strategies:

Privacy-Preserving Techniques: Methods such as data anonymization and differential privacy enable analysis without compromising individual user identities.

Fairness-Aware ML: Computational techniques are being integrated to detect and mitigate bias, promoting equity in model outputs (Kamiran & Calders, 2012; Dwork, 2008).

Explainable AI (XAI): Techniques that make model decision-making processes transparent and interpretable, thereby fostering trust and accountability among users and regulators (Goodman & Flaxman, 2017).

Collectively, these approaches provide a holistic framework for upholding ethical standards and protecting data privacy while advancing the capabilities of sentiment analysis.

5.Personality Analysis and Customer Satisfaction

Personality, defined as the constellation of enduring psychological traits that influence an individual's cognitions, motivations, and behaviors (McCrae & Costa, 2008), has been a fundamental subject of psychological inquiry. The field encompasses a diverse range of theoretical perspectives. Historically, these have included Freud's (1923) psychoanalytic theory, which emphasized unconscious conflicts among the id, ego, and superego; Jung's (1921) typological approach, which categorized individuals along dimensions like introversion and extroversion and later inspired instruments like the Myers-Briggs Type Indicator (MBTI); and the behaviorist view, championed by Skinner (1953), which conceptualized personality as a repertoire of behaviors shaped by environmental contingencies. Among contemporary frameworks, Goldberg's (1990) Five-Factor Model (FFM), or "Big Five," has gained broad acceptance for organizing personality into five core dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism.

Complementing these psychologically oriented models, hierarchical and biological approaches, such as Eysenck's (1967) PEN model, have sought to identify the genetic and neurological substrates of traits like extraversion, neuroticism, and psychoticism, thereby contributing to a more holistic, biopsychological understanding of personality.

These personality traits play a critical role in shaping consumer behavior, preferences, and brand loyalty. Consequently, personality analysis has emerged as a significant tool for predicting and understanding customer satisfaction (Zhang et al., 2019). The Big Five model, in particular, is extensively employed in consumer research to elucidate variations in behavior (John & Srivastava, 1999). For instance, research indicates that highly agreeable individuals tend to report higher satisfaction levels, often attributable to more positive social interactions with service staff. Conversely, individuals high in neuroticism are more likely to experience and recall negative service encounters acutely (Roberts, Walton, & Viechtbauer, 2007). Beyond the FFM, typological theories like the MBTI are utilized for customer segmentation and the development of targeted marketing strategies. For example, extraverted customers may respond more favorably to interactive and socially engaging feedback mechanisms, while introverted customers often prefer detailed, self-guided information and minimal social pressure (Zhang, Craciun, & Shin, 2019).

Therefore, the application of personality theories provides businesses with profound insights for personalizing customer experiences and enhancing satisfaction. Modern personality-based approaches, bolstered by advanced data analytics and psychometrics, demonstrate that demographic and behavioral data alone are insufficient for fully explaining customer satisfaction. To foster deeper customer loyalty, it is imperative for businesses to integrate these psychological frameworks into their strategic decision-making processes (Kotler & Keller, 2016). Ultimately, synthesizing personality theory with customer satisfaction research enhances the efficacy and theoretical grounding of customer-centric management in both academic and applied contexts.

Personality theories offer a comprehensive framework for understanding individual differences in behavior and psychological tendencies. To translate these theoretical constructs into empirical and practical applications, a variety of psychometric measurement tools have been developed. Diverse theoretical approaches—from the psychoanalytic foundations of Freud and Jung to the behavioral focus of Skinner and the trait-based models of Goldberg—have contributed to defining the core components of personality, thereby creating a need for standardized measurement. Notably, typological and factor-analytic

theories have been instrumental in pioneering the development of systematic personality assessments.

