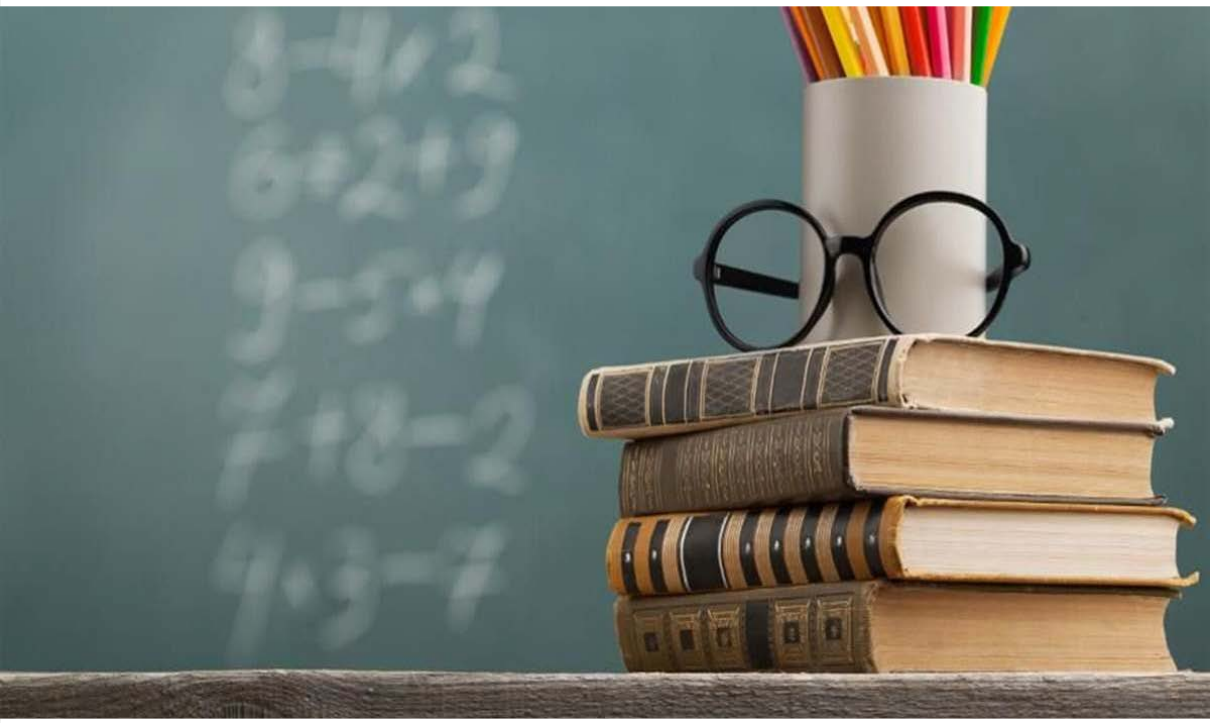
Academic Debates in Social, Humanities and Administrative Sciences

Editor: Assoc. Prof. Şahin KARABULUT



yaz yayınları

Academic Debates in Social, Humanities and Administrative Sciences

Editor

Assoc. Prof. Şahin KARABULUT

yaz yayınları

2023

yaz yayınları

Academic Debates in Social, Humanities and Administrative Sciences

Editor: Assoc. Prof. Şahin KARABULUT

E_ISBN 978-625-6642-00-3

Aralık 2023 – Afyonkarahisar

Dizgi/Mizanpaj: YAZ Yayınları

Kapak Tasarım: YAZ Yayınları

YAZ Yayınları. Yayıncı Sertifika No: 73086

M.İhtisas OSB Mah. 4A Cad. No:3/3
İscehisar/AFYONKARAHİSAR

www.yazyayinlari.com

yazyayinlari@gmail.com

info@yazyayinlari.com

İÇİNDEKİLER

SOCIO-ECONOMIC CONSEQUENCES OF THE RUSSIA-UKRAINE WAR

Mehmet Emin AKKILIÇ[1]

Sevgi SEZER[2]

Gülşah ÖZDEMİR[3]

1. INTRODUCTION

On February 21, 2022, Russian President Vladimir Putin announced that he recognized the Luhansk and Donetsk regions in eastern Ukraine as an independent state, that the Russian military units had undertaken the task of "keeping the peace", and the next day, the Russian parliament authorized Putin to use military force outside the borders of the country (NPR, 2022; Forbes, 2022). After the state of emergency was declared across Ukraine, Russia started to occupy Ukraine on February 24, 2022, and explosions occurred in many cities of the country, including the capital Kiev (Bloomberg, 2022; DW, 2022). The war, which started with the attack of the Russian army on February 24, 2022, is a hybrid war with a conventional aspect on the one hand, and cyber attacks, support of separatist forces and disinformation campaigns on the other; Asymmetric warfare against a military power that is considerably larger than Ukraine itself, as this power takes advantage of its weak points and thus gains significant

[1] Prof. Dr., Balıkesir University, Burhaniye Faculty of Applied Sciences, Department of International Trade, eakkilic@balikesir.edu.tr, ORCID: 0000-0002-3888-6025.

[2] Assoc. Prof., Balıkesir University, Burhaniye Faculty of Applied Sciences, Department of Finance and Banking, sevgi.sezer@balikesir.edu.tr, ORCID: 0000-0001-6958-3329.

[3] Assist. Prof. Dr., Balıkesir University, Burhaniye Faculty of Applied Sciences Department of International Trade, gulsah.ozdemir@balikesir.edu.tr, ORCID: 0000-0001-8900-2560.

successes; It also reflects the characteristics of the proxy war in terms of Western countries providing weapons, cash, cyber, military equipment and intelligence support to Ukraine. On February 24, 2022, Russian military units launched an operation against Ukraine. Before examining this operation on the axis of hybrid, asymmetric and proxy warfare, it would be useful to state some of the factors that encouraged Russia to carry out such an operation before the war and Russia's purpose in this war. The first of the factors that encouraged Russia to wage a frontal war on Ukrainian territory was the inability of the West to respond adequately as a result of its annexation of Crimea in 2014. Undoubtedly, hybrid warfare methods used by Russia and which the West was foreign to at that time were effective (Dempsey, 2022). It can be said that this attitude of Russia, which received the support of its own public opinion regarding the annexation of Crimea and turned it into a heroic story (BBC, 2022), was also a driving factor in launching an operation against Ukraine. As the second factor that encouraged Russia, the current situation of the West before the Ukraine war can be cited. In 2019, French President Macron stated that NATO, which was a symbol of the Cold War era and was established against the Soviet threat, was "brain dead" (BBC Turkish, 2019), thus emphasizing that NATO became dysfunctional. In January 2020, Brexit was accepted in the UK and thus the UK officially left the European Union. In addition to these, in August 2021, when the USA accepts its failure in Afghanistan and decides to withdraw, it is seen that the West is dealing with its own internal problems, cannot put up an effective resistance against itself and is in a decline. It can be said that the impression is strengthened. Evaluating this general atmosphere that dominated the West before the war, Russia launched a military operation on February 24, 2022. Contrary to what many experts expected at most a limited attack (Haring, 2022), Russia re-used in Europe a battle method based on the maneuverability of tanks and called *Blitzkrieg* (lightning war) for

short, as the first quarter of the 21st century drew to a close. This comprehensive study delves into the wide-ranging socio-economic consequences of the protracted Russia-Ukraine War, shedding light on how it has reshaped the socio-economic landscape of Eastern Europe. Going beyond the immediate impact on the two countries involved, the study also explores the far-reaching effects on global economic stability and international relations. The study begins by examining the direct socio-economic consequences of the conflict, emphasizing the devastating toll it has taken on human lives and property. It sheds light on the significant population displacements, which have given rise to a humanitarian crisis characterized by heightened food insecurity, mental health challenges, and social fragmentation. Moreover, the war has disrupted critical infrastructures, impeded economic growth, and severely hindered foreign investment in both Ukraine and Russia. The study then delves into the broader economic implications of the war. It explores how the conflict has disrupted vital trade routes and energy resources, particularly affecting Russia's major trading partner, the European Union, and neighboring countries. The analysis also takes into account the impact on international energy markets, considering Ukraine's role as a key transit country for Russian natural gas. Additionally, the study examines how the increase in defense expenditures has contributed to regional economic instability and fluctuations in global financial markets. The study also delves into how the conflict has precipitated a realignment of international trade, political alliances, and the global economy, with a particular focus on the European Union, the North Atlantic Treaty Organization (NATO), and the United States. It contemplates the potential long-term socio-economic ramifications of this geopolitical shift, including the deepening of the East-West divide and the ushering in of a new era of economic and political uncertainties. Lastly, the study explores the consequences of international sanctions imposed on Russia,

examining their multifaceted nature and the economic response of the sanctioned countries. This sheds light on the dual nature of such diplomatic tools, with both intended and unintended consequences. The findings of this study underscore the complex and wide-ranging socio-economic consequences of the Russia-Ukraine War. They emphasize the imperative of sustainable peacebuilding measures and proactive international efforts to mitigate the negative effects of the conflict. The study advocates for a multilateral approach to conflict resolution, highlighting the critical importance of understanding these impacts not only for post-conflict recovery and reconciliation but also for global stability.

2. HISTORICAL CONTEXT

2.1. Brief Overview of Russia-Ukraine Relations Before The War

Russia and Ukraine have a long and closely connected past that goes back to the medieval Kyivan Rus era. Throughout history, their shared culture, language, and historical experiences have played a significant role in shaping their relationship. In 1922, the establishment of the Soviet Union brought Ukraine under Russian influence. While this period saw economic integration, it also laid the foundation for future tensions between the two nations. After the collapse of the Soviet Union in 1991, Ukraine declared its independence. However, the transition to democracy and market-oriented reforms proved to be challenging, resulting in political instability, corruption, and economic difficulties. Russia saw Ukraine as part of its sphere of influence, while Ukraine aimed for closer integration with the European Union (EU) and NATO. These conflicting interests fueled geopolitical rivalries and contributed to escalating tensions. Ukraine's strategic location and abundant energy resources made it a crucial transit country for Russian gas exports

to Europe. Energy dependence and trade relations played a vital role in shaping the economic dynamics between the two nations. Despite political tensions, Ukraine and Russia maintained significant economic ties, including trade, investments, and labor migration. These economic interdependencies formed a complex web that would be greatly affected by the war. The intertwined history, political developments, and economic connections between Russia and Ukraine created the groundwork for the conflict and influenced its socio-economic consequences. By understanding these historical dynamics, policymakers and researchers can gain valuable insights into the complexities of the Russia-Ukraine War and its far-reaching impacts on the socio-economic fabric of the region (Allison, 2022).

2.2.Events Leading to The Outbreak of The War

The Euromaidan protests, which began in late 2013, were a response to President Viktor Yanukovych's decision to abandon plans for closer integration with the European Union (EU) in favor of aligning with Russia. These protests were driven by the desire for democratic reforms and closer ties with the West, and they had a profound impact on Ukraine's political landscape. In March 2014, Russia annexed Crimea following a controversial referendum. This move drew strong international criticism and drastically intensified tensions between Russia and Ukraine. Shortly after the annexation of Crimea, the conflict in eastern Ukraine, particularly in the Donbas region, erupted. Pro-Russian separatist movements emerged, with armed groups challenging the authority of the Ukrainian government. The situation quickly escalated into a full-scale war, causing widespread devastation and prolonged suffering. Ethnic and linguistic divisions within Ukraine, particularly between the predominantly Ukrainian-speaking west and the Russian-speaking east, played a significant role in the regional dynamics and contributed to the escalation of the conflict. Geopolitical interests were also at play, as Russia considered Ukraine a crucial part of its sphere of influence and

sought to maintain political and economic control over the country. On the other hand, Ukraine aimed to strengthen its integration with the EU and NATO, leading to clashes of interest and regional power struggles. In response to the annexation of Crimea and the ongoing conflict, the international community imposed economic sanctions on Russia, targeting key sectors of its economy. Diplomatic efforts were made to mediate the conflict and seek a peaceful resolution, although a lasting solution has yet to be achieved. International organizations and countries provided humanitarian assistance to those affected by the conflict in Ukraine, and financial support was offered to aid in the country's recovery and reconstruction efforts. The Euromaidan protests, annexation of Crimea, and the conflict in eastern Ukraine were significant events that heightened tensions between Russia and Ukraine. Understanding these events is crucial for comprehending the subsequent socio-economic consequences that unfolded as a result of the war, affecting the lives of countless individuals (Chen et al., 2023).

2.3.Key Actors and Their Interests

Russia's interests in Ukraine are rooted in a combination of historical, cultural, and economic factors that have created strong ties between the two regions. For Russia, it is important to maintain political influence, secure military access to the Black Sea, and protect the rights of Russian-speaking populations in Ukraine. Additionally, Ukraine's role as a transit country for Russian gas exports to Europe has major implications for Russia's energy security. The economic aspects, such as trade relations and investments, also shape Russia's interests in the region. On the other hand, Ukraine's foreign policy has been driven by its desire for closer integration with the European Union (EU) and NATO. The country aims to strengthen democracy, promote human rights, and achieve economic prosperity through EU integration. Ukraine's struggle to assert its national identity and protect its territorial integrity are central to its interests. Preserving the rights

of Ukrainian-speaking populations, safeguarding cultural heritage, and ensuring border security have all influenced Ukraine's position in the conflict. The EU's interests in the Russia-Ukraine conflict lie in expanding its sphere of influence and promoting stability in the region. Key objectives for the EU include encouraging democratic reforms, fostering economic cooperation, and mitigating geopolitical tensions (Mahilaj, 2023).

Energy security, particularly diversifying energy sources and reducing dependence on Russian gas, is also a significant concern for the EU. Maintaining trade relations with Ukraine and stability in the region align with the EU's economic interests. Similarly, the United States has been involved in the conflict due to its broader geopolitical interests. Balancing Russian influence, upholding democratic values, and maintaining stability in Eastern Europe are key drivers for the United States. Supporting Ukraine's sovereignty, strengthening NATO alliances, and countering Russian aggression are crucial security interests for the United States in the region. The geostrategic interests of Russia, Ukraine's European integration aspirations and national identity, the EU's expansion of influence and energy security concerns, and the United States' focus on geopolitical balance and security interests have all played significant roles in shaping the conflict and its socio-economic consequences. Understanding these interests is essential for comprehending the long-term effects of the war and developing effective strategies for recovery and reconstruction, with a human-centered approach (Wedel, 2022).

3. IMPACT ON UKRAİNE'S ECONOMY

3.1.Destruction of Infrastructure and Physical Assets

The war has had a devastating impact on Ukraine's road and highway infrastructure, causing extensive damage that has

disrupted transportation networks and hindered trade. This not only affects people's ability to travel within the country but also poses challenges for international trade and regional integration. The railway networks have also suffered significant damage, resulting in disruptions to the movement of goods and people. The disruption in rail services has made it difficult for businesses to conduct trade activities and has created logistical challenges, adding further strain to the economy. The conflict has caused destruction to power plants, transmission lines, and distribution networks, leading to electricity shortages and instability. The disruptions in the energy sector have had a cascading effect on various industries, households, and essential services. This has hindered economic activities and had a negative impact on the quality of life for people in Ukraine. Water supply and sewage systems have also been targeted, resulting in disruptions in access to clean water and sanitation services. The destruction of water infrastructure has created public health risks, adding additional challenges to the recovery and development process (Empire & Duson, 2022). Manufacturing facilities, including factories and production sites, have suffered significant damage due to the war. This destruction has disrupted manufacturing processes, reduced productivity, and caused a loss of employment. These adverse effects have had a significant impact on the industrial sector and overall economic output. Ukraine's mining and natural resource extraction industries have also been heavily affected. The destruction of mining infrastructure, such as mines and processing facilities, has resulted in a decline in production and export capacities, leading to revenue losses and diminished economic potential. Rebuilding the damaged infrastructure and physical assets requires substantial financial resources. The costs of reconstruction place a heavy burden on Ukraine's already strained economy, diverting funds that could have been allocated to other pressing social and economic needs. The destruction of infrastructure and physical assets hampers economic

development by impeding the efficient functioning of industries, limiting investment opportunities, and obstructing the flow of goods and services. These consequences have long-term implications for Ukraine's economic growth, productivity, and competitiveness (Lunn, 2023).

3.2.Disruption of Key Industries and Trade

The conflict has had a profound impact on agricultural activities, particularly in the war-affected regions of eastern Ukraine. This disruption has resulted in a decline in agricultural output, affecting food production and exports, which raises concerns about food security. Landmines and unexploded ordnance pose a significant threat to agricultural productivity. These hazards not only restrict access to agricultural land but also reduce the availability of arable land for cultivation, putting the lives of farmers at risk. Industrial infrastructure, including factories, production facilities, and supply chains, has suffered extensive damage due to the war. This destruction has disrupted manufacturing processes, leading to reduced production capacities, job losses, and hampering the sector's contribution to the overall economy. The conflict has also disrupted trade flows, resulting in import restrictions and export challenges. This disruption has increased Ukraine's dependence on imports, affecting domestic industries that rely on imported inputs for their manufacturing processes (Morris, 2023). The conflict and security concerns have significantly impacted Ukraine's tourism and hospitality sector. Travel advisories, fear of instability, and infrastructure damage have caused a decline in tourism, affecting revenue generation and employment opportunities. Financial services and investment in Ukraine have faced challenges due to uncertainty, geopolitical risks, and infrastructure damage. These factors have dampened investor confidence, hindered foreign direct investment, and impeded the growth of the financial sector. The conflict has disrupted domestic trade networks, with severed transportation routes, disrupted markets, and strained trade

relationships. This disruption has hindered the efficient flow of goods and services within Ukraine. Additionally, the war has had implications for international trade, as economic sanctions imposed on Russia and counter-sanctions have affected trade relations between Ukraine and its neighboring countries. These trade challenges have further exacerbated the economic difficulties faced by Ukraine (Orhan, 2022).

3.3.Loss of Human Capital and Brain Drain

The war has forced a significant number of Ukrainians to flee their homes, especially from the conflict-affected regions of eastern Ukraine. These internally displaced individuals face numerous challenges, such as finding employment and integrating into new communities. These difficulties disrupt labor markets and strain social cohesion. The conflict has also contributed to international migration, with skilled professionals seeking opportunities abroad due to economic uncertainties and security concerns. The departure of these professionals has a detrimental impact on Ukraine's human capital, affecting its ability to foster economic growth and innovation (Wachs, 2023). The Russia-Ukraine War has accelerated brain drain, as highly skilled individuals, including scientists, researchers, and professionals in various sectors, leave Ukraine in search of better opportunities and stability. The loss of these professionals weakens Ukraine's workforce, hampers knowledge transfer, and impedes innovation and technological advancement. The conflict has disrupted educational institutions, leading to challenges in providing quality education and training. This disruption further limits the development of skilled human capital and the nurturing of talent, impacting Ukraine's long-term growth prospects (Ratten, 2023). The absence of skilled professionals exacerbates the skill mismatch in Ukraine's labor market. The lack of specialized expertise in critical sectors hinders economic development and productivity growth, resulting in inefficiencies and reduced competitiveness. The exodus of skilled professionals

contributes to wage suppression, as labor supply exceeds demand in certain sectors. Moreover, the underutilization of skills due to limited job opportunities leads to brain waste, resulting in the loss of potential contributions to economic growth (Ani & Anyanwu, 2023). The loss of human capital adversely affects Ukraine's innovation and research capacity. Skilled professionals play a vital role in driving innovation, knowledge creation, and technological advancements, which are essential for long-term economic development. Brain drain can impede the development of a vibrant entrepreneurial ecosystem, as skilled professionals often contribute to the creation of new ventures, job opportunities, and economic dynamism. Their absence limits the growth potential of the start-up ecosystem in Ukraine. Implementing strategies to retain skilled professionals, such as providing competitive wages, creating favorable work environments, and ensuring career development opportunities, can help mitigate brain drain and encourage talent to remain in Ukraine. Investing in education and skills development programs is essential for nurturing a skilled workforce and fostering human capital. Aligning educational curricula with market needs, promoting vocational training, and strengthening higher education institutions all contribute to enhancing the country's talent pool (Lendel, 2023).

3.4.Depreciation of Currency and Inflation

The conflict and geopolitical tensions have had severe consequences, causing external shocks that have resulted in a loss of investor confidence and capital flight from Ukraine. The reduction in foreign exchange inflows has contributed to the depreciation of Ukraine's currency, undermining its purchasing power and exacerbating economic instability. This depreciation has direct implications for people's lives, as it affects their ability to afford goods and services. The war has disrupted Ukraine's balance of payments, leading to adverse effects on the current account balance. Reduced exports, capital outflows, and

increased import costs have contributed to a widening current account deficit, which puts downward pressure on the currency. This has a direct impact on people's lives by making imported goods more expensive. Currency depreciation has a direct impact on import costs, leading to imported inflation. The increased prices of imported goods and raw materials contribute to overall inflationary pressures, which affect consumer purchasing power and the cost of production for domestic industries. This means that people have to spend more on everyday items, such as groceries and essential goods, while businesses face increased costs that can affect their profitability (Astrov et al., 2022). High inflation rates can result in reduced consumer confidence, lower household spending, and challenges for businesses in maintaining profitability. Persistent inflationary pressures create uncertainty for businesses and investors, which can deter investments and impede economic growth. This affects people's job prospects, business opportunities, and overall economic well-being. Managing inflation in a war-affected economy poses challenges for the central bank. Balancing the need to stabilize the currency, contain inflationary pressures, and support economic growth requires careful policy decisions and coordination with fiscal authorities. The central bank may implement measures such as tightening monetary policy or intervening in the foreign exchange market to stabilize the currency. Implementing fiscal discipline and structural reforms, along with enhancing tax systems, improving public expenditure management, and promoting a favorable business environment, can help mitigate inflationary pressures and support currency stability. International assistance and cooperation are crucial in providing financial support, technical expertise, and policy guidance to mitigate the impact of inflation and stabilize the currency (Maurya et al., 2023).

3.5. Challenges in Accessing International Financial Assistance

The conflict between Russia and Ukraine has created complex geopolitical dynamics in the region, with various major powers having competing interests. These complexities have had a direct impact on Ukraine's ability to receive financial assistance from the international community. Political considerations and diplomatic relations with key international actors have influenced Ukraine's access to financial support. The response of international institutions and countries has been shaped by the conflict's impact on regional and global dynamics, which affects the availability and terms of financial assistance. International financial assistance often comes with conditions, including the implementation of structural reforms. These conditions aim to address economic vulnerabilities, promote good governance, and ensure the efficient use of funds. However, meeting these conditions can be challenging for Ukraine's domestic policy agenda and governance capacity. Implementing effective anti-corruption measures and institutional reforms, in particular, has been a complex task that requires sustained efforts and political will. Failure to meet these conditions can hinder Ukraine's access to financial support. Ukraine's pre-existing debt burden and concerns over debt sustainability have posed challenges in accessing financial assistance. The country's debt-to-GDP ratio and limited fiscal space have made lenders cautious, impacting Ukraine's ability to secure favorable terms and sufficient funding. Moreover, the conflict and economic uncertainties have affected investor confidence, limiting Ukraine's access to international financial markets. This reduced market access makes it more difficult for Ukraine to secure affordable financing, exacerbating the financial constraints faced by the country (Ozili, 2022). International financial institutions, such as the International Monetary Fund (IMF), the World Bank, and the European Bank for Reconstruction and Development (EBRD), play a crucial role

in providing financial assistance to Ukraine. These institutions offer technical expertise, policy advice, and financial support. However, their involvement is subject to conditionality and the availability of funds. Bilateral partners also contribute to Ukraine's financial assistance through bilateral agreements and aid programs, often in coordination with international financial institutions. The level of assistance depends on geopolitical considerations and the priorities of the respective donors (Shumilova et al., 2023).

4. SOCIAL CONSEQUENCES IN UKRAINE

4.1.Displacement and Humanitarian Crisis

The conflict has caused a significant number of Ukrainians to be internally displaced, especially from the conflict-affected regions of eastern Ukraine. These displaced individuals face numerous challenges in their lives, such as finding shelter, accessing basic services, and rebuilding their lives. These challenges create socio-economic disruptions and vulnerabilities for them and their communities. The war has also triggered external migration, with Ukrainians seeking refuge and opportunities in other countries. This external migration poses challenges in terms of brain drain, as skilled individuals leave the country, resulting in a loss of human capital and potential long-term effects on Ukraine's workforce and economic development. Access to basic services such as healthcare, education, and social support systems has been severely strained by the conflict. Displaced populations often face difficulties in accessing adequate healthcare facilities, educational opportunities, and social welfare services. These challenges exacerbate existing inequalities and vulnerabilities, further widening the gap between different segments of society. Displaced individuals also struggle to find adequate shelter and housing due to the destruction of homes, limited availability of affordable housing, and

competition for resources. This strain on the housing market contributes to the housing crisis and fosters social instability. The war has disrupted social structures and community cohesion. Displacement, loss of trust, and divisions within communities contribute to social fragmentation, hindering social integration and fostering tensions and conflicts. Displaced populations often experience stigmatization and discrimination, leading to social exclusion and marginalization. These negative social dynamics further deepen divisions and impede the post-war recovery process (Haque et al., 2022). The conflict has disrupted education systems, with many schools damaged or inaccessible. Displaced children face difficulties in accessing quality education, increasing the risk of long-term educational gaps and limiting their opportunities for future development. Providing humanitarian aid and assistance is crucial in addressing the immediate needs of displaced populations. This includes the provision of food, shelter, healthcare, and psychosocial support services to help restore dignity, ensure basic well-being, and support the recovery process. Promoting social integration and community rebuilding efforts are essential for restoring social cohesion. This involves fostering dialogue, reconciliation, and promoting inclusive policies and programs that address the needs of displaced populations, while also encouraging community participation and social inclusion. Population displacement, internal and external migration, disruptions to social structures, and the challenges faced in addressing the humanitarian needs of affected populations have created a complex socio-economic landscape. Understanding these consequences is vital for formulating effective strategies to support displaced individuals, promote social cohesion, and facilitate post-war recovery in Ukraine. It is important to prioritize the well-being, dignity, and rights of the affected individuals, working towards their empowerment and the restoration of their communities (Spiegel et al., 2023).

4.2.Increased Poverty and Inequality

The conflict has had a significant impact on the economy, leading to income loss and unemployment for many individuals. Those who have been displaced or are living in conflict-affected areas face particular challenges in accessing income-generating opportunities and basic services. This vulnerability leaves them at a higher risk of poverty. Certain population groups, such as the elderly, children, women, and people with disabilities, are disproportionately affected by poverty due to limited access to resources, increased caregiving responsibilities, and reduced social protection measures. The war has further deepened their poverty levels and exacerbated their vulnerability. The conflict has widened regional disparities, with areas directly affected by the war experiencing greater socio-economic challenges compared to other regions. This uneven distribution of resources and opportunities has contributed to increased inequality across different regions in Ukraine. The war has also contributed to social stratification, creating divisions within society based on disparities in access to resources and opportunities. This social fragmentation can undermine social cohesion and hinder efforts towards inclusive socio-economic development (Bin-Nashwan et al., 2022). To mitigate poverty and reduce inequality, it is crucial to improve and expand social protection programs. This includes enhancing coverage, increasing benefit levels, and ensuring targeted support for vulnerable populations, including displaced individuals and marginalized groups. Investing in inclusive education systems and skill development programs is also essential. Accessible and quality education, vocational training, and lifelong learning opportunities play a crucial role in reducing poverty and promoting social mobility (Thusi & Mlambo, 2023).

4.3.Loss of Lives and Psychological Trauma

The war has resulted in a significant loss of lives among civilians, soldiers, and combatants. This loss of lives has had

profound emotional and psychological impacts on families and communities. Beyond the immediate grief and trauma, there are long-term socio-economic consequences to consider. The disruption of families and the loss of breadwinners create significant challenges, leading to increased financial strain and a reduction in human capital. The indirect consequences of the conflict, such as displacement, limited access to healthcare, and increased vulnerability to diseases, have further contributed to additional loss of lives. Vulnerable populations, including children, the elderly, and those with pre-existing health conditions, are particularly affected. The loss of lives has caused significant disruption to families and communities. The absence of loved ones and the fragmentation of social networks can lead to social isolation, increased vulnerability, and challenges in community cohesion. These factors hinder the social fabric and the recovery process, making it more difficult for communities to heal and rebuild. Moreover, the psychological trauma experienced by individuals can have inter-generational consequences. The mental health and well-being of future generations can be impacted by the trauma endured by their predecessors. This inter-generational trauma perpetuates cycles of psychological distress, further hindering the post-war recovery of communities (Kalaitzaki & Tamiolaki, 2022). The healthcare system has been under immense strain due to the war, limiting its capacity to adequately address the mental health needs of the affected population. Insufficient resources, inadequate infrastructure, and a shortage of trained professionals contribute to the challenges faced in providing comprehensive healthcare and psychosocial support services. Effective psychosocial support is crucial for addressing the psychological trauma resulting from the war. This support involves providing counseling, therapy, and community-based support systems to individuals and communities. It aims to facilitate healing, resilience, and social reintegration. In post-war recovery efforts,

it is essential to incorporate trauma-informed approaches. Recognizing the impact of trauma, fostering safe and supportive environments, and ensuring the availability of comprehensive mental health services are crucial steps. Promoting community rebuilding and social integration efforts is also vital for healing and recovery. This includes fostering community participation, facilitating dialogue, and creating opportunities for individuals to rebuild their lives and contribute to the recovery process (Khudaykulova et al., 2022).

4.4.Impacts on Education and Healthcare Systems

The conflict has caused significant damage to educational facilities, rendering many schools in conflict-affected areas non-functional. The destruction of school infrastructure, including classrooms, equipment, and resources, has had a profound impact on children and youth. It has limited their access to education and disrupted the learning process. With interrupted academic calendars, school closures, and limited access to educational resources, the quality of education in conflict-affected areas has been severely affected. Displaced students face numerous challenges in continuing their education, such as limited availability of schools, language barriers, and difficulties in transferring educational records. These barriers exacerbate educational inequalities and hinder the continuation of education. The psychological impact of the conflict on students is significant. Many of them have experienced trauma, anxiety, and stress, which affects their ability to engage effectively in the learning process. Addressing their psychological well-being is crucial for optimal learning outcomes and their overall educational success. In addition to the damage to educational infrastructure, the conflict has also resulted in damage to healthcare facilities, including hospitals, clinics, and medical facilities. The destruction of healthcare infrastructure has reduced the availability of essential medical care for the population, leading to limited access to healthcare services. The conflict has

also led to challenges in the healthcare workforce, with healthcare professionals being displaced or leaving conflict-affected areas. The loss of skilled healthcare workers, including doctors, nurses, and other medical staff, further strains the healthcare system and reduces the availability of healthcare services. Displaced populations and marginalized communities face additional barriers in accessing essential healthcare services, leading to health inequalities and increased health risks (Kurapov et al., 2023). The war has broader implications for public health, including the spread of infectious diseases, inadequate healthcare infrastructure, and disrupted healthcare delivery systems. The overall health status of the population is compromised, resulting in long-term health consequences and challenges in effectively addressing public health needs. Rebuilding educational and healthcare infrastructure is crucial for restoring access to quality education and healthcare services. Investment in infrastructure rehabilitation and development plays a vital role in enhancing educational opportunities and improving healthcare access for the population. Additionally, capacity building and workforce development are essential for rebuilding the education and healthcare systems. Strengthening the skills and expertise of teachers, healthcare professionals, and support staff is crucial for providing quality education and healthcare services (Uwishema et al., 2022).

4.5.Rise of Nationalism and Political Polarization

Nationalism in Ukraine has deep historical roots, and the war has reignited feelings of nationalism among various segments of the population. While nationalism can serve as a unifying force, it also presents challenges in building a cohesive society. National symbols, cultural heritage, and language have played a significant role in shaping this national identity and promoting a sense of unity in the face of external threats. However, the war has also intensified political polarization within Ukrainian society. Divergent political ideologies, conflicting narratives, and

competing visions for the country's future have led to political fragmentation, making consensus-building and effective governance more difficult. The conflict has further accentuated the regional divide between eastern and western Ukraine, with differing political preferences and socio-economic perspectives. This East-West divide has deepened political polarization, hindering efforts to foster national unity and inclusive governance (Zhao et al., 2023). The existence of political polarization and nationalist sentiments can impede effective governance and policymaking processes. Divisions within society may hinder the development and implementation of coherent and inclusive socio-economic policies, potentially impacting post-war recovery and long-term development in Ukraine. Furthermore, nationalism and political polarization can have economic implications, including reduced investor confidence, increased policy uncertainty, and challenges in attracting foreign direct investment. The conflict has also seen the weaponization of media, with misinformation, propaganda, and disinformation campaigns exacerbating political polarization and contributing to societal divisions. The rise of digital media and social networks has made it easier for divisive narratives to spread. Promoting dialogue and reconciliation efforts are essential for overcoming political polarization and nationalist divisions. Encouraging open, respectful, and inclusive discussions can foster understanding, bridge divides, and promote social cohesion. Building strong institutions and upholding the rule of law is vital for inclusive governance. Strengthening democratic processes, promoting transparency, and ensuring equal access to justice can contribute to reducing political polarization and fostering social integration (Bordignon et al., 2022).

5. IMPACT ON RUSSIA'S ECONOMY

5.1.Economic Sanctions and Trade Restrictions

After the conflict broke out, several countries and international organizations imposed economic sanctions on Russia in response. These sanctions targeted key sectors such as finance, energy, defense, and technology, with the intention of putting economic pressure on Russia and influencing its actions in the conflict. Alongside sanctions, trade restrictions and limitations were placed on Russia, impacting its trade relationships with other countries. These restrictions have hindered the free flow of goods, services, and investments, affecting Russia's ability to engage in international trade and access global markets. The imposition of economic sanctions and trade restrictions has led to a decrease in foreign direct investment (FDI) in Russia. The uncertainty and risks associated with the conflict, coupled with limited access to international markets, have discouraged foreign investors from investing in the Russian economy. The limitations on technology transfers resulting from sanctions and trade restrictions have also hindered Russia's access to advanced technologies and innovation. This can impede the country's economic development and modernization efforts, affecting its competitiveness in the global market. (Estrada & Koutronas, 2022). Russia's energy sector, particularly its oil and gas exports, has been significantly impacted by economic sanctions and trade restrictions. Restrictions on energy-related investments, technology access, and trade limitations have hampered Russia's ability to expand its energy exports, impacting its revenue and economic stability. The conflict and subsequent economic measures have also contributed to fluctuations in global oil prices. Reduced demand, market uncertainty, and geopolitical tensions have influenced oil prices, which in turn have affected Russia's fiscal position and overall economic performance. Economic sanctions and trade restrictions have limited Russia's access to international capital markets. Restrictions on borrowing,

capital outflows, and financial transaction limitations have constrained Russia's ability to raise capital and finance its economic activities. These measures have contributed to currency depreciation and increased inflationary pressures in Russia. The devaluation of the Russian ruble and rising import costs have impacted the purchasing power of consumers, affecting their standard of living. The socio-economic challenges arising from economic sanctions and trade restrictions have underscored the importance of economic diversification in Russia. The limitations on certain sectors have highlighted the need to reduce reliance on traditional industries and promote the development of new sectors and innovation-driven activities. The conflict and economic measures have also emphasized the necessity for structural reforms in Russia's economy. Promoting a more diversified and resilient economic structure, improving the business environment, and enhancing competitiveness can help mitigate the socio-economic impacts of the conflict and sanctions (Gaur et al., 2023).