The primary instruments for personality measurement are standardized tests, which are broadly categorized into two methodological approaches:

Self-Report Inventories: These objective tests rely on individuals' self-assessments of their own behaviors, thoughts, and emotions through structured questionnaires. They are valued for their scalability and quantitative nature. Prominent examples include:

NEO Personality Inventory-Revised (NEO-PI-R): A comprehensive measure of the five-factor model (Big Five) traits (Costa & McCrae, 1992).

Myers-Briggs Type Indicator (MBTI): A typological assessment based on Jungian theory, categorizing individuals into 16 personality types (Myers & Briggs, 1985).

16 Personality Factor Questionnaire (16PF): Developed by Cattell, this instrument measures 16 primary personality factors (Cattell, 1949).

Projective Techniques: These tests present individuals with ambiguous stimuli, designed to project unconscious impulses, needs, and internal conflicts onto their responses. Examples include the Rorschach Inkblot Test and the Thematic Apperception Test (TAT) (Exner, 1991). The administration and interpretation of all personality tests are governed by rigorous psychometric principles, where validity, reliability, and standardization are paramount (Anastasi & Urbina, 1997).

These instruments have become indispensable tools not only in academic psychology but also in applied fields such as business and marketing, where they facilitate a deeper understanding of consumer behavior and drivers of satisfaction. Thus, abstract theoretical constructs are operationalized into objective and measurable criteria, enabling the effective translation of theory into practice.

5.1. The Integration of Artificial Intelligence in Personality Assessment

Artificial intelligence (AI) is revolutionizing personality assessment by enabling the inference of traits from digital behavioral data, complementing traditional psychometric methods:

Digital Footprint Analysis: Machine learning algorithms analyze patterns within digital data—including social media posts, preference markers (likes), and social network structures—to predict personality traits. Notably, Youyou, Kosinski, and Stillwell (2015) demonstrated that AI-based assessments of digital footprints can surpass the accuracy of average human judgments.

Natural Language Processing (NLP): NLP and text mining techniques are employed to extract personality signals from written text. Metrics such as word choice, syntactic complexity, and emotional tone in emails, reviews, or social media updates serve as reliable indicators of underlying personality characteristics (Schwartz et al., 2013).

Predictive Modeling: Supervised machine learning models, including Support Vector Machines (SVM), Random Forest classifiers, and deep neural networks, are increasingly used for automated personality classification and prediction based on multimodal digital data. Predictive Modeling represents a systematic methodology that employs statistical and machine learning techniques to forecast future behaviors and outcomes based on historical data. Within the context of personality assessment, these models are utilized to automatically infer personality traits from individuals' digital footprints, including social media interactions and linguistic patterns (Youyou et al., 2015). Empirical investigations have demonstrated that computer-based personality assessments can achieve comparable, and in certain contexts, superior validity compared to conventional methodologies. Matz and colleagues (2017) empirically validated that features derived from digital footprints can reliably predict personality profiles with accuracy comparable to psychometric questionnaires.

Adaptive Testing: Adaptive testing is a dynamic assessment method that maximizes test efficiency and accuracy by selecting questions tailored to each participant's individual ability level or trait profile (Wainer, 2000). The theoretical foundations of this approach are based on Frederick Lord's (1980) pioneering work on Item Response Theory, and its first large-scale implementation was realized through the U.S. Department of Defense's Armed Services Vocational Aptitude Battery (Sands et al., 1997).

Artificial intelligence (AI)-based personality analysis presents substantial advantages over traditional assessment methods, primarily through its scalability, objectivity, and dynamic capabilities. Firstly, AI systems can process vast and heterogeneous datasets—ranging from social media interactions to transaction histories—enabling a more holistic and nuanced evaluation of an individual's behavioral and psychological profile. Secondly, the automation of analysis significantly reduces interpreter bias inherent in human evaluation, thereby enhancing the objectivity and reliability of the outcomes. Thirdly, AI's capacity for real-time data processing facilitates the dynamic monitoring of personality expressions, allowing for rapid adaptation to evolving consumer states. Finally, the continuous longitudinal tracking of personality variables enables the precise identification of developmental trends and subtle

shifts in psychological tendencies, offering profound advantages for both academic research and applied customer analytics.