5.2.Fiscal Strain and Military Expenditures

The war has resulted in a significant increase in defense expenditures in Russia. The need to finance military operations, modernize equipment, and strengthen military capabilities has put considerable pressure on the country's fiscal resources. This increased military spending has strained Russia's budget, making it challenging to allocate funds to other essential sectors such as healthcare, education, and infrastructure. These budget constraints can have socio-economic implications, affecting the provision of public services and hindering long-term development. The substantial allocation of funds to military operations and defense expenditures has necessitated trade-offs in resource allocation. This diversion of resources may limit investments in other critical sectors, potentially impacting economic growth, human development, and social welfare. The fiscal strain resulting from increased military spending can

impede investments in infrastructure development projects, which are crucial for sustainable economic growth. Limited investment in infrastructure can hinder productivity, regional connectivity, and long-term competitiveness (Chen, 2022). The increased military expenditures have implications for Russia's public finances, potentially leading to budget deficits, increased public debt, and reduced fiscal flexibility. These factors can influence investor confidence, credit ratings, and the cost of borrowing, ultimately affecting Russia's overall economic stability. The allocation of significant resources to military spending reduces the availability of funds for socio-economic programs such as poverty alleviation, healthcare, and education. Limited investment in these areas can impede social development, exacerbate inequality, and impact the well-being of the population. The war has stimulated the growth of Russia's defense sector, resulting in increased production and employment opportunities within the military-industrial complex. The expansion of the defense industry can have positive economic impacts, including job creation and technology development. However, reliance on defense exports as a revenue source can create vulnerability in Russia's economy. Economic dependence on the defense sector can increase exposure to market fluctuations, changes in international demand, and potential disruptions to defense trade, impacting economic resilience (Siddiqui, 2022).

5.3.Energy Sector Vulnerabilities

Russia heavily relies on energy exports, particularly oil and gas, as a significant source of revenue. The conflict has brought attention to the risks associated with relying too heavily on energy exports, exposing Russia's economy to fluctuations in global energy prices and demand. This vulnerability has human consequences, as it affects the country's ability to generate revenue and maintain economic stability. The war has created uncertainties and disruptions in energy supplies, especially in the

transit of energy resources through Ukraine. This impacts not only Russia but also its trading partners, as pipeline infrastructure and transit agreements have been affected. These disruptions in energy flows have real-life implications, affecting revenue streams and market stability for Russia and its partners. The conflict has contributed to global energy price volatility, which directly impacts Russia's revenue from energy exports. Fluctuations in energy prices, driven by geopolitical tensions, changes in demand, and market perceptions of supply security, can have a profound impact on Russia's fiscal position and economic stability. These fluctuations can disrupt budgetary planning and affect the government's ability to provide necessary public services and support socio-economic programs. Furthermore, the war and its geopolitical implications have the potential to impact energy demand, particularly from key export markets. Economic uncertainties, political tensions, and trade limitations can reduce energy demand, leading to lower export volumes and revenue for Russia. This, in turn, affects the country's economic well-being and its ability to fund public initiatives. The conflict has shed light on energy security challenges for Russia, highlighting the need for diversification and reducing dependence on specific energy markets. Geopolitical risks, trade restrictions, and changing energy dynamics all pose challenges to Russia's long-term energy security. These challenges have human consequences, as they can impact the stability of energy supply, affect market access, and potentially disrupt the livelihoods of those working in the energy sector (Abbassi et al., 2023). The vulnerabilities in the energy sector have wider implications for Russia's economy and society. Reduced revenue from energy exports can impact the country's fiscal stability, affecting public finances, government spending, and socio-economic programs that benefit the population. Ensuring the stability and resilience of the energy sector is essential for maintaining a healthy and balanced economy that

supports the well-being of the people. Addressing these vulnerabilities requires a focus on economic diversification and resilience. Encouraging the development of non-energy sectors, promoting innovation, and fostering sustainable economic growth are important steps toward reducing Russia's reliance on the energy sector. Exploring opportunities for regional and market diversification can enhance energy security, open up new avenues for cooperation, and reduce the risks associated with dependence on specific markets (Cui, 2023).

6. SOCIETAL EFFECTS IN RUSSIA

6.1.Perception of The War and Propaganda

The war has had a profound impact on how the conflict is perceived, largely due to the influence of media. Both state-controlled and independent media outlets play a significant role in shaping narratives, molding public opinion, and influencing societal attitudes towards the war. These influences have human consequences, as they shape the way people perceive and understand the conflict. The perception of the war has contributed to the rise of nationalism and patriotism within Russian society. National symbols, cultural identity, and a sense of unity have been utilized to rally public support and portray the war as a defense of national interests. This patriotic sentiment reflects the deep emotional connection that individuals feel towards their country and its values. State-controlled media channels have played a prominent role in disseminating propaganda and shaping public opinion. These media outlets often emphasize Russia's role as a protector of Russian-speaking populations and may distort or downplay information related to the conflict. This can lead to challenges in accessing accurate and reliable information, hindering individuals' ability to make informed decisions and think critically about the situation (Geissler et al., 2022). Disinformation campaigns, both domestically and internationally,

have also been employed to influence public opinion and shape the perception of the war. False narratives, misinformation, and manipulation of information can create challenges in discerning the truth and can hinder the development of an informed society. Access to accurate information is crucial for fostering a well-informed citizenry and promoting meaningful dialogue. The perception of the war has contributed to political polarization and divisions within Russian society. Diverse viewpoints, conflicting narratives, and ideological differences have deepened societal divisions, impacting social cohesion and hindering constructive dialogue. These divisions have human implications, as they can strain relationships and create barriers to understanding and empathy. The war and its societal effects have influenced civil society organizations and public discourse. Organizations and individuals with differing perspectives on the war may face challenges in expressing their views, which can limit civic engagement and the exchange of ideas. A vibrant civil society is essential for fostering dialogue, promoting inclusivity, and enhancing social cohesion. The perception of the war and the dissemination of propaganda can also have implications for governance and democratic processes. Manipulation of information, limited media plurality, and restricted freedom of expression can hinder transparency, accountability, and the development of an informed and participatory society. Ensuring a diverse media landscape and protecting freedom of expression are vital for promoting an inclusive and resilient society. The societal effects of the war, including polarization and divisions, can also have economic implications. Social divisions and political instability can impact investor confidence, economic decision-making, and long-term economic growth, affecting the well-being of the population. A stable and inclusive society is essential for fostering a favorable economic environment (Ciuriak, 2022).

6.2.Media Censorship and Freedom of Expression

State-controlled media outlets have played a significant role in shaping the narrative surrounding the war, prioritizing information that aligns with the government's interests. This control over media restricts the diversity of viewpoints and limits access to unbiased and critical reporting. Internet regulation and censorship have been employed to control information flows and restrict freedom of expression online. The state has implemented measures to monitor and regulate online platforms, limiting access to independent sources of information and inhibiting open public discourse. The conflict has led to the suppression of dissenting voices, stifling critical perspectives and limiting public discourse. Journalists, activists, and individuals expressing views that contradict the official narrative may face harassment, intimidation, and legal consequences. Media censorship and limitations on freedom of expression contribute to self-censorship and create a climate of fear among journalists and citizens. The fear of reprisals and legal consequences hinders open discussions, impedes the flow of information, and limits the diversity of viewpoints (Pavlik, 2022). Media censorship and restrictions on freedom of expression erode democratic principles and undermine the functioning of democratic institutions. A lack of transparency, limited access to unbiased information, and curtailed public debates can result in a democratic deficit and hinder effective governance. Limitations on freedom of expression can also impact civil society engagement and civic participation. Citizens may face challenges in expressing their opinions, engaging in public discourse, and holding the government accountable. This hampers the development of an informed and participatory society. Media censorship and limited freedom of expression stifle innovation and entrepreneurship. An environment that restricts creativity, critical thinking, and open exchange of ideas impedes the development of a vibrant entrepreneurial ecosystem and hinders economic growth.

Additionally, media censorship and restrictions on freedom of expression can negatively impact a country's international reputation and investor confidence. A limited space for free expression and independent media raises concerns about transparency, governance, and the rule of law, potentially deterring foreign investment and hindering economic development (Li & Whitworth, 2023).

6.3.Opposition Movements and Political Climate

The war has solidified the ruling political party's control in Russia, leading to a concentration of power and limited space for opposition movements. The government's response to the conflict has contributed to the shaping of the political landscape, favoring the ruling party and hindering the influence of opposition parties, civil society organizations, and activist groups. Opposition movements in Russia have been affected by the conflict, facing restrictions, repression, and limited opportunities for political participation. These challenges have hampered their ability to influence the political climate. The war has resulted in increased restrictions on political freedom in Russia. Opposition voices, critical viewpoints, and dissenting opinions may face censorship, legal consequences, and limited access to public platforms, creating a constrained political environment. Additionally, the conflict has deepened political polarization within Russian society. Divergent political ideologies, conflicting narratives, and differing visions for the country's future have fostered divisions, inhibiting constructive dialogue and contributing to a climate of polarization (Petro, 2023). The impact on opposition movements and the constrained political climate can give rise to a democratic deficit in Russia. Limited political pluralism, restricted political participation, and constraints on freedom of expression undermine democratic principles and hinder the functioning of democratic institutions. Moreover, restrictions on opposition movements and the political climate can impede civil society engagement and civic

participation. Limitations on freedom of assembly, expression, and political involvement curtail civil society's ability to engage in public debates, monitor governance, and hold the government accountable. The political climate and constraints on opposition movements can also influence investor confidence and economic stability. Political instability, limited democratic engagement, and a constrained political environment raise concerns among investors, potentially affecting economic growth and foreign direct investment. Furthermore, the political climate can impact the business environment and entrepreneurship in Russia. A restricted political landscape and limited opportunities for opposition movements can hinder innovation, creativity, and entrepreneurship, potentially impeding economic development. Protecting freedom of expression and assembly is crucial for fostering democratic engagement. Ensuring the rights of citizens to freely express their opinions, participate in peaceful protests, and engage in political activities contributes to a more inclusive and participatory political climate. Promoting political pluralism is essential for a vibrant democracy, involving the development of diverse political parties, supporting their participation in political processes, and fostering an inclusive political culture (Alyukov, 2022).

7. INTERNATIONAL RESPONSE AND ASSISTANCE

7.1. Role of International Organizations and Diplomatic Efforts

The United Nations has played a vital role in addressing the socio-economic consequences of the Russia-Ukraine War, working through various agencies and programs to provide humanitarian aid, coordinate assistance efforts, and facilitate diplomatic dialogue. The UN's involvement aims to alleviate the suffering of affected populations and promote peace and stability

in the region. The European Union (EU) has actively responded to the conflict by implementing sanctions, offering financial aid, and engaging in diplomatic efforts. The EU's assistance focuses on supporting Ukraine's economic recovery, promoting democratic reforms, and fostering regional stability. Their involvement aims to provide the necessary support for Ukraine to rebuild and develop its economy. The International Monetary Fund (IMF) has also played a critical role by providing financial assistance to Ukraine during the conflict. Through various financial programs and loan packages, the IMF supports Ukraine's efforts to stabilize its economy, implement structural reforms, and address the macroeconomic challenges arising from the war (Mahilaj, 2023). Diplomatic efforts have been instrumental in addressing the socio-economic consequences of the conflict. Normative diplomacy, which emphasizes promoting international norms and principles, and mediation diplomacy, which aims to facilitate peaceful negotiations, have played significant roles in mitigating the impact of the war and seeking a peaceful resolution. Multilateral and bilateral engagements have been key in addressing the socio-economic consequences of the conflict. Peace talks, ceasefire agreements, and negotiations between Russia, Ukraine, and other involved parties have sought to de-escalate tensions, promote dialogue, and find diplomatic solutions to the conflict. International organizations, including the Red Cross, Médecins Sans Frontières, and various NGOs, have provided vital humanitarian aid and relief efforts to alleviate the suffering of affected populations. Their assistance includes the provision of essential services such as food, healthcare, shelter, and other necessary support (Hlihor, 2023). The conflict has resulted in significant displacement and refugee flows. International organizations and humanitarian actors have worked to provide assistance to internally displaced persons (IDPs) and refugees, ensuring access to shelter, healthcare, education, and livelihood support. The international community has provided

financial support and development assistance to address the socio-economic consequences of the war. Aid packages, grants, and loans have been extended to support Ukraine's economic recovery, infrastructure rehabilitation, and sustainable development initiatives. Technical assistance and capacity-building efforts have also been deployed to help Ukraine enhance its governance structures, strengthen institutions, and promote economic diversification. Donor coordination and partnership have been crucial in ensuring effective assistance delivery and avoiding duplication of efforts. Collaborative frameworks and mechanisms have been established to enhance coordination among international organizations, donor countries, and recipient countries. Efforts have been made to promote local ownership and empower affected communities in decision-making and implementing assistance programs. Inclusive and participatory approaches can enhance the effectiveness and sustainability of assistance efforts, fostering local resilience and empowering communities (Sinambela & Arsyad, 2023).

7.2.Humanitarian Aid and Reconstruction Support

The Russia-Ukraine War has caused a severe humanitarian crisis, affecting millions of people caught in the conflict. Humanitarian aid has played a crucial role in meeting the immediate needs of the affected populations, providing essential assistance such as food, clean water, shelter, healthcare, and protection services. International humanitarian organizations, including the United Nations agencies, the Red Cross, Médecins Sans Frontières, and various non-governmental organizations, have been on the ground, coordinating efforts, mobilizing resources, and delivering aid to those in need. The war has caused extensive damage to infrastructure, including buildings, roads, bridges, and utilities. Reconstruction efforts are vital to restore critical infrastructure, revive essential services, and revitalize the affected regions. International financial institutions such as the World Bank and the European Bank for Reconstruction and

Development have played significant roles by providing financial support and expertise for post-conflict reconstruction. They offer loans, grants, and technical assistance to facilitate infrastructure rehabilitation, economic recovery, and sustainable development in the areas affected by the conflict (Ozili, 2022). To ensure effective and efficient international assistance, coordination mechanisms have been established. Platforms like the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the International Reconstruction and Development Support Group for Ukraine have been instrumental in aligning international efforts, avoiding duplication, and maximizing impact. The support of international donors, including governments, philanthropic organizations, and private sector entities, has been crucial in providing financial resources for humanitarian aid and reconstruction efforts. Partnerships between donors, international organizations, and local actors have helped foster a coordinated and sustainable response to address the socio-economic consequences of the conflict. However, challenges in accessing affected areas have hindered the delivery of humanitarian aid and reconstruction support. Security risks, bureaucratic barriers, and logistical challenges can delay or limit the effectiveness of international assistance efforts. Additionally, funding shortfalls can impede the long-term sustainability of humanitarian and reconstruction initiatives. Ensuring sustained financial support and commitment from the international community is essential to address ongoing needs and support the recovery and reconstruction process. Humanitarian aid and reconstruction support are critical for facilitating socio-economic recovery and building resilience in conflict-affected areas. By restoring basic services, rebuilding infrastructure, and supporting livelihoods, international assistance can contribute to the long-term stability and well-being of affected communities. Promoting local ownership and empowering affected communities are key to the effectiveness and sustainability of assistance efforts.

Involving local actors in decision-making processes, supporting local initiatives, and strengthening local capacities can enhance the impact of international assistance and foster community resilience (Orabi & Soliman Amin, 2023).

7.3.Economic Sanctions and Their Effectiveness

Economic sanctions are measures taken by countries to impose trade restrictions, financial measures, and diplomatic actions against another country in response to perceived violations of international norms or security concerns. These sanctions can include trade embargoes, asset freezes, travel bans, and limitations on financial transactions. In the context of the Russia-Ukraine War, the main objectives of economic sanctions have been to deter Russia's actions, exert pressure on the Russian government, and encourage a change in behavior. The aim is to impose economic costs, politically isolate Russia, and promote a peaceful resolution to the conflict. Economic sanctions have had a significant impact on the Russian economy by limiting its access to international markets, investments, and technology. The sanctions have also highlighted the importance of economic diversification and reducing reliance on sectors targeted by the sanctions, such as energy and defense. Trade flows have been disrupted, and Russia's access to international markets has been restricted. Export industries, especially those heavily reliant on Western markets, have been significantly affected, leading to reduced export revenues and loss of market share. The financial sector has also felt the impact, with limited access to international financing, increased borrowing costs, and restrictions on financial transactions. Foreign direct investment in Russia has been discouraged, resulting in reduced capital inflows and impacting economic development (Schott, 2023). The effectiveness of economic sanctions in influencing Russia's behavior and policy choices is a subject of debate. Some argue that the sanctions have increased the costs of Russia's actions and brought about changes in its behavior. Others contend that the impact has been limited,

as the Russian government has adapted and found alternative means to mitigate the effects. Nonetheless, economic sanctions have had political and symbolic significance, conveying international condemnation of Russia's actions and demonstrating solidarity with Ukraine. They have helped maintain international pressure and draw attention to the violation of international norms, shaping the narrative surrounding the conflict. It is important to consider the effectiveness of economic sanctions within broader geopolitical considerations. Factors such as Russia's ability to withstand economic pressures, its political resilience, and its capacity to seek alternative economic partners can influence the overall impact of the sanctions. Economic sanctions can also have unintended humanitarian consequences, affecting vulnerable populations and limiting access to essential goods and services. Mitigating the socio-economic costs on the general population is crucial to prevent exacerbating the humanitarian situation. In response to the sanctions, the Russian government has implemented countermeasures and adjusted its economic policies. These measures include import substitution, trade diversification, and increased cooperation with non-Western partners. Monitoring and evaluating the effectiveness of sanctions is essential to assess their impact and adjust policy approaches accordingly. This includes assessing the socio-economic consequences, measuring behavior change, and understanding the broader geopolitical dynamics (Kubin, 2023).