By uncovering the psychological underpinnings of consumer behavior, personality analysis provides a critical foundation for developing targeted strategies to enhance customer satisfaction (Matz & Netzer, 2017). For instance:

Extraverted customers are often more active on social channels and demonstrate higher responsiveness to interactive and community-oriented marketing campaigns.

Conscientious customers prioritize high-quality, reliable products and detailed, accurate information.

Agreeable individuals are more likely to develop positive relationships with customer service representatives and can evolve into loyal brand advocates.

This deep psychological insight allows for the personalization of marketing messages, the optimization of customer service protocols, and the strengthening of long-term customer loyalty (Voigt & Von dem Bussche, 2017).

However, the accurate measurement of emotions and personality traits remains a complex endeavor. The multidimensional and context-dependent nature of emotional expression can impede analytical accuracy (Calvo & D'Mello, 2010). Moreover, the validity and reliability of these assessments are contingent upon the quality of the underlying models and data. AI algorithms require continuous retraining and validation to mitigate performance decay over time and maintain predictive accuracy.

Consequently, the successful integration of AI-supported analytics necessitates a dual focus on technological capability and ethical stewardship. Businesses must not only invest in robust computational infrastructure but also uphold stringent ethical responsibilities. This includes ensuring transparent data governance, securing explicit customer consent, and rigorously protecting data privacy throughout the analysis process.

5.2. Challenges in Artificial Intelligence and Personality Analysis

While artificial intelligence (AI) has driven significant advancements in personality analysis, its application in this domain is confronted by several critical challenges and limitations:

Data Privacy and Algorithmic Bias: The data underpinning AI-driven personality analysis—sourced from social media activity, digital surveys, and other digital footprints—raises substantial ethical and privacy concerns. The collection and processing of such sensitive information are strictly governed by legal frameworks like the European Union's General Data Protection Regulation (GDPR), which mandates that AI models must be developed and

deployed in compliance with principles of data minimization, purpose limitation, and user consent (Voigt & Von dem Bussche, 2017). Beyond privacy, a paramount issue is algorithmic bias. Models trained on incorrectly labeled or demographically biased datasets can perpetuate and even amplify these biases, leading to erroneous and discriminatory outcomes. For instance, the underrepresentation of specific ethnic or socioeconomic groups in training data can result in models that systematically fail to generalize accurately for those populations (Caliskan, Bryson, & Narayanan, 2017).

Challenges in Generalizability and Context Sensitivity: Personality analysis models are typically trained on large, aggregate datasets to identify general patterns. However, the fundamental complexity and situational variability of human personality pose a significant challenge to model generalizability (De Raad & Schouwenburg, 1996). A core limitation is context-dependency: the same trait (e.g., extraversion) may manifest in vastly different behaviors across professional versus social settings. Consequently, a model that accurately predicts behavior in one context may fail in another. While advanced deep learning and context-aware architectures offer potential solutions, developing such sophisticated models requires access to vast, high-quality, and contextually rich data, which remains difficult to acquire.

Theoretical Pluralism and Measurement Incompatibility: The field of personality psychology is characterized by a plurality of theoretical frameworks, such as the Big Five, HEXACO, and Myers-Briggs Type Indicator (MBTI). This theoretical diversity presents a significant compatibility challenge for AI model design, as each theory operationalizes personality through different dimensions and measurement systems. For example, the MBTI's typological approach (16 discrete types) is conceptually incongruent with the Big Five's dimensional and trait-based perspective. This incompatibility creates uncertainty in selecting an appropriate theoretical foundation for model training and fundamentally hinders the comparability and integration of results across different AI systems, potentially limiting their practical utility and scientific validity.