7.4.Implications for Global Security and Stability

The conflict has had far-reaching effects on the security landscape of Eastern Europe, impacting regional dynamics in profound ways. It has heightened tensions between Russia and NATO member states, giving rise to concerns regarding territorial integrity, sovereignty, and the deployment of military forces in the region. The Russia-Ukraine War has also rekindled debates surrounding frozen conflicts and secessionist movements in Eastern Europe. The conflict has shed light on the complex

challenges of managing ethno-national tensions, territorial disputes, and the potential for border changes, significantly impacting regional stability and security. Moreover, the conflict has strained relationships between Russia and Western countries, including the European Union and the United States. Disagreements over the conflict itself, economic sanctions, and divergent geopolitical interests have exacerbated tensions and led to a deterioration of diplomatic relations. The war has prompted a reassessment of security strategies and defense policies among NATO member states, emphasizing the critical importance of collective defense, deterrence measures, and resilience-building efforts to effectively address evolving security challenges in the region (Lincong, 2022). The conflict has also raised concerns regarding the adherence to international norms and principles, such as territorial integrity, sovereignty, and the prohibition of the use of force. Violations of these fundamental norms can have far-reaching implications for global security, challenging the existing international order and its established framework. Additionally, the conflict has underscored the significance of energy security within the context of geopolitical tensions. Disruptions to energy supplies and transit routes have sparked concerns about energy security and the potential for economic and political leverage in the region. International cooperation and multilateral diplomacy play crucial roles in addressing the socio-economic consequences of the conflict, promoting global security, and fostering stability. Mediation efforts, diplomatic dialogue, and peace initiatives are key to de-escalating tensions, fostering reconciliation, and facilitating a peaceful resolution to the conflict. The conflict has further highlighted the importance of arms control and non-proliferation efforts in maintaining global security. Escalating tensions and increased military activities emphasize the need for strengthened arms control regimes and non-proliferation mechanisms to prevent the escalation of conflicts and mitigate their destructive consequences. Moreover, the conflict has

introduced economic risks and uncertainty, impacting global markets and trade flows. The interconnectedness of economies and the potential for spillover effects emphasize the significance of economic stability for global security. International organizations, such as the United Nations, the Organization for Security and Cooperation in Europe, and regional bodies, play indispensable roles in promoting global security and stability. These organizations facilitate dialogue, mediate conflicts, and support peacebuilding efforts in regions affected by conflict (Anghel & Džankić, 2023).

8. CONCLUSION

The Russia-Ukraine War, which began in 2022, has had far-reaching effects on the lives of people in Ukraine and Russia, touching various aspects of their societies and economies. The conflict has caused widespread devastation to infrastructure, disrupted key industries, resulted in the loss of human talent, devalued currencies, and hindered access to international financial aid. Its impact has also been deeply felt at the societal level, with displacement, increased poverty rates, loss of lives, and a rise in nationalism and political polarization. The significance of diplomatic efforts in conflict resolution cannot be overstated. The war serves as a stark reminder of the crucial role that negotiations, dialogue, and peaceful resolutions play in preventing and resolving conflicts. It emphasizes the need for robust international mechanisms that can effectively mediate disputes and deescalate tensions to prevent further violence and suffering. The Russia-Ukraine War further underscores the importance of early intervention and preventive measures in addressing conflicts at their earliest stages. International actors must be attentive to early warning signs and take swift action to prevent tensions from spiraling out of control, as seen in this conflict. International organizations have played a vital role in

responding to the war, offering humanitarian aid, facilitating peace negotiations, and supporting post-conflict reconstruction. These organizations serve as essential platforms for coordinating efforts, providing assistance, and promoting stability in conflict-affected regions. The imposition of economic sanctions on Russia during the war highlights both their potential as a tool for political leverage and the economic repercussions they can have on the targeted country and the global economy. The effectiveness and unintended consequences of sanctions must be carefully considered to ensure they do not exacerbate the suffering of affected populations. Humanitarian considerations must take precedence in conflicts of this nature. The socio-economic consequences of the Russia-Ukraine War underscore the need to prioritize humanitarian aid, effectively manage displacement, and invest in post-conflict reconstruction to restore the well-being and rights of affected populations. The conflict emphasizes the importance of robust conflict resolution mechanisms and adherence to international law in preventing and resolving conflicts. Strengthening international institutions, supporting peace negotiations, and investing in diplomacy are crucial for maintaining global peace and security. The vulnerabilities exposed in the energy sector during the Russia-Ukraine War highlight the importance of energy diversification and reducing dependence on a single source. Enhancing energy security and promoting economic interdependence can contribute to stability and decrease the risk of conflicts arising from energy-related issues. Regional cooperation is a crucial factor in fostering stability and reconciliation. The conflict reveals the significance of building trust, promoting dialogue, and encouraging economic integration among neighboring countries. Such efforts can help prevent conflicts and contribute to regional peace and development. In conclusion, the Russia-Ukraine War has had profound socio-economic consequences for Ukraine and Russia, impacting regional stability and international relations. Drawing

lessons from this conflict, such as the significance of diplomatic efforts, early intervention, and international cooperation, can inform future endeavors in conflict prevention, resolution, and post-conflict reconstruction. By prioritizing humanitarian considerations, strengthening conflict resolution mechanisms, ensuring energy security, and promoting regional cooperation, the international community can work towards preventing similar conflicts and fostering sustainable peace for all.

REFERENCES

Abbassi, W., Boubaker, S., Manita, R., & Pandey, D. K. (2023). Are environmentally friendly firms more vulnerable to the Russia-Ukraine crisis?. *International journal of accounting, auditing and performance evaluation*.

Allison, R. (2022). Russia, Ukraine and state survival through neutrality. *International affairs*, *98*(6), 1849-1872.

Alyukov, M. (2022). Making sense of the news in an authoritarian regime: Russian television viewers' reception of the Russia–Ukraine conflict. *Europe-Asia Studies*, *74*(3), 337-359.

Anghel, V., & Džankić, J. (2023). Wartime EU: consequences of the Russia–Ukraine war on the enlargement process. *Journal of European Integration*, *45*(3), 487-501.

Ani, K. J., & Anyanwu, T. C. (2023). Feet Drain During Invasion? Russo-Ukrainian Wars of 2022 and Nigerian Footballers in the Region. *RBFF-Revista Brasileira de Futsal e Futebol*, *15*(62), 200-211.

Astrov, V., Grieveson, R., Kochnev, A., Landesmann, M., & Pindyuk, O. (2022). *Possible Russian invasion of Ukraine, scenarios for sanctions, and likely economic*

impact on Russia, Ukraine and the EU (No. 55). Policy Notes and Reports.

BBC. (2022, Mart 18). *Putin Hails Crimea Annexation and War with Lessons on Heroism*. https://www.bbc.com/news/world-europe-60793319

BBC Turkish. (2019, Kasım 8). *Fransa Cumhurbaşkanı Macron: NATO'nun beyin ölümü gerçekleşti*. https://www.bbc.com/turkce/haberler-dunya-50342428

Bin-Nashwan, S. A., Hassan, M. K., & Muneeza, A. (2022). Russia–Ukraine conflict: 2030 Agenda for SDGs hangs in the balance. *International Journal of Ethics and Systems*, (ahead-of-print).

Bloomberg. (2022). "Ukraine Seeks to Declare Nationwide State of Emergency". Erişim adresi: https://www.bloomberg.com/news/articles/2022-02-23/ukraineseeks-to-declare-nationwide-state-of-emergency-kzzeqqe7.

Bordignon, F., Diamanti, I., & Turato, F. (2022). Rally'round the Ukrainian flag. The Russian attack and the (temporary?) suspension of geopolitical polarization in Italy. *Contemporary Italian Politics*, *14*(3), 370-386.

Chen, L. (2022, December). The impact of the Russia-Ukraine war on the European economy. In *2022 International Conference on Economics, Smart Finance and Contemporary Trade (ESFCT 2022)* (pp. 619-626). Atlantis Press.

Chen, S., Bouteska, A., Sharif, T., & Abedin, M. Z. (2023). The Russia–Ukraine war and energy market volatility: A novel application of the volatility ratio in the context of natural gas. *Resources Policy*, *85*, 103792.

Ciuriak, D. (2022). The role of social media in Russia's war on Ukraine. *Available at SSRN 4078863*.

Cui, L., Yue, S., Nghiem, X. H., & Duan, M. (2023). Exploring the risk and economic vulnerability of global energy supply chain interruption in the context of Russo-Ukrainian war. *Resources Policy*, *81*, 103373.

Dempsey, J. (2022, Şubat 25). *The End of the German Delusion*. https://carnegieeurope.eu/strategiceurope/86525

DW. (2022). "Russia Launches Massive Invasion of Ukraine as It Happened". Erişim adresi: https://www.dw.com/en/russialaunches-massive-invasion-of-ukraine-as-it-happened.

Empire, H. N., & Duson, N. A. (2022). A legal assessment of the environmental, humanitarian and economic impacts of the Russia/Ukraine armed conflict.

Estrada, M. A. R., & Koutronas, E. (2022). The Impact of the Russian Aggression Against Ukraine on the Russia-EU Trade. Journal of Policy Modeling, 44(3), 599–616.

Forbes. (2022). "Russia Authorizes Putin's Request for Military Deployment Outside Russia". Erişim adresi: https://www.forbes.com/sites/dereksaul/2022/02/22/russiaauthorizes-putins-request-for-military-deployment-outsiderussia/?sh=1abeceaa47fa.

Gaur, A., Settles, A., & Väätänen, J. (2023). Do Economic Sanctions Work? Evidence from the Russia-Ukraine Conflict. *Journal of Management Studies*.

Geissler, D., Bär, D., Pröllochs, N., & Feuerriegel, S. (2022). Russian propaganda on social media during the 2022 invasion of Ukraine. *arXiv preprint arXiv:2211.04154*.

Haque, U., Naeem, A., Wang, S., Espinoza, J., Holovanova, I., Gutor, T., ... & Nguyen, U. S. D. (2022). The human toll

and humanitarian crisis of the Russia-Ukraine war: the first 162 days. *BMJ global health*, *7*(9), e009550.

Haring, M. (2022, Şubat 25). *Putin's Blunder Ukraine Will Make Russia Regret This War*. Foreign Affairs: https://www.foreignaffairs.com/articles/ukraine/2022-02-25/putins-blunder

Hartwell, Christopher A., (2013). "A Eurasian (or a Soviet) Union? Consequences of further economic integration in the Commonwealth of Independent State". Business Horizons, Elsevier, 56(4): 411-420.

Hlihor, E. (2023). Public Diplomacy During Military International Conflicts. The Ukraine War Case. *Bulletin Of" Carol I" National Defence University*, *12*(1), 19-30.

Khudaykulova, M., Yuanqiong, H., & Khudaykulov, A. (2022). Economic consequences and implications of the Ukraine-russia war. *International Journal of Management Science and Business Administration*, *8*(4), 44-52.

Kubin, T. (2023). Russia, Ukraine, and the West: Are Smart Economic Sanctions Effective?. *The Soviet and Post-Soviet Review*, *1*(aop), 1-34.

Kurapov, A., Pavlenko, V., Drozdov, A., Bezliudna, V., Reznik, A., & Isralowitz, R. (2023). Toward an understanding of the Russian-Ukrainian war impact on university students and personnel. *Journal of Loss and Trauma*, *28*(2), 167-174.

Lendel, A. (2023). Ukrainian Universities at a Time of Global Crisis and New Opportunities: How to Secure and Develop Human Capital. *Der Donauraum*, *63*(1-2), 53-72.

Li, Y. T., & Whitworth, K. (2023). The right to information or data sovereignty? Sending unsolicited messages to Russians

about the war in Ukraine. *Big Data & Society*, *10*(1), 20539517231156123.

Lincong, W. (2022). Global Security Governance from the Perspective of the Russia-Ukraine Conflict: Dilemma and Way out. *China Int'l Stud.*, *95*, 96.

Lunn, S. (2023). Human Security and the Digital Threat: Russia and Ukraine. In *Perspectives on Justice, Indigeneity, Gender, and Security in Human Rights Research* (pp. 263-283). Singapore: Springer Nature Singapore.

Mahilaj, S. (2023). EU and OSCE Cooperation in the Russia-Ukraine Conflict: Impacts and Limitations. *ESI Preprints*, *15*, 49-49.

Morris, J. (2023). Global Trade Implications of a Russia and Ukraine-like Conflict Between China and Taiwan.

NPR. (2022). "Why Luhansk and Donetsk Are Key to Understanding the Latest Escalation in Ukraine". Erişim adresi: https://www.npr.org/2022/02/22/1082345068/why-luhanskand-donetsk-are-key-to-understanding-the-latest-escalation-inukrain.

Orabi, D. A., & Soliman Amin, E. M. (2023). Russia-Ukraine war: An Analytical Study on Van Dijk Ideological Square. *Journal of Public Relations Research Middle East/Magallat Bhut Al-Laqat Al-Amh-Al-Srq Al-Aust*, (44).

Orhan, E. (2022). The effects of the Russia-Ukraine war on global trade. *Journal of International Trade, Logistics and Law*, *8*(1), 141-146.

Ozili, P. K. (2022). Global economic consequence of Russian invasion of Ukraine. *Available at SSRN 4064770*.

Pavlik, J. V. (2022). The Russian war in Ukraine and the implications for the news media. *Athens Journal of Mass Media and Communications, 8,* 1-17.

Petro, N. N. (2023). Introduction: Russia, Ukraine, and the West: Looking to the Future. *Russian Politics, 8*(2), 123-126.

Ratten, V. (2023). The Ukraine/Russia conflict: Geopolitical and international business strategies. *Thunderbird International Business Review, 65*(2), 265-271.

Schott, J. J. (2023). Economic sanctions against Russia: How effective? How durable?. *Peterson Institute for International Economics Policy Brief,* (23-3).

Shumilova, O., Tockner, K., Sukhodolov, A., Khilchevskyi, V., De Meester, L., Stepanenko, S., ... & Gleick, P. (2023). Impact of the Russia–Ukraine armed conflict on water resources and water infrastructure. *Nature Sustainability*, *6*(5), 578-586.

Siddiqui, K. (2022). The Ukraine-Russia War. *WORLD*.

Sinambela, S. I., & Arsyad, R. (2023). The OSCE And The Ukraine Crisis: Cooperation Over Conflict. *Jurnal PIR: Power in International Relations*, *7*(2), 174-185.

Spiegel, P. B., Kovtoniuk, P., & Lewtak, K. (2023). The war in Ukraine 1 year on: the need to Strategise for the long-term health of Ukrainians. *The Lancet, 401*(10377), 622-625.

Thusi, X., & Mlambo, V. H. (2023). The Grass Suffers When Elephants Fight: Lessons For Africa From The Russia-Ukraıne Conflict. *Humanities And Social Sciences, 30*(2), 135-146.

Uwishema, O., Sujanamulk, B., Abbass, M., Fawaz, R., Javed, A., Aboudib, K., ... & Onyeaka, H. (2022). Russia-Ukraine conflict and COVID-19: a double burden for Ukraine's healthcare system and a concern for global

citizens. *Postgraduate medical journal*, *98*(1162), 569-571.

Wachs, J. (2023). Digital traces of brain drain: developers during the Russian invasion of Ukraine. *EPJ Data Science*, *12*(1), 14.

Wedel, M. G. (2022). Refined Diplomacy for the Global Order Restoration; Lessons from the Russia-Ukraine War. *Issue 5 Int'l JL Mgmt. & Human.*, *5*, 374.

Zhao, B., Ren, W., Zhu, Y., & Zhang, H. (2023). Manufacturing conflict or advocating peace? A study of social bots agenda building in the Twitter discussion of the Russia-Ukraine war. *Journal of Information Technology & Politics*, 1-19.

EXAMINATION OF E-COMPLAINTS DIRECTED TOWARDS AIRPORT GROUND HANDLING COMPANIES IN TÜRKİYE

Serdar KIZILCAN[1]

1. INTRODUCTION

Airport ground handling services encompass a process that begins with security checks for departing passengers, continues with both airport ground and airside services, and concludes with the aircraft taking off. For arriving passengers, it covers the process from disembarking the aircraft until leaving the terminal building. Airport services play a complementary and crucial role in the quality of service in air transportation. Allowing private sector practices in aviation and transportation policies reducing airlines' costs have positively impacted ticket prices. As a result, existing passengers have increased their usage of airlines, and new passengers have been introduced to air transportation.