Natural Language Processing (NLP) and Semantic Analysis Challenges: The analysis of textual data from social media and other digital platforms is a cornerstone of AI-driven personality assessment. However, the accuracy of these inferences is constrained by persistent limitations in natural language processing (NLP). A significant hurdle is the inability of many systems to fully grasp complex linguistic features such as sarcasm, irony, idioms, and context-dependent meanings, which are highly influenced by

cultural and subcultural norms (Jurafsky & Martin, 2021). This can lead to a fundamental misreading of the emotional or intentional content of a text.

Furthermore, the core assumption that social media text is a direct reflection of inner personality traits is often flawed. Users actively manage their self-presentation, a phenomenon known as "impression management," where they may curate a idealized or intentionally misleading online persona (Goffman, 1959; Rosenberg & Egbert, 2011). This disparity between a user's true personality and their digitally projected identity introduces significant noise and bias into training data, leading models to learn from inauthentic expressions and consequently generate incorrect inferences about an individual's actual psychological traits.

6. Applications in AI-Supported Customer Satisfaction Management

Artificial intelligence (AI) has become an indispensable tool in the strategic management of customer satisfaction, driving significant advancements in the personalization and efficiency of customer experience (CX). By leveraging sophisticated algorithms, AI enables a deeper, more dynamic understanding of customer needs and emotions, transforming how businesses interact with and retain their clientele.

A primary application is AI-powered sentiment and emotion analysis. Through natural language processing (NLP) techniques, AI systems can automatically evaluate vast volumes of unstructured data from customer reviews, social media interactions, and survey responses, classifying them by emotional tone (e.g., positive, negative, neutral) and specific emotions (e.g., anger, joy) (Liu, 2012; Cambria et al., 2013). This capability allows organizations to move beyond simple metrics like Net Promoter Score (NPS) to identify precise pain points and drivers of satisfaction in real-time, enabling prompt and targeted remedial actions. Industry leaders such as Amazon and Netflix exemplify this approach, continuously refining their offerings based on nuanced analysis of customer feedback.

Beyond reactive measures, AI enables hyper-personalized engagement by synthesizing data on customer behavior, purchase history, and even inferred personality traits. Machine learning algorithms analyze this data to deliver tailored product recommendations, content, and service options that align with individual customer preferences (Ricci, Rokach, & Shapira, 2015). This high degree of personalization not only enhances immediate satisfaction but also cultivates deeper brand loyalty and increases customer lifetime value, as demonstrated by the renowned recommendation engines of Spotify, Amazon, and Netflix.

AI-driven customer service automation, particularly through advanced chatbots and virtual assistants, represents another critical contribution. These systems, underpinned by NLP and machine learning, provide instant, 24/7 support by resolving routine inquiries, troubleshooting issues, and escalating complex cases (Adamopoulou & Moussiades, 2020). This results in dramatically reduced wait times and consistent service quality for the customer, while simultaneously allowing businesses to optimize operational efficiency and reduce support costs. Consequently, chatbot integration has become ubiquitous across high-interaction sectors like banking, e-commerce, and telecommunications.

Finally, AI empowers a proactive, predictive approach to customer retention. By employing predictive analytics and churn modeling, AI can identify customers with a high likelihood of attrition before they decide to leave (Ngai, Xiu, & Chau, 2009). This foresight enables companies to deploy preemptive interventions—such as personalized retention campaigns, special offers, or dedicated support—to address underlying issues and restore satisfaction. This shift from reactive problem-solving to proactive relationship management is crucial for securing long-term customer loyalty and maximizing retention rates.

In summary, AI's role in customer satisfaction management is multifaceted, driving improvements in insight generation, personalization, operational efficiency, and strategic foresight. Its continued evolution promises to further redefine the boundaries of customer-centric enterprise.

7. Limitations and Challenges

The integration of AI-driven sentiment and personality analysis into customer satisfaction management, while transformative, is fraught with significant limitations and challenges that can undermine its efficacy and ethical application.

A primary constraint is the fundamental dependency on data quality. The performance of AI algorithms is contingent upon the integrity of their training datasets, which are often incomplete, erroneous, or imbued with societal biases. In sentiment analysis, this vulnerability is exacerbated by the inherent complexity of human language. The context-dependent nature of meaning, including sarcasm, irony, and cultural idioms, frequently leads to misclassification (González-Ibáñez, Muresan & Wacholder, 2011). For instance, a telecommunications company deploying sentiment analysis to evaluate customer complaints may fail to identify critical issues if the system misinterprets ironic expressions in social media messages. Similarly, in personality analysis, inferences drawn from digital footprints can be misleading,

as online behavior is often a curated performance influenced by social validation rather than an authentic reflection of one's true personality (Youyou, Kosinski & Stillwell, 2015). This discrepancy can result in marketing strategies, such as poorly targeted campaigns, that fail to resonate with their intended audience.

Furthermore, AI models risk perpetuating and amplifying pre-existing biases present in their training data (Barocas, Hardt & Narayanan, 2019). This can lead to discriminatory outcomes in customer segmentation and service delivery, where inaccurate inferences about specific demographic groups erode trust and negatively impact satisfaction.

The ethical and privacy implications of these technologies are profound. The collection and processing of personal data for sentiment and personality analysis are subject to stringent regulations like the European Union's General Data Protection Regulation (GDPR), which mandates principles of lawfulness, transparency, and data minimization (Voigt & Von dem Bussche, 2017). Conducting such analyses without explicit customer consent constitutes both an ethical breach and a significant legal risk. Businesses must, therefore, prioritize transparency, secure informed consent, and implement robust data anonymization techniques to mitigate these concerns.

Additional challenges include cultural and linguistic limitations. AI models optimized for specific languages and cultural contexts often fail to generalize across different regions, as the expression of emotion and personality is deeply culturally coded (Matsumoto & Hwang, 2013). Finally, the technical and financial overhead of integration—requiring specialized expertise, computational infrastructure, and significant processing power for real-time analysis—presents a substantial barrier to entry for many organizations (Davenport et al., 2019).

8.The Relative Influence of Sentiment and Personality Analysis in Customer Satisfaction

Sentiment analysis and personality analysis serve distinct yet synergistic functions in the comprehensive management of customer satisfaction. Sentiment analysis operates as a vital operational tool, providing real-time metrics on immediate customer emotions. This makes it indispensable for managing urgent operational processes such as complaint resolution and crisis response, where swift identification of negative feedback is critical (Pang & Lee, 2008). Conversely, personality analysis functions as a strategic instrument, offering deep insights into the enduring psychological drivers

behind customer behaviors, loyalty patterns, and long-term engagement (Matz & Netzer, 2017).

Consequently, the prioritization of one analysis over the other is not a matter of inherent superiority but is contingent upon an organization's specific strategic objectives, customer relationship management (CRM) model, and intended application area. Sentiment analysis takes precedence in scenarios demanding rapid response, whereas personality analysis proves more impactful for strategic initiatives like customer segmentation, hyper-personalized marketing, and the design of long-term loyalty programs. The most robust and effective approach to customer satisfaction management is achieved through the strategic integration of both analytical dimensions, creating a holistic and dynamic understanding of the customer.

Empirical research underscores the unique value of each approach. Studies on AI-driven sentiment systems demonstrate that sentiment-aware applications significantly enhance perceived trust and instantaneous satisfaction. For instance, chatbots powered by large language models (LLMs) that demonstrate emotional sensitivity have been shown to generate higher perceptions of reliability and competence compared to their neutral counterparts. The provision of empathetic, human-like responses in customer service interactions has been consistently linked to increased satisfaction levels

Parallel research on personality-based AI systems confirms their critical role in crafting customized, long-term customer experiences. AI-driven strategies that are tailored to distinct personality traits have proven highly effective in boosting overall satisfaction, particularly within personalized service environments (Rajuroy, 2023). Ultimately, the most advanced and intuitive user experiences emerge from the fusion of both approaches, integrating real-time emotional sensitivity with deep, personality-driven customization to foster more authentic and satisfying customer interactions.