Alongside these positive developments, internet-based technological innovations have become a driving force for companies' activities in the highly competitive aviation industry. For instance, complaints and suggestions, previously conveyed via phone or word of mouth, are now shared through platforms like "sikayetvar.com." This allows customers to easily express their experiences, opinions, and complaints about the products or services they receive. Furthermore, these platforms have become a source of information for consumers to consult before making a

[1] Lecturer, Uşak University, Civil Aviation Vocational School, serdar.kizilcan@usak.edu.tr, ORCID: 0000-0002-8209-2804.

purchase, influencing their decision-making process in various ways. Since the comments and complaints on these platforms are written by customers themselves, viewers find this information more reliable than the information provided by companies. Therefore, it would be beneficial for companies to take into account and resolve complaints on these platforms.

This study examines complaints from the website sikayetvar.com directed at ground handling service companies operating at airports in Türkiye. A total of 248 complaints were analyzed using content analysis method and categorized into three main groups. The obtained results can provide management and decision-makers with valuable information on how airport ground handling service companies can respond more effectively to customer complaints, improve service quality, and ensure customer satisfaction.

2. LITERATURE

2.1. Related Research

Atalik (2007) aimed to identify the complaints of frequent flyers regarding their program memberships in his study. In this study, customer complaints were categorized into five categories. Among the complaints, issues related to sales and staff behavior hold a significant place. Metwally (2013), in his case study on Egyptair customers' dissatisfaction, presented a model for better management of complaints. Additionally, the study suggests a range of practices at different levels within Egyptair to enhance customer satisfaction and loyalty. Rajain (2016), in his study on airline customer complaints, revealed that most participants had a tendency to complain. Problems related to employees played a role in influencing customers' decision to complain. The article focuses on service attributes causing dissatisfaction in customers and the approach taken to resolve the issues.

Ibiş and Batman (2016), examined complaints found on the website called "sikayetvar.com" using content analysis method for airlines operating in Turkey. Complaints directed towards airline companies were categorized. According to the results of the research, it was determined that complaints were primarily related to lost and damaged baggage and flight staff behavior. Battal et al. (2019) examined the complaints related to Turkish Airlines on "sikayetvar.com" and aimed to identify the most common complaint topics. The most common complaint topics were found to be related to damaged and lost baggage, Turkish Airlines' loyalty card - Miles and Smiles, delays, and ticket refunds. The study concluded by providing recommendations for Turkish Airlines and the relevant literature.

2.2. The Concept Of Service

Uyguc (1998) defines service as "an action, performance, social event, or effort produced and consumed at the place of production." In this context, services are intangible products created by humans and machines, directly providing benefits to consumers without physical ownership (Karahan, 2000). The concept of service is also evaluated as a collection of abstract activities that aim to meet the needs of consumers or consumer groups, creating utility and satisfaction without requiring ownership of any goods (Kotler, 2001). Based on these definitions, it is evident that services differ significantly from goods and possess unique characteristics. Technological advancements have led to significant changes in services. As a result, today's services are not considered as tradeable, low-efficiency goods.

Services belong more to the "performance" category than to the material aspect, making them unassessable in terms of being seen, felt, touched, etc. When a good is purchased, ownership is acquired, and it can be consumed. However, when a

service is purchased, there is no transfer of ownership; rather, the right to use, consumption, or experience is acquired (Üner, 1994). Services are consumed at the time of production; the production and sale of the service occur simultaneously. Therefore, the business and the customer are in interaction throughout the production and delivery process, and the customer participates in the production process (Sayım and Aydın, 2015).

The quality and content of services can vary from customer to customer, and even from day to day. Considering that a significant portion of the service industry is labor-intensive, it can be concluded that service businesses have limited chances of producing standardized products. On the other hand, heterogeneity also arises from the customers themselves. Each customer perceives the service with unique experiences (Zeithaml et al., 2000). Services can vary significantly depending on where and in what context they are provided. The quality of a service is dependent on who provides it and where it is offered. Furthermore, the intensity of the interaction between the service provider and the customer depends on the service provider's skills and performance during the service encounter. For example, a customer who receives high-quality service on one occasion may not receive the same level of service from the same person on another day (İçöz, 2005). Services require face-to-face interaction between the provider and the consumer. Therefore, the presence of humans is an absolute and inevitable necessity in the service sector (Sayım and Aydın, 2015).

2.3. The Concept of Ground Services

The services provided by ground handling companies authorized by the General Directorate of Civil Aviation at airports are referred to as ground services. These services include representation, passenger traffic, flight operations, cargo handling, communication, aircraft line maintenance, ramp

services, transportation, catering, supervision and inspection, and aircraft special security services (DHMİ, 2022; 143).

The services provided by airline companies or ground handling companies on their behalf consist of the following sections: Passenger services (flight check-in, boarding, arrival, lost & found for baggage), ramp services, cargo services, and operation services (SHGM, 2013; 40). The passenger services encompass processes from the entry of passengers to the airport until boarding the aircraft, including ticket, baggage, and passport control in accordance with international aviation rules and airline standards. It also involves meeting international passengers at the arrival area and directing them to passport control and providing assistance with any issues related to passenger baggage. On the other hand, operation services refer to the coordination of ground operational services. Main components of this service include cargo planning and control, communication, coordination, flight operations, record-keeping, and archiving (SHGM, 2013; 41-42).

2.4. The Concept of Customer Complaint

Customer complaints are expressed as dissatisfaction that arises when products or services fail to meet the customer's expectations (Barış, 2006). Customer complaints can be defined as the expression of dissatisfaction with a product through different channels. The primary purpose of customer complaint management is to ensure the satisfaction of the complaining customer, which involves activities to achieve this goal (Gökdeniz et al., 2011).

Customer complaints, which allow businesses to learn from their customers' opinions, are crucial for their improvement. Similarly, Namkung et al. (2011) state that consumer complaints provide businesses with information about shortcomings related to products or services, enabling them to make improvements in their production and/or management processes. Failure to address

complaints in a timely manner can lead customers to spread negative word-of-mouth about the product or service they received. This situation can adversely affect the business's operations (Yüksel et al., 2006).

Consumers choose different channels to express their complaints. The complaint channels include face-to-face meetings with the manager, face-to-face meetings with employees, written complaints (letter, email, internet), and complaint reporting through comment cards (Susskind, 2010). With the advancement of information communication technologies, consumers have started using the internet as a channel to share their positive and negative experiences. Through this new channel, consumers can comfortably communicate their dissatisfaction to the relevant parties and receive responses to their demands. As a result, numerous online feedback/review forums have emerged regarding experienced products or services (Berry et al., 2018).

2.5. The Concept of E-Complaint

Schall (2003) defines the concept of e-complaint as the expression of consumer dissatisfaction with a product or service through electronic channels. With the advancement of technology, the internet has provided consumers with an attractive complaint channel that was not previously available for voicing their discontent. The internet is a channel that can be easily accessed at any time, individually incurring little to no cost. Therefore, there has been a significant increase in customer complaints through electronic means, and this trend is expected to continue at an even faster pace in the future (Tripp and Gregoire, 2011).

In the past, when the internet was not as developed and deeply integrated into society, mass dissemination of consumer complaints was possible only if a media organization interested

in the issue decided to publish the complaint. However, with the proliferation of the internet, every consumer has become a writer, and the whole world has become their audience (Tyrrell and Woods, 2004). Innovations in communication technologies have led to the establishment of complaint websites where consumers can share their negative experiences with other consumers. Through online complaint sites, consumers can inform others about issues they have complained about, prevent them from experiencing the same negatives, or seek revenge against the business (Sparks and Browning, 2010).

3. METHODOLOGY

With the advancement and widespread adoption of communication technologies, customers using air transportation now have the ability to swiftly and effectively share their negative experiences regarding the services they receive at airports through online platforms. Therefore, the purpose of this study is to examine the e-complaints directed at Çelebi, Havaş, and TGS Ground Handling Services, three companies operating at airports in Türkiye, as posted on the "sikayetvar.com" portal. Previous research has predominantly focused on airlines, and this study aims to contribute to the literature in this area. The results and recommendations obtained within the scope of the study are believed to assist businesses in utilizing their resources efficiently and effectively.

The research was developed based on qualitative data collection methods. Content analysis, one of the qualitative research methods, was utilized to categorize the complaints. Content analysis is a scientific approach that allows for the objective and systematic examination of verbal, written, and other materials. The main process in content analysis is to gather similar data under specific concepts and themes, then organize

and interpret them in a way that the reader can understand (Sert et al., 2012). The data source for the study is the e-complaint portal called www.sikayetvar.com. This complaint portal is a freely accessible website open to everyone, and therefore, ethical approval from an ethics committee is not required for conducting the study. Within the scope of the research, a total of 248 e-complaint records related to Çelebi, Havaş, and TGS Ground Handling Services companies were evaluated between June 21 and July 5, 2023.

The complaints related to Havaş Ground Handling Services company were not considered in this study since the research focuses on passenger complaints regarding services provided at the airport. As a result, a total of 861 e-complaints addressed to Havaş Ground Handling Services were individually examined, and 83 complaints relevant to the research subject were included in the study. During the evaluation, main categories and sub-categories were identified as the basis for grouping the complaints. Battal et al.'s (2019) study was utilized for categorizing the complaints based on the main issues, while G. Hoşgör and Hoşgör's (2019) study was used for grouping the complaints according to the primary emotions expressed by the passengers.

4. FINDINGS

The main results related to the complaints examined in the scope of the research are presented in Table 1.

Table 1. Basic Results of the Dataset

Çelebi		
Gender	**n**	**%**
Female	40	38,5%
Male	64	61,5%
Total	**104**	**100%**

The Number of Company Responses Regarding the Complaints		-
The Number of Complaints that Resulted in Customer Satisfaction		3

Havaş		
Gender	**n**	**%**
Female	31	37,3%
Male	52	62,7%
Total	**83**	**100%**
The Number of Company Responses Regarding the Complaints		-
The Number of Complaints that Resulted in Customer Satisfaction		1

TGS		
Gender	**n**	**%**
Female	28	45,9%
Male	33	54,1%
Total	**61**	**100%**
The Number of Company Responses Regarding the Complaints		-
The Number of Complaints that Resulted in Customer Satisfaction		1

When examining the distribution of complaints based on the gender of the complainants, it is observed that 61.5% of the complaints at Çelebi are written by males and 38.5% by females. For Havaş, 62.7% of the complaints are from males and 37.3% from females. In TGS, the proportions are closer to each other, with 54.1% of the complaints written by males and 45.9% by females.

Looking at the number of company responses to the complaints, it can be seen that all three companies did not respond to the complaints on the sikayetvar.com portal. This indicates a lack of emphasis on customer relations and the importance of responding to customer feedback. Finally, as seen in Table 1, the number of complaints resulting in customer satisfaction is only 3 at Çelebi, while the other two companies have only 1 each.

Table 2. Results of Content Analysis

		Çelebi		Havaş		TGS	
Main Themes	**Sub-Themes**	**n**	**%**	**n**	**%**	**n**	**%**
Employee	Rude and Problematic	22		21		13	
	Irresponsible / Uninterested	14	44,2%	12	51,8%	12	47,5%
	Uninformed	6		5		3	
	Double Standards	4		5		1	
Luggage	Damaged	24		15		6	
	Lost	11	38,5%	11	34,9%	12	32,8%
	Late Delivery	5		3		2	
Airport Service	Boarding / Debording	9		7		11	
	Delayed / Slow Check-in	6	17,3%	2	13,3%	-	19,7%
	Wheelchair	3		2		1	
	Total	**104**	**100%**	**83**	**100%**	**61**	**100%**

The data and content analysis results of e-complaints are presented in Table 2. The complaints are categorized into three main categories: 'Employee,' 'Luggage,' and 'Airport Service.' Each complaint is considered only once during the process. Looking at the complaints, at Çelebi Ground Handling Services, the primary issue with the highest percentage of 44.2% is related to 'Employee' (n: 46). Following this, the distribution of other main issues is as follows: "Luggage" (38.5%; n: 40), and "Airport Service" (17.3%; n: 18). At Havaş Ground Handling Services, the primary issue with the highest percentage of 51.8% is related to 'Employee' (n: 43). The second main issue with a percentage of 34.9% is "Luggage" (n: 29), and the third main issue with a percentage of 13.3% is "Airport Service" (n: 11). Similarly, at TGS Ground Handling Services, the ranking is the same with the

following distribution: 'Employee' (47.5%; n: 29), "Luggage" (32.8%; n: 20), and "Airport Service" (19.7%; n: 12).

Employee

Airport ground services employees are individuals responsible for ticket, baggage, and passport control procedures in accordance with international rules and airline standards, from passengers' entry into the terminal to boarding the aircraft. The presence of qualified employees is crucial for providing high-quality service and ensuring passenger satisfaction. According to the research results, it is observed that in the 'Employee' main category, the most common complaints in all companies are related to the 'Rude and Problematic' subcategory. Below are some examples of complaints related to this subcategory:

Çelebi: "While waiting in line at the counter for my Istanbul flight, I was so disturbed by the rude and commanding tone of the male and female attendants towards the passengers. I felt very embarrassed about Çelebi Ground Services Company providing service in this manner. I urgently recommend that you educate your employees in this area on etiquette and service or provide service with a new team."

Havaş: "It's not pleasant at all that the female employee at the baggage drop-off counter during the Adana-Van flight on April 24, 2023, behaved rudely and didn't let me express myself, responding in a rude manner with 'if you don't like it, don't fly.' I suggest you hire more polite and understanding staff. Thank you."

TGS: "A gentleman claiming to be an authorized person is speaking quite rudely to passengers with slightly oversized luggage. He doesn't speak any foreign language and uses gestures to express phrases like 'forbidden, you can't board the plane, you must pay'..."

Luggage

A passenger whose luggage is lost should apply to the relevant airline company or ground services company's lost and found office at the destination. After the application, the passenger is given a reference number related to the lost luggage. If the passenger's luggage is damaged, they should also apply to the relevant airline company or ground services company's lost and found office. Here, a report about the passenger's damaged luggage is created (THY, 2023). According to the research results, in the 'Luggage' main category, complaints about the 'Damaged' subcategory are the most common for Çelebi and Havaş. For TGS, complaints about the 'Lost' subcategory are at the top. Below are some examples of complaints related to the 'Damaged' subcategory:

Çelebi: "On 16.07.2019, I had a flight from Antalya to Erzurum with a layover in Ankara. When I picked up my luggage at Erzurum Airport, I was infuriated to find it completely destroyed. I reported the situation to Çelebi Ground Services personnel and showed them my damaged luggage. They directed me to a female representative who filled out a form and gave me a contact number. I haven't received any response yet, and I want my grievance to be addressed."

Havaş: "My suitcase was completely broken and unusable on the Adana-Antalya flight. I have sent you the photos. I want to be compensated for my damages, and I am currently in a distressed situation."

TGS: "On 24/12/2022, my luggage was broken on the Moldova-Istanbul flight. I reported the situation at the TGS office, and they gave me a document, saying they would provide information via email or phone. However, it has been one month, and no one has contacted me. I want to be reached as soon as possible, and I will also file a complaint about this incident."

Airport Service

When looking at the main category of 'Airport Service,' it is evident that complaints related to the 'Boarding / Deboarding' subcategory stand out in all three companies. Boarding refers to the final check performed before passengers board the plane. Passengers go through the final checkpoint and are directed by the staff to board the plane shortly before the departure time. According to aviation regulations, no one is allowed to board the plane after the boarding time has passed (Pegasus, 2023). Deboarding, on the other hand, is the process of passengers disembarking from the aircraft after landing at the destination. Here are some examples of complaints related to the 'Boarding / Deboarding' subcategory:

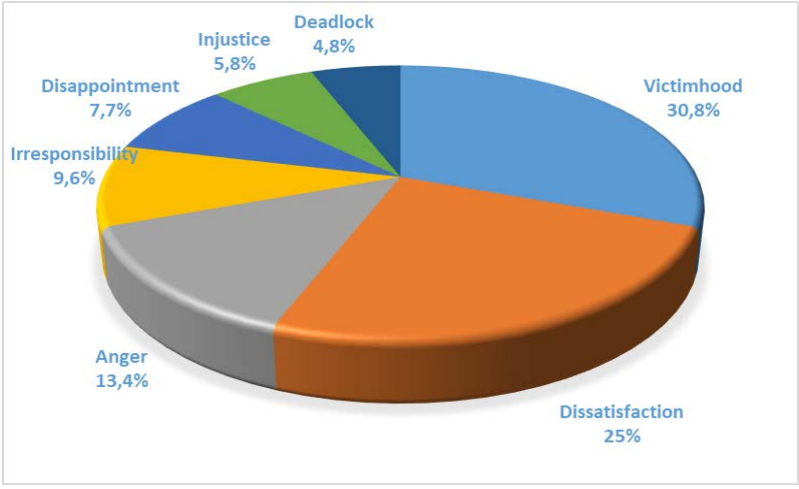
Çelebi: "My spouse had pass travel rights as she is a Turkish Airlines employee. However, the boarding staff of Çelebi Ground Services claimed that the captain does not accept pass travel on the flight. When I asked the cabin crew why they didn't accept my spouse, they said there was no such restriction but they still wanted to confirm with the captain. The captain also confirmed that there was no such instruction. My spouse was eventually allowed to board the plane, but I am lodging a complaint against all Çelebi employees responsible for the boarding process of flight TK2707."

Havaş: "...Due to your staff, who intentionally claimed that our checked-in tickets were not checked-in and did not let my mother and father board the plane, we experienced distress. As a result, my mother, who had heart surgery, had to travel to Istanbul by bus. Furthermore, despite us not being able to board the flight, you sent a message asking if we were satisfied with the flight."

TGS: "Even though I was at the designated gate 35 minutes before the Istanbul-Kastamonu flight, I was not allowed to board the plane. The staff at the gate told me that the boarding

had ended early, the service vehicle had left, and they couldn't do anything as they had closed the gate. This cannot be acceptable."