These collective findings suggest that the future of customer service optimization lies not in choosing between emotional and personality-based analysis, but in developing integrated AI systems capable of synthesizing both to achieve superior customer-centric outcomes.

In practice, sentiment analysis is extensively deployed to gauge satisfaction and identify complaints across diverse channels, including call center transcripts, social media content, survey responses, and real-time interaction monitoring. This capability allows organizations to rapidly detect shifts in customer sentiment, thereby enhancing the efficacy of crisis management and the overall quality of customer service (Pang & Lee, 2008; Liu, 2012). Conversely, personality analysis finds its strategic value in applications

such as sophisticated customer segmentation, the design of highly targeted marketing campaigns, the development of personalized recommendation systems, and the architecture of long-term customer loyalty programs (Youyou, Kosinski & Stillwell, 2015; Matz & Netzer, 2017).

However, the efficacy of these analyses is challenged by the cultural and demographic diversity inherent in customer data, which can introduce significant biases into algorithmic outputs. A promising mitigation strategy involves the triangulation of multiple analytical techniques. For instance, the potential limitations of a single model (e.g., the perceptive intuition of the MBTI) can be counterbalanced and enriched by integrating results from an alternative framework (e.g., the conscientiousness dimension of the Big Five inventory). This multi-method approach can compensate for the inherent weaknesses of any one test by synthesizing responses developed for different theoretical interpretations of personality.

Furthermore, the challenge of context-dependent identity presentation must be acknowledged. Individuals consciously or subconsciously project different personas—their "professional self," "personal self," etc.—depending on the context, professional or social role. These situational facets can lead to the emergence of unforeseen or seemingly contradictory traits that may not align with a core personality model. To mitigate this illusion and enhance analytical accuracy, it is imperative to contextualize analyses within specific frameworks. This entails refining models to account for occupational, sectoral, and role-specific contexts, thereby ensuring that inferences about personality and emotion are drawn from behavior within relevant and defined scenarios, leading to more accurate and applicable insights.

Moreover, the implementation of AI-based analyses entails substantial responsibilities regarding data security, privacy, and adherence to ethical standards. Factors such as algorithmic bias, the diversity and quality of datasets, and the accuracy and reliability of analyses directly influence the extent to which businesses can optimize customer satisfaction. Ethical obligations—including the protection of customers' personal data, transparency, and obtaining informed consent—must be rigorously upheld. In this context, it is essential that businesses fully comply with data ethics principles when applying AI-driven sentiment and personality analyses, establish open communication channels with customers, and ensure transparency in their analytical processes. Importantly, the inclusion of representatives from diverse demographic and cultural backgrounds in the model development process is crucial. Collaborative design approaches that integrate user feedback and cultural consultation should also be prioritized. Furthermore, comprehensive and longitudinal research is

necessary to evaluate the effectiveness of these technologies across different industries and cultural contexts. Looking ahead, advancements in AI algorithms are expected to further enhance the accuracy and applicability of sentiment and personality analyses, thereby creating new opportunities for improving customer satisfaction. It must be emphasized, however, that as algorithms become increasingly sophisticated, the rapidly growing global population continues to generate vast linguistic, religious, racial, cultural, habitual, and preference-based diversities. This simultaneous evolution presents experts with an expanding array of parameters to manage. Therefore, theories and practices must be continuously refined through processes of analysis, synthesis, and adaptation—constituting an ongoing cycle.

In conclusion, AI-driven sentiment and personality analyses represent indispensable tools for comprehensively understanding and managing customer satisfaction. By integrating these technologies, businesses can strengthen their customer-centric strategies, gain a competitive advantage, and achieve sustainable success.

9.References

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