Figure 1. Distribution of Complaints Directed at Çelebi, Based on the Main Emotions in the Complaint Texts (n: 104)



The distribution of complaints belonging to Çelebi Ground Handling Services company based on the main emotions in the complaint texts is shown in Figure 1. According to the data, the most frequent complaint emotion is "Victimhood" with 30.8% (n: 32). Following that, "Dissatisfaction" comes in second place with 25% (n: 26), and "Anger" ranks third with 13.4% (n: 14).

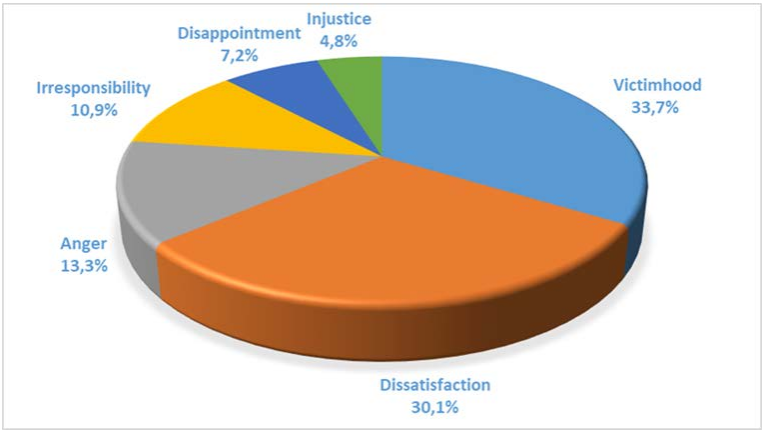
In addition to Figure 1, it is also essential to consider how passengers express these emotions. In this regard, examples of how relevant emotions are expressed can be listed as follows:

Victimhood: "... Company employees are doing their best to victimize people."

Dissatisfaction: "... I was not pleased with any of the airport staff; they did not pay attention to me."

Anger: "... Since we signed anyway, they think it gives them the right to mishandle our luggage. There are so many things to say, but I'm too angry to put them into words."

Figure 2. Distribution of Complaints Directed at Havaş, Based on the Main Emotions in the Complaint Texts (n: 83)



The distribution of complaints belonging to Havaş Ground Handling Services company based on the main emotions in the complaint texts is shown in Figure 2. According to the data, the most prevalent complaint emotion is "Victimhood," representing 33.7% (n: 28) of the total complaints. Following that, "Dissatisfaction" comes second with 30.1% (n: 25), and "Anger" is the third most common emotion, comprising 13.3% (n: 11) of the total complaints.

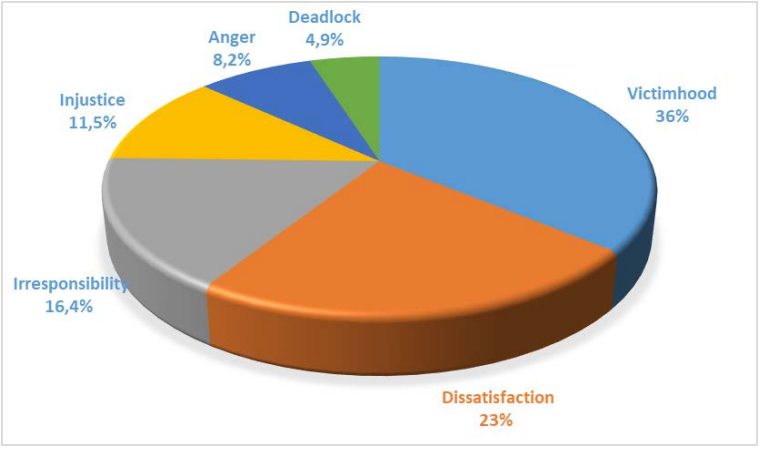
Examples expressing the relevant emotions can be listed as follows:

Victimhood: "I arrived from Egypt a week ago, my luggage didn't come out, and for a week now, I've been calling the call center for the 5th time, but my luggage is still missing. I feel like a victim, and I'm filing a complaint against Havaş."

Dissatisfaction: "... I arrived 4 hours late from Istanbul to Gaziantep, and I had to wait for my luggage for an additional hour at Gaziantep Airport in the middle of the night. The staff was very slow, and I was not satisfied at all."

Anger: "You lost my suitcase, and I have a loss of 12,000 TL. I am eagerly awaiting the court date. I will pursue my rights both financially and emotionally to the fullest. I am very angry."

Figure 3. Distribution of Complaints Directed at TGS, Based on the Main Emotions in the Complaint Texts (n: 61)



The distribution of complaints belonging to TGS Ground Handling Services company based on the main emotions in the complaint texts is shown in Figure 3. According to this, the most intense feeling of complaint is "Victimhood" with 36% (n: 22). Following that, "Dissatisfaction" comes in second with 23% (n: 14), and "Irresponsibility" ranks third with 16.4% (n: 10).

Examples expressing the relevant emotions can be listed as follows:

Victimhood: "... Even though my son had a Covid test, the officials did not allow him to board the plane. The officials at Hamburg Airport said it wasn't their problem and that the initiative lies with the Turkish officials, yet they prevented my son's flight. We have been financially and emotionally harmed as a result..."

Dissatisfaction: "When I asked the ground staff if they were checking in at their own discretion, they replied, 'Exactly.'

Every stage of TGS is very bad. They are so comfortable saying 'complain wherever you want.'"

Irresponsibility: "... The seat I sat in on the plane was wet. The staff asked mockingly, 'Should we give you a tissue?' I had to travel in a wet condition for an hour. I am complaining about the irresponsibility of the relevant employees."

5. CONCLUSION AND RECOMMENDATIONS

Customers now have more power than ever before due to the advancement of communication technology. For example, they can share their negative experiences on multiple channels such as forums, websites, or social media networks before even boarding a passenger plane or immediately after landing. This situation highlights the importance for companies operating in the aviation industry to be sensitive to customer complaints.

In this study, passenger complaints regarding Çelebi, Havaş, and TGS Ground Handling Services companies operating at airports in Türkiye have been addressed. The complaints were classified under three main categories: 'Employee,' 'Luggage,' and 'Airport Service' and examined accordingly.

When the number of responses to complaints from companies is examined, it can be observed that all three companies did not respond to complaints on the "sikayetvar.com" portal. This indicates a lack of understanding and importance given to customer relations. On the other hand, only Çelebi had 3 complaints resulting in customer satisfaction, while the other two companies had only 1 each. In a study conducted by Halstead et al. (1996) in the United States, it was found that ignoring passenger complaints by airline companies could lead to further complications and escalate into larger issues.

When the distribution of complaints is examined according to main issues, it is evident that in all three companies, the top main issue is "Employee." Rajain's (2016) study on airline customer complaints also highlighted that problems related to employees influence passengers' decision to file complaints. Additionally, Atalik's (2007) research on frequent flyers' complaints about program memberships also showed that issues related to staff behavior (32.89%) hold significant importance. In our study, it is noteworthy that the majority of complaints in the "Employee" category, particularly regarding "Rude and Problematic" behavior, were present in all three companies. Passengers reported that they experienced rude and problematic behavior from employees, including being treated disrespectfully, subjected to insults and shouting, threatened with denial of boarding, and employees behaving as if they were the owners of the company. The second most common complaint category is "Irresponsible / Uninterested." Passengers expressed that they observed staff members behaving irresponsibly and showing a lack of interest, being undisciplined and careless, and not providing assistance promptly.

According to Battal et al.'s (2019) study on Turkish Airlines' e-complaints, one of the most common complaint topics is damaged and lost baggage. Similarly, İbiş and Batman (2016) found in their research on four airlines operating in Türkiye that the highest number of complaints in the ground services category was related to damaged and lost baggage. In our study, in the "Luggage" main category, complaints related to the "Damaged" sub-category were prominent in Çelebi and Havaş. On the other hand, in TGS, complaints related to the "Lost" sub-category were the most prevalent. Passengers who complained about damaged baggage mentioned that their bags were significantly harmed, rendered unusable, and faced difficulties in finding the responsible authorities to claim compensation. Regarding lost

baggage complaints, passengers reported that their bags were left behind at the departure airport, sent to a different airport, or completely lost, and they expressed dissatisfaction with the lack of response from the company. Looking at the "Airport Service" main category, in all three companies, complaints related to the "Boarding / Deboarding" sub-category were at the top. Passengers mentioned that they were not allowed to board the aircraft and faced long waiting times during boarding and deboarding processes.

When examining the emotions most frequently described in relevant complaints, in Çelebi and Havaş Ground Handling Services company, the emotions of "Victimhood," "Dissatisfaction," and "Anger" come in that order. In TGS company, the emotions are "Victimhood," "Dissatisfaction," and "Irresponsibility," respectively. It is evident that most passengers have expressed being victims of their experiences. The phrases "I am a victim," "I have been victimized," and "suffered from a grievance" are frequently encountered in the subject lines of these complaints. On the other hand, there is also a significant number of passengers expressing their dissatisfaction with the services they received. Passenger satisfaction has become a crucial goal for businesses operating in the aviation industry. Ensuring passenger satisfaction in most companies translates to fewer complaints and dealing with failures at a lower cost.

The recommendations developed based on the results of this study are as follows:

- Ground handling companies should demonstrate a positive attitude towards complaining passengers for dedicating their time and effort. Thanking the passengers for reaching out and attempting to address the issues encountered can create a good impression. Furthermore, passengers whose complaints are acknowledged and

resolved promptly have the potential to become advocates for the company.

- Companies should conduct complaint analysis, tracking, and categorization to facilitate the resolution of complaints.
- Efforts to improve services based on complaints and feedback should be shared with customers to prevent unfounded allegations about the company.
- Training relevant personnel and establishing guidelines and policies on handling customer complaints will streamline the company's operations. For example, setting a 72-hour deadline for resolving complaints within 24 hours.
- Employees who mistreat passengers should receive serious warnings, temporary suspension from duties if necessary, undergo training, and be monitored through secret shopper programs. If employees continue repeating the same mistakes despite all warnings, they should be separated from the company, as they can negatively impact the company's image.
- Passengers who express positive feedback about the service should also be taken into account. Implementation of incentives such as promotions or extra bonuses for employees who are praised by customers, helpful, and solution-oriented can increase their motivation and sense of belonging.
- Ground handling companies should make a careful effort to ensure that baggage is reliably tagged and properly handled. According to the study conducted by Davis et al. (2023), the proper handling of passenger baggage is one

of the most significant factors affecting passengers' evaluation of the provided services.

- In cases where luggage is damaged or lost, the company should respond to passengers as quickly as possible, inform them about the process, and make efforts to resolve the problem. While damage or loss of luggage is an unwanted situation for the passenger, the real grievance occurs when the company fails to acknowledge its mistake and solve the problem. Therefore, ground handling companies should act constructively and solution-oriented in such situations.

By implementing these recommendations, ground handling companies can enhance customer satisfaction, reduce complaints, and improve their overall service quality.

REFERENCES

Atalik, Ö. (2007). Customer Complaints About Airline Service: A Preliminary Study of Turkish Frequent Flyers. *Management Research News*, 30(6), 409-419.

Barış, G. (2006). *Kusursuz Müşteri Memnuniyeti İçin Şikâyet Yönetimi*. İstanbul: Mediacat Kitapları.

Battal, S., Kayalı, E., Ural, Ü. S., & Yetgin, D. (2019). A Survey on E-Complaints: The Case of Turkish Airlines. *Journal of Tourism Leisure and Hospitality,* 1(1), 15-21.

Berry, R., Tanford, S., Montgomery, R. & Green, A. J. (2018). How We Complain: The Effect of Personality on Consumer Complaint Channels. *Journal of Hospitality & Tourism Research,* 42(1), 74-101.

DHMİ, (2022). Havacılık Terimleri Sözlüğü, Gözden geçirilmiş ve güncellenmiş 2. Baskı,

https://www.dhmi.gov.tr/Documents/HavacilikTerimleriSozlugu/DHMi-Havacilik-Terimleri-Sozlugu.pdf (11.06.2023).

Dike, S.E., Davis. Z., Abrahams, A., Anjomshoae, A. & Ractham, P. (2023). Evaluation of Passengers' Expectations and Satisfaction in The airline Industry: An Empirical Performance Analysis of Online Reviews. *Benchmarking: An International Journal,* doi:10.1108/BIJ-09-2021-0563

Gökdeniz, İ., Bozacı, İ. & Karakaya, E. (2011). Şikâyet Yönetim Süreci Sonrası Memnuniyeti Etkileyen Faktörler Üzerine Uygulamalı Bir Araştırma. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 26, 173-185.

Gündüz, D., & Hoşgör, H. (2019). Sağlık Hizmeti Tüketicileri Perspektifinden Özel Hastane Şikâyetlerinin İncelenmesi (Sikayetvar.com Örneği). *Hacettepe Sağlık İdaresi Dergisi,* 22(4), 823-842.

Halstead, D., Morash, E. A., & Ozment, J. (1996). Comparing Objective Service Failures and Subjective Complaints: An Investigation of Domino and Halo Effects. *Journal of Business Research,* 36(2), 107-115.

İbiş, S., & Batman, O. (2016). Havayolu İşletmelerine Yönelik Yapılan Müşteri Şikâyetlerinin Analizi. *3rd International Congress of Tourism & Management Researches,* 317-333, Antalya.

İçöz, O. (2005). *Hizmet Pazarlaması.* Ankara: Turhan Kitabevi.

Karahan, K. (2000). *Hizmet Pazarlaması.* İstanbul: Beta Yayınları Dağıtım A.Ş.

Kotler, P. A. (2001). *The Principles of Marketing.* New Jersey: Prentice Hall.

Kozak, M. (2007). Turizm Sektöründe Tüketicilerin Şikâyetlerini Bildirme Eğilimleri. *Celal Bayar Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 14(1), 137-151.

Metwally, D. (2013). Complaint Handling in the Airline Industry: The Way to Enhance Customer Loyalty. *Mediterranean Journal of Social Sciences,* 4(10), 299-311.

Namkung, Y., Jang, S. S. & Choi, S. K. (2011). Customer Complaints in Restaurants: Do They Differ by Service Stages and Loyalty Levels?, *International Journal of Hospitality Management,* 30(3), 495-502.

Pegasus, (2023). https://www.flypgs.com/seyahat-sozlugu/boarding (01.07.2023).

Rajain, P. (2016). Customer Complaint Behavior: a Study of Airline Customer. *Innovare Journal of Social Sciences,* 4(3), 11-14.

Sayım, F. & Aydın, V. (2015). Hizmet Sektörü Özellikleri ve Sistematik Olmayan Risklerin Sektör Menkul Kıymetleri ile Etkileşimine Dair Teorik Bir Çalışma. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi,* 29.

Schall, M. (2003). Best Practices in the Assessment of Hotel-Guest Attitudes. *Cornell Hotel and Restaurant Administration Quarterly,* 44(2), 51–65.

Sert, G., Kurtoğlu, M., Akıncı, A. & Seferoğlu, S. S. (2012). Öğretmenlerin Teknoloji Kullanma Durumlarını İnceleyen Araştırmalara Bir Bakış: Bir İçerik Analizi Çalışması. *Uşak Üniversitesi, Akademik Bilişim C*.14, 46.

SHGM, (2013). Yolcu Hizmetleri, Havaalanları Daire Baskanlığı Yayını, https://web.shgm.gov.tr/documents/sivilhavacilik/files/pdf/kurumsal/yayinlar/yolcu_hizmetleri_06.02.2014.pdf (11.06.2023).

Sparks, B. A., & Browning, V. (2010). Complaining in Cyberspace: The Motives and Forms of Hotel Guests' Complaints Online. *Journal of Hospitality Marketing & Management,* 19(7), 797-818.

Susskind, A. M. (2010). Guest Service Management and Processes in Restaurants: What We Have Learned in Fifty Years. *Cornell Hospitality Quarterly,* 51(4), 479–483.

THY, (2023). https://www.turkishairlines.com/tr-int/bilgi-edin/kayip-hasarli-bagajlar/ (02.07.2023).

Tripp, T. M., & Gregoire, Y. (2011). When Unhappy Customers Strike Back on the Internet. *Sloan Management Review,* 52(3), 37-44.

Tyrrell, B., & Woods, R. (2004). E-Complaint Lessons to be Learned From the Service Recovery Literature. *Journal of Travel & Tourism Marketing,* 17(2-3), 183-190.

Uyguç, N. (1998). *Hizmet Sektöründe Kalite Yönetimi: Stratejik Bir Yaklaşım.* İzmir: Dokuz Eylül Yayınları.

Üner, M. M. ve Karatepe O.M. (1996). Hizmet Pazarlaması Sorunlarına Frenchising Çözümleri. *H. Ü. İktisadi ve İdari Bilimler Fakültesi Dergisi,* 14(2), 185-208.

Yüksel, A., Kılınç, U. and Yüksel, F. (2006). Cross-national Analysis of Hotel Customers' Attitudes Toward Complaining and Their Complaining Behaviours. *Tourism Management,* 27(1), 11-24.

Zeıthaml, V. A., Berry, L. L. and Parasuraman, A. (1988). Communication and Control Processes in the Delivery of Service Quality. *Journal of Marketing,* 4, 35-48.

EVALUATING THE WORLD'S MOST INNOVATIVE COMPANIES VIA CRITIC BASED EDAS METHODOLOGY

Pelin ŞENTÜRK[1]

1. INTRODUCTION

Technological developments in today's conditions and the increasing competitive environment have made it difficult for companies to survive. Companies affected by market conditions have started to try new and various methods and attach importance to these activities in order to gain an advantage in the competitive environment. (Paksoy, Ersoy, 2016: 414). For this reason, companies in search of innovation attach more importance to their performance and development by giving importance to their innovation and activities, making a difference in an increasingly competitive environment. (Çalışkan, Akkoç, Turunç, 2011: 364)

The concept of innovation has many different definitions in the literature. Drucker (1985) defines innovation as the generation, acceptance and implementation of new ideas, processes, products and services. Clegg and Birch (2006), on the other hand, stated that innovation is not just a change or a revisional approach, it is a tool that helps to solve problems that have high distinguishability against competitors or that have not been solved for many years.

[1] Assoc. Prof. Dr., Karadeniz Technical University, Faculty of Economics and Administrative Sciences, Business Administration, pcelik@ktu.edu.tr, ORCID: 0000-0002-2234-2656.

Innovation, the catalyst that propels societies and organizations forward, stands as a driving force behind progress in the modern world. At its core, innovation encapsulates the dynamic process of introducing novel ideas, methods, or products that disrupt conventional norms and pave the way for advancement. It is an intricate dance between creativity and execution, forging new pathways in science, industry, and culture.

Innovation is not a solitary act; rather, it thrives in environments that foster curiosity, collaboration, and a willingness to challenge the status quo. The spectrum of innovation extends from incremental improvements, optimizing existing processes, to radical breakthroughs that redefine entire industries. Understanding this multifaceted concept involves navigating through the intersections of creativity, technology, and adaptability.

This study seeks to assess the performance of 86 companies listed in both the Global 2000 and Forbes' The World's Most Innovative Companies list. The evaluation involves calculating various criteria values, including sales, total assets, market values, return on assets, net profit margin, total number of employees, and 12 months sales growth. To address this problem, an integrated approach utilizing the CRITIC and EDAS methods is applied in the study.

2. LITERATURE REVIEW

Diakoulaki et al. (1995) conducted research on MCDM problems that involved multiple criteria. Their objective was to devise a method for identifying sources of information and assigning objective weights to them. They exemplified the application of this method in the Greek pharmaceutical industry.

The study revealed that the CRITIC method outperformed other techniques, offering distinct advantages and objectivity.

In a separate study, Madic and Radovanovic (2014) explored plasma arc cutting, oxy-fuel cutting, and laser beam cutting. They developed an MCDM model to rank four different NTMPs, namely cutting, abrasive water jet cutting, and nine others, by considering technological criteria. The importance of the evaluated criteria was determined using the CRITIC method.

Kazan and Özdemir (2014) conducted a study where they utilized the CRITIC method to compute nineteen financial ratios for 14 prominent holdings listed on the Istanbul Stock Exchange (ISE). The analysis of the holdings' financial statements was performed using the TOPSIS method across three periods (2009-2011).

Wang and Zhao (2016) used the analytical hierarchy process (AHP) method to optimize the mechanical properties of ceramic tool materials, and then combined them with the Criterion Significance Correlation (CRITIC) method. Ghorabaee et al. (2017) propose a new approach based on CRITIC and WASPAS methods to evaluate Third Party Logistics (3PL) providers with IT2FSs.

Kiracı and Bakır (2019) conducted a research study focusing on the performance evaluation of 13 airline companies during the period of 2005-2012, both before and after the global financial crisis. To assess performance, they employed MCDM methods along with aviation-specific measurement indicators. The CRITIC method was utilized to ascertain the significance levels of the criteria employed, while the EDAS method was applied to establish the ranking of airline companies based on their performance.

Ulutaş and Karaköy (2019) employed MCDM methods, namely the CRITIC and ROV (Value Range) approaches, to

assess the performance of a logistics company during the period of 2011-2017. Their study aimed to evaluate the company's performance using these methods.

In a separate study by Akın (2019), the author focused on selecting a border sewing machine for the bed edge construction of a sleep products and mattress manufacturing company. To determine the optimal choice, the study utilized the CRITIC, ENTROPY, and ROV methods. The ENTROPY and CRITIC methods were utilized to determine the weights of the criteria, while the ROV method was employed to rank the alternatives and identify the best choice.

The EDAS method, despite being relatively new, has demonstrated successful applications in various problem-solving contexts. For instance, Ghorabaee et al. (2015) employed the EDAS method to classify 47 inventory items based on criteria such as 'average unit price,' 'annual use of dollars,' and 'delivery time'.

Ghorabaee et al. (2016) used fuzzy EDAS method to determine the most suitable company among five supplier companies producing chemical materials according to "cost", "delivery", "flexibility", "innovation", "quality" and "service" main and 14 sub-criteria.

Ulutaş (2017) ranked 8 sewing machines from the best to the worst according to the criteria of "sewing speed", "stitch length", "price" and "energy use". As a result of the application, he stated that the machine he defined as machine 2 was the most suitable option.

In their study, Juodagalvienė et al. (2017) employed the EDAS method to identify the most suitable house from a selection of seven single-storey houses. The evaluation criteria considered in their analysis included 'material cost of the main building

elements,' 'safety,' 'layout of spaces and interspaces,' and 'energy saving.

Ecer (2018), "cost", "relationship", "service", "quality", "information system", "flexibility", "delivery", "professionalism", "financial situation", "location" and "reputation" According to the criteria, the most suitable third party logistics (3PL) company among 4 options was determined by EDAS method.

Karabasevic et al. (2018) employed the EDAS method to select two experts in the field of information technologies for employment in a domestic company. They initially pre-selected 33 candidates and narrowed them down to six based on various criteria such as "interview preparation," "education in IT," "work experience in the field," "special skills and knowledge in relational database management systems," "proficiency in foreign languages," "interpersonal skills," and "communication and presentation skills.

Mathew and Sahu (2018) employed the EDAS method, along with other approaches, to determine the optimal conveyor system from four alternatives based on six criteria. The selection process considered factors such as "hourly fixed cost," "hourly variable cost," "conveyor speed," "product width," "product weight," and "flexibility.

Chatterjee et al. (2018) employed the EDAS method to facilitate the selection of gear and bumper materials for automobiles. They assessed a set of eight alternatives based on five criteria for gear selection, and for the bumper material, they evaluated five options according to six criteria.

Altınkurt and Merdivenci (2020) evaluated service quality in airlines with AHP-based EDAS methods. The service quality criteria of airline companies were assessed using the AHP method, utilizing data gathered from five aviation experts to

determine the importance weights. Subsequently, the service quality ranking of the airline companies was established by combining the importance weights obtained through the AHP method with the EDAS method.

3. METHODOLOGY

3.1.CRITIC Method

The CRITIC method has been proposed to objectively determine the importance weights of the criteria of MCDM problems. CRITIC method was introduced to the literature in 1995 by Diakoulaki et al. The CRITIC method is a weighting method performed by using the standard deviations of the criteria and the correlation between the criteria.

The steps of CRITIC method are as follows;

Step 1. Creation of the Decision Matrix

In the decision matrix expressed by Equation (1); the index i represents the alternatives and the index j represents the criteria. xij, represents the performance value of i*th* alternative in terms of j*th* criterion.

$$X = [X_{ij}]_{mxn} = \begin{bmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mn} \end{bmatrix} \quad (i= 1,2,\ldots m \text{ and } j = 1,2,\ldots,n) \tag{1}$$

Step 2. Decision matrix is normalized by Equation (2).

$$x_{ij}^{*}=\frac{x_{ij}-\min x_{ij}}{\max(x_{ij})-\min(x_{ij})} \quad (i= 1,2,\ldots m \text{ and } j = 1,2,\ldots,n) \tag{2}$$

Step 3. In this step, standart deviation of the criterion and its correlation between other criteria are inclueded. Then weight is calculated by Equation (3).

$$w_j = \frac{c_j}{\sum_{j=1}^{n} c_j} \quad (3)$$

C_j shows the quantity of information comprised in j*th* criterion settled as;

$$C_j = \sigma_j \sum_{j=1}^{n} (1 - r_{ij}) \quad (4)$$

This method assigns greater weight to criteria with higher standard deviation and lower correlation coefficients with other criteria. In other words, a higher value of Cj indicates that the criterion provides a greater amount of unique information, thereby signifying its higher relative importance for the decision problem.

3.2.EDAS Method

EDAS (Evaluation based on Distance from Average Solution) method was developed as an alternative to other MCDM methods. The EDAS method was developed in 2015 by Ghorabaee et al. (Ghorabaee et al., 2015). EDAS method is known as Evaluation by Average Solution Distance method and evaluation of alternatives also considers the average solution. The EDAS method consists of six steps and these are; (Ghorabaee et al., 2015; Ulutaş, 2017).

Step 1. Creation of the Decision Matrix

As in CRITIC method, the first step is creating the decision matrix, Equation (1).

Step 2. The average values matrix (AV) is formed as shown in Equation (5) by averaging the values of all criteria.

$$AV = \left[AV_j\right]_{1xn}$$

where, (5)

$$AV_j = \frac{\sum_{i}^{m} x_{ij}}{m}$$

Step 3. For each criterion, a positive distance matrix (PDA) from the mean represented by Equation (6) and a negative distance matrix (NDA) from the mean by Equation (7) is created. If the criteria are in terms of utility, the PDA and NDA matrices are formed by Equation (8) and (9). If the criteria are in terms of cost, then the PDA and NDA matrices are calculated by Equation (10) and (11).

$$\text{PDA} = \left[PDA_{ij}\right]_{mxn} \quad (6)$$

$$\text{NDA} = \left[NDA_{ij}\right]_{mxn} \quad (7)$$

$$PDA_{ij} = \frac{\max(0,(X_{ij}-AV_j)}{AV_j} \quad (8)$$

$$NDA_{ij} = \frac{\max(0,(AV_j-X_{ij})}{AV_j} \quad (9)$$

$$PDA_{ij} = \frac{\max(0,(AV_j-X_{ij})}{AV_j} \quad (10)$$

$$NDA_{ij} = \frac{\max(0,(X_{ij}-AV_j)}{AV_j} \quad (11)$$

Step 4. The weighted total PDA and NDA are calculated for each option. v_j indicates the weight of the j*th* criterion.

$$SP_i = \sum_{j=1}^{n} v_j \, PDA_{ij} \quad (12)$$

$$SN_i = \sum_{j=1}^{n} v_j \, NDA_{ij} \quad (13)$$

Step 5. For each option, the SP and SN values are normalized using Equations (14) and (15).

$$NSP_i = \frac{SP_i}{max_i(SP_i)} \quad (14)$$

$$NSN_i = 1 - \frac{SN_i}{max_i(SN_i)} \quad (15)$$

Step 6. Assessment score (AS) is calculated with Equation (16) for all options.

$$AS_i = \frac{1}{2}(NSP_i + NSN_i) \quad (16)$$

Step 7. The options are sorted in descending order of assessment score. The first option is considered the best option.

4. DATA AND FINDINGS

First of all, the weights of criteria are determined by CRITIC method. While creating the decision matrix, companies in the Global 2000 and The World's Most Innovative Companies list published by Forbes were discussed. In this context, 8 most used criteria in the literature were selected to determine the performance of companies.

The decision matrix is given in Table 1.

Table 1. Decision Matrix

Rank	Company Name	Country	Sales ($M)	Assets ($M)	Market Value ($M)	Return On Assets	Net Profit Margin	Employees	12 Month Sales Growth
			C1	C2	C3	C4	C5	C6	C7
1	ServiceNow	USA	5900	10800	88070	0,039	0,021	16881	39,02
2	Workday	USA	5100	10500	42060	0,006	0,003	15200	36,07
3	Salesforce	USA	26500	99200	159510	0,053	0,014	40447	24,88
4	Tesla	USA	53800	62100	870160	0,102	0,089	99290	67,98
5	Amazon	USA	469800	420500	1310000	0,071	0,079	1608000	30,8
6	Netflix	USA	30400	45300	98120	0,164	0,110	8600	32,41
7	Incyte	USA	3000	5000	15560	0,316	0,190	2094	38,93
9	Naver	USA	6100	28300	36140	0,180	0,039	4678	19,36
10	Facebook	USA	117900	166000	254100	0,334	0,237	71970	47,09
11	Monster Beverage	USA	5500	7900	45340	0,255	0,177	4092	10,67
13	Adobe Systems	USA	16100	26000	175530	0,298	0,185	13513	24,56
15	Autodesk	USA	4400	8600	44060	0,113	0,058	12600	1,33
16	Regeneron	USA	16100	25400	62900	0,503	0,319	8564	20,82
17	Vertex	USA	7600	13400	72160	0,303	0,172	3900	46,2
19	Amerisourcebergen	USA	221100	57600	30140	0,007	0,028	16800	4,29
20	İllumina	USA	4500	15200	32290	0,169	0,050	9800	14,74
21	Marriot İnternational	USA	13900	25600	49770	0,079	0,043	97000	34,1
23	Cp All	Thailand	17650	27900	17530	0,021	0,013	63414	12,67
25	Tencent Holdings	China	86900	253000	414280	0,402	0,138	112771	53,83

26	Fleetcor	USA	2800	13400	16160	0,300	0,063	9700	22,82
27	Lg Household&Healthcare	South Korea	7100	6400	12570	0,104	0,115	4469	5,6
28	Trip.Com Group	China	3100	30100	13890	-0,028	-0,003	33400	37,18
29	Hermes International	France	10600	15700	138970	0,274	0,185	17595	8,77
30	Starbucks	USA	30400	28800	96460	0,145	0,153	245000	5,03
31	Align Technology	USA	4000	5900	19030	0,193	0,131	22540	36,44
32	Fast Retailing	Japan	19300	22900	51270	0,098	0,083	55589	6,75
34	Expedia	USA	8600	21550	28290	0,001	0,001	14800	14,66
36	Visa	USA	25480	81930	411000	0,504	0,157	21500	21,72
37	Anheuser-Busch İnbev	Belgium	54330	219370	118520	0,086	0,021	169339	24,01
38	Keyence	Japan	6430	19060	100890	0,401	0,135	8380	24,73
40	Oriental Land	USA	2040	9480	57490	-0,119	-0,026	8782	-1,98
41	Molson Coors Breewing	USA	10280	27620	11660	0,098	0,037	16300	125,24
42	Booking Holdings	USA	10960	23640	90520	0,107	0,049	20300	18,04
43	China Molybdenum	USA	26770	21570	11400	0,030	0,037	11472	248,24
44	Intutitive Surgical	USA	5910	13680	90640	0,277	0,120	9793	15,84
45	Baidu	USA	19310	59630	32490	0,082	0,026	45500	18,17
46	Mastercard	USA	18880	37670	343270	0,460	0,231	15600	15,97
47	Falabella	Chile	15100	25160	7270	0,057	0,034	103926	8,81
48	Dassault Systemes	France	5750	16170	56730	0,159	0,057	20496	7,72
49	General Mills	USA	18630	31140	43660	0,123	0,074	15000	-5,7
50	Roper Technologies	USA	6090	23710	47950	0,181	0,046	19300	21,57
51	Intuit	USA	11410	26300	125370	0,190	0,083	13500	10,29
52	Essilor Luxottica	France	23430	67580	79450	0,074	0,026	182684	7,34
53	Coca Cola	USA	38730	94350	282860	0,252	0,104	80300	-15,38
54	Inditex	Spain	32750	32450	68150	0,116	0,117	165042	12,3
55	Edwards Lifesciences	USA	5230	8500	73550	0,287	0,176	15700	15,91
56	Reckitt Benckiser Group	UK	18200	36500	56350	-0,002	-0,001	52303	15,9
57	Experian	Ireland	5940	10390	32220	0,166	0,095	17800	7,54
58	Constellation Brands	USA	8820	25860	46990	-0,005	-0,002	10000	3,49
59	Kone	Finland	12430	11050	25870	0,097	0,109	62720	3,8
60	Brown Forman	USA	3740	6230	32090	0,216	0,130	4700	-2,51
62	Mondelez International	USA	28720	67090	89980	0,150	0,064	79000	-0,1
63	Compass Group	UK	24500	20050	39010	0,020	0,024	478070	2,75
64	Jiangsu Hengriu Medicine	China	4350	6030	32320	0,222	0,160	28903	22,59
65	Boston Scientific	USA	11890	32230	62630	0,087	0,032	20000	7,89
66	Procter & Gamble	USA	79620	120220	386530	0,183	0,121	26000	-0,37
67	Pepsico	USA	79470	92380	238130	0,096	0,082	129000	1,15
68	Cerner	USA	5760	7430	27550	0,096	0,075	17605	7,21
70	Unilever	USA	62000	85400	116160	0,115	0,084	148000	3,9
71	Colgate-Palmolive	USA	17420	15040	68170	0,125	0,144	33800	1,7
72	Sodexo	France	22330	22070	11330	0,023	0,023	412088	1,13
73	United Parcel Service	USA	97200	69410	163030	0,133	0,186	534000	8,82
75	Asml Holding	Netherlands	20650	33640	247800	0,295	0,181	29861	35,85
76	Paychex	USA	4500	10280	47420	0,302	0,132	15000	6,75
77	Clorox	USA	7080	6190	18540	0,035	0,040	6390	3,68
78	Assa Abloy	Sweden	11070	14360	29860	0,115	0,088	51000	7,03

79	Alphabet	USA	257490	359270	1581720	0,295	0,212	156500	23,73
80	Nidec	Japan	17070	22160	40470	0,071	0,055	117206	21,23
81	Fanuc	Japan	6250	14790	31360	0,229	0,097	8256	32,21
83	Hershey	USA	8970	10410	46070	0,165	0,142	16620	1,01
84	Waste Connections	Canada	6150	14840	35260	0,100	0,042	19998	37,16
85	Relx	UK	9960	18770	59180	0,203	0,108	33500	1,81
86	Larsen & Toubro	India	20530	40820	31130	0,055	0,027	360826	14,08
87	Shiseido	Japan	9420	10240	19140	0,041	0,038	35318	14,54
88	Kellogg	USA	14180	18180	23530	0,105	0,082	31000	-0,65
89	Republic Services	USA	11300	24950	41810	0,114	0,052	35000	6,99
90	Hikvision	China	12990	16460	59330	0,203	0,160	52752	28,88
91	China Shipbuilding Industry	China	5340	28600	13460	-0,009	-0,002	33141	-26,99
92	Bharti Airtel	India	14980	48720	56800	0,027	0,008	48600	-8,82
93	Ecolab	USA	12730	21210	50160	0,089	0,053	47000	5,21
94	Loreal Group	France	38160	48910	195520	0,142	0,111	85412	6,5
95	Nxp Semiconductors	Netherlands	11060	21250	44830	0,169	0,088	31000	-2,55
96	Sun Pharma Industries	India	5100	9300	28970	0,171	0,094	37000	-11,99
97	The Estee Lauder Companies	USA	17770	22080	94,7	0,183	0,147	62000	4,99
98	Diageo	USA	19000	44910	116050	0,221	0,093	27783	-1,63
100	Norilsk Nickel	Russia	17810	23430	37750	0,367	0,279	73557	10,74

After applying Equations (1-4), the weights of criteria are calculated as Table 2.

Table 2. The Weights Calculated by CRITIC

C1	C2	C3	C4	C5	C6	C7
0,0993	0,1200	0,1087	0,2112	0,2044	0,1121	0,1443

When the weights are calculated, steps of EDAS method are followed. After applying Equations (5-11), weighted positive distance from average and weighted negative distance from average are shown in Table 3-4.

Table 3. Weighted Positive Distance from Average

Company Name	C1	C2	C3	C4	C5	C6	C7
ServiceNow	0,080	0,091	0,031	0,158	0,157	0,089	0,000
Workday	0,082	0,091	0,071	0,203	0,198	0,091	0,000
Salesforce	0,012	0,000	0,000	0,139	0,173	0,057	0,000
Tesla	0,000	0,000	0,000	0,071	0,006	0,000	0,000
Amazon	0,000	0,000	0,000	0,114	0,027	0,000	0,000
Netflix	0,000	0,000	0,022	0,000	0,000	0,100	0,000
Incyte	0,089	0,106	0,095	0,000	0,000	0,109	0,000
Naver	0,079	0,043	0,077	0,000	0,117	0,106	0,000
Facebook	0,000	0,000	0,000	0,000	0,000	0,013	0,000
Monster Beverage	0,081	0,099	0,068	0,000	0,000	0,107	0,060

Adobe Systems	0,046	0,049	0,000	0,000	0,000	0,094	0,000
Autodesk	0,085	0,097	0,070	0,057	0,075	0,095	0,134
Regeneron	0,046	0,051	0,053	0,000	0,000	0,100	0,000
Vertex	0,074	0,084	0,045	0,000	0,000	0,107	0,000
Amerisourcebergen	0,000	0,000	0,082	0,201	0,142	0,089	0,110
İllumina	0,084	0,079	0,080	0,000	0,092	0,099	0,027
Marriot İnternational	0,053	0,051	0,064	0,103	0,108	0,000	0,000
Cp All	0,041	0,044	0,093	0,182	0,174	0,025	0,044
Tencent Holdings	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Fleetcor	0,090	0,084	0,094	0,000	0,064	0,099	0,000
Lg Household&Healthcare	0,076	0,103	0,098	0,069	0,000	0,106	0,100
Trip.Com Group	0,089	0,038	0,096	0,250	0,211	0,066	0,000
Hermes International	0,064	0,077	0,000	0,000	0,000	0,088	0,075
Starbucks	0,000	0,042	0,023	0,013	0,000	0,000	0,104
Align Technology	0,086	0,104	0,092	0,000	0,000	0,081	0,000
Fast Retailing	0,035	0,058	0,063	0,077	0,019	0,036	0,091
Expedia	0,071	0,062	0,084	0,209	0,203	0,092	0,028
Visa	0,015	0,000	0,000	0,000	0,000	0,083	0,000
Anheuser-Busch İnbev	0,000	0,000	0,003	0,094	0,157	0,000	0,000
Keyence	0,078	0,068	0,019	0,000	0,000	0,101	0,000
Oriental Land	0,093	0,094	0,058	0,373	0,262	0,100	0,160
Molson Coors Breewing	0,065	0,045	0,098	0,077	0,123	0,090	0,000
Booking Holdings	0,063	0,056	0,028	0,065	0,094	0,084	0,001
China Molybdenum	0,011	0,061	0,099	0,171	0,122	0,096	0,000
Intutitive Surgical	0,080	0,083	0,028	0,000	0,000	0,099	0,019
Baidu	0,035	0,000	0,080	0,099	0,145	0,050	0,000
Mastercard	0,037	0,018	0,000	0,000	0,000	0,091	0,018
Falabella	0,049	0,052	0,102	0,134	0,128	0,000	0,074
Dassault Systemes	0,080	0,076	0,058	0,000	0,078	0,084	0,083
General Mills	0,038	0,035	0,070	0,042	0,039	0,092	0,190
Roper Technologies	0,079	0,056	0,066	0,000	0,101	0,086	0,000
Intuit	0,061	0,049	0,000	0,000	0,020	0,094	0,063
Essilor Luxottica	0,022	0,000	0,038	0,110	0,147	0,000	0,086
Coca Cola	0,000	0,000	0,000	0,000	0,000	0,002	0,266
Inditex	0,000	0,032	0,048	0,052	0,000	0,000	0,047
Edwards Lifesciences	0,082	0,097	0,043	0,000	0,000	0,091	0,018
Reckitt Benckiser Group	0,039	0,021	0,059	0,214	0,207	0,040	0,018
Experian	0,080	0,092	0,080	0,000	0,000	0,088	0,085
Constellation Brands	0,070	0,050	0,067	0,217	0,208	0,098	0,117
Kone	0,058	0,090	0,086	0,079	0,000	0,026	0,114
Brown Forman	0,087	0,103	0,080	0,000	0,000	0,106	0,164
Mondelez International	0,004	0,000	0,029	0,006	0,061	0,004	0,145
Compass Group	0,018	0,066	0,074	0,184	0,150	0,000	0,123
Jiangsu Hengriu Medicine	0,085	0,104	0,080	0,000	0,000	0,072	0,000
Boston Scientific	0,060	0,033	0,053	0,092	0,132	0,085	0,082
Procter & Gamble	0,000	0,000	0,000	0,000	0,000	0,076	0,147
Pepsico	0,000	0,000	0,000	0,080	0,020	0,000	0,135
Cerner	0,080	0,100	0,084	0,079	0,037	0,088	0,087
Unilever	0,000	0,000	0,006	0,053	0,017	0,000	0,113

Colgate-Palmolive	0,042	0,079	0,048	0,041	0,000	0,066	0,131
Sodexo	0,025	0,060	0,099	0,179	0,152	0,000	0,135
United Parcel Service	0,000	0,000	0,000	0,030	0,000	0,000	0,074
Asml Holding	0,031	0,029	0,000	0,000	0,000	0,071	0,000
Paychex	0,084	0,092	0,067	0,000	0,000	0,092	0,091
Clorox	0,076	0,103	0,092	0,163	0,115	0,103	0,115
Assa Abloy	0,063	0,081	0,082	0,054	0,006	0,042	0,089
Alphabet	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Nidec	0,043	0,060	0,073	0,114	0,082	0,000	0,000
Fanuc	0,079	0,080	0,081	0,000	0,000	0,101	0,000
Hershey	0,070	0,092	0,068	0,000	0,000	0,089	0,136
Waste Connections	0,079	0,080	0,077	0,074	0,111	0,085	0,000
Relx	0,066	0,069	0,056	0,000	0,000	0,066	0,130
Larsen & Toubro	0,031	0,009	0,081	0,137	0,143	0,000	0,033
Shiseido	0,068	0,092	0,092	0,155	0,120	0,064	0,029
Kellogg	0,052	0,071	0,088	0,067	0,021	0,070	0,150
Republic Services	0,062	0,052	0,072	0,055	0,089	0,064	0,089
Hikvision	0,056	0,075	0,056	0,000	0,000	0,040	0,000
China Shipbuilding Industry	0,082	0,042	0,097	0,224	0,208	0,067	0,359
Bharti Airtel	0,050	0,000	0,058	0,174	0,186	0,045	0,214
Ecolab	0,057	0,062	0,064	0,090	0,085	0,048	0,103
Loreal Group	0,000	0,000	0,000	0,017	0,000	0,000	0,093
Nxp Semiconductors	0,063	0,062	0,069	0,000	0,007	0,070	0,165
Sun Pharma Industries	0,082	0,095	0,083	0,000	0,000	0,061	0,239
The Estee Lauder Companies	0,040	0,060	0,109	0,000	0,000	0,027	0,105
Diageo	0,036	0,000	0,006	0,000	0,000	0,074	0,157
Norilsk Nickel	0,040	0,056	0,075	0,000	0,000	0,011	0,059

Table 4. Weighted Negative Distance from Average

Company Name	C1	C2	C3	C4	C5	C6	C7
ServiceNow	0,000	0,000	0,000	0,000	0,000	0,000	0,165
Workday	0,000	0,000	0,000	0,000	0,000	0,000	0,142
Salesforce	0,000	0,149	0,033	0,000	0,000	0,000	0,053
Tesla	0,079	0,049	0,663	0,000	0,000	0,024	0,395
Amazon	1,457	1,021	1,054	0,000	0,000	2,095	0,100
Netflix	0,001	0,003	0,000	0,014	0,043	0,000	0,113
Incyte	0,000	0,000	0,000	0,221	0,220	0,000	0,165
Naver	0,000	0,000	0,000	0,035	0,000	0,000	0,009
Facebook	0,291	0,330	0,117	0,246	0,327	0,000	0,229
Monster Beverage	0,000	0,000	0,000	0,137	0,192	0,000	0,000
Adobe Systems	0,000	0,000	0,047	0,197	0,209	0,000	0,051
Autodesk	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Regeneron	0,000	0,000	0,000	0,477	0,510	0,000	0,021
Vertex	0,000	0,000	0,000	0,203	0,180	0,000	0,222
Amerisourcebergen	0,633	0,036	0,000	0,000	0,000	0,000	0,000
Illumina	0,000	0,000	0,000	0,020	0,000	0,000	0,000
Marriot International	0,000	0,000	0,000	0,000	0,000	0,021	0,126

Cp All	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Tencent Holdings	0,189	0,566	0,259	0,338	0,105	0,043	0,283
Fleetcor	0,000	0,000	0,000	0,199	0,000	0,000	0,037
Lg Household&Healthcare	0,000	0,000	0,000	0,000	0,054	0,000	0,000
Trip.Com Group	0,000	0,000	0,000	0,000	0,000	0,000	0,151
Hermes International	0,000	0,000	0,015	0,163	0,209	0,000	0,000
Starbucks	0,001	0,000	0,000	0,000	0,138	0,224	0,000
Align Technology	0,000	0,000	0,000	0,053	0,089	0,000	0,145
Fast Retailing	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Expedia	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Visa	0,000	0,102	0,256	0,478	0,147	0,000	0,028
Anheuser-Busch Inbev	0,081	0,475	0,000	0,000	0,000	0,120	0,046
Keyence	0,000	0,000	0,000	0,338	0,099	0,000	0,052
Oriental Land	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Molson Coors Breewing	0,000	0,000	0,000	0,000	0,000	0,000	0,849
Booking Holdings	0,000	0,000	0,000	0,000	0,000	0,000	0,000
China Molybdenum	0,000	0,000	0,000	0,000	0,000	0,000	1,825
Intutitive Surgical	0,000	0,000	0,000	0,168	0,064	0,000	0,000
Baidu	0,000	0,042	0,000	0,000	0,000	0,000	0,000
Mastercard	0,000	0,000	0,196	0,418	0,312	0,000	0,000
Falabella	0,000	0,000	0,000	0,000	0,000	0,031	0,000
Dassault Systemes	0,000	0,000	0,000	0,006	0,000	0,000	0,000
General Mills	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Roper Technologies	0,000	0,000	0,000	0,036	0,000	0,000	0,027
Intuit	0,000	0,000	0,003	0,049	0,000	0,000	0,000
Essilor Luxottica	0,000	0,063	0,000	0,000	0,000	0,139	0,000
Coca Cola	0,029	0,136	0,142	0,134	0,027	0,000	0,000
Inditex	0,009	0,000	0,000	0,000	0,059	0,114	0,000
Edwards Lifesciences	0,000	0,000	0,000	0,181	0,191	0,000	0,000
Reckitt Benckiser Group	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Experian	0,000	0,000	0,000	0,016	0,008	0,000	0,000
Constellation Brands	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Kone	0,000	0,000	0,000	0,000	0,039	0,000	0,000
Brown Forman	0,000	0,000	0,000	0,084	0,086	0,000	0,000
Mondelez International	0,000	0,062	0,000	0,000	0,000	0,000	0,000
Compass Group	0,000	0,000	0,000	0,000	0,000	0,544	0,000
Jiangsu Hengriu Medicine	0,000	0,000	0,000	0,092	0,154	0,000	0,035
Boston Scientific	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Procter & Gamble	0,164	0,206	0,234	0,040	0,068	0,000	0,000
Pepsico	0,164	0,131	0,103	0,000	0,000	0,065	0,000
Cerner	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Unilever	0,106	0,112	0,000	0,000	0,000	0,091	0,000
Colgate-Palmolive	0,000	0,000	0,000	0,000	0,119	0,000	0,000
Sodexo	0,000	0,000	0,000	0,000	0,000	0,454	0,000
United Parcel Service	0,223	0,068	0,036	0,000	0,212	0,621	0,000
Asml Holding	0,000	0,000	0,111	0,192	0,201	0,000	0,140
Paychex	0,000	0,000	0,000	0,202	0,092	0,000	0,000
Clorox	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Assa Abloy	0,000	0,000	0,000	0,000	0,000	0,000	0,000

Alphabet	0,754	0,855	1,295	0,193	0,270	0,103	0,044
Nidec	0,000	0,000	0,000	0,000	0,000	0,049	0,024
Fanuc	0,000	0,000	0,000	0,102	0,012	0,000	0,111
Hershey	0,000	0,000	0,000	0,015	0,114	0,000	0,000
Waste Connections	0,000	0,000	0,000	0,000	0,000	0,000	0,151
Relx	0,000	0,000	0,000	0,066	0,037	0,000	0,000
Larsen & Toubro	0,000	0,000	0,000	0,000	0,000	0,383	0,000
Shiseido	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Kellogg	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Republic Services	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Hikvision	0,000	0,000	0,000	0,067	0,155	0,000	0,085
China Shipbuilding Industry	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Bharti Airtel	0,000	0,012	0,000	0,000	0,000	0,000	0,000
Ecolab	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Loreal Group	0,027	0,013	0,065	0,000	0,044	0,005	0,000
Nxp Semiconductors	0,000	0,000	0,000	0,020	0,000	0,000	0,000
Sun Pharma Industries	0,000	0,000	0,000	0,023	0,005	0,000	0,000
The Estee Lauder Companies	0,000	0,000	0,000	0,039	0,125	0,000	0,000
Diageo	0,000	0,002	0,000	0,090	0,005	0,000	0,000
Norilsk Nickel	0,000	0,000	0,000	0,290	0,420	0,000	0,000

Then, we calculated SP_i, SN_i, NSP_i and NSN_i by using Equations (12-16). In last step we calculate the final scores and showed in Table 5.

Table 5. EDAS Calculation Results

	SP_i	NSP_i	SN_i	NSN_i	AS_i	Ranking
ServiceNow	0,6045	0,5304	0,1653	0,0289	0,2796	16
Workday	0,7379	0,6475	0,1419	0,0248	0,3362	8
Salesforce	0,3798	0,3333	0,2351	0,0411	0,1872	48
Tesla	0,0774	0,0679	1,2101	0,2113	0,1396	74
Amazon	0,1404	0,1232	5,7270	1,0000	0,5616	1
Netflix	0,1219	0,1070	0,1737	0,0303	0,0687	85
Incyte	0,3999	0,3509	0,6064	0,1059	0,2284	28
Naver	0,4220	0,3703	0,0448	0,0078	0,1890	44
Facebook	0,0133	0,0117	1,5409	0,2691	0,1404	73
Monster Beverage	0,4142	0,3635	0,3295	0,0575	0,2105	36
Adobe Systems	0,1890	0,1658	0,5033	0,0879	0,1269	78
Autodesk	0,6112	0,5363	0,0000	0,0000	0,2682	18
Regeneron	0,2502	0,2196	1,0077	0,1759	0,1978	41
Vertex	0,3091	0,2713	0,6050	0,1056	0,1885	46
Amerisourcebergen	0,6248	0,5482	0,6694	0,1169	0,3326	9
Illumina	0,4615	0,4050	0,0201	0,0035	0,2042	38
Marriot International	0,3794	0,3329	0,1473	0,0257	0,1793	52
Cp All	0,6036	0,5297	0,0000	0,0000	0,2648	19
Tencent Holdings	0,0000	0,0000	1,7821	0,3112	0,1556	68
Fleetcor	0,4309	0,3781	0,2357	0,0411	0,2096	37
Lg Household&Healthcare	0,5509	0,4834	0,0537	0,0094	0,2464	23

Trip.Com Group	0,7509	0,6589	0,1507	0,0263	0,3426	6
Hermes International	0,3043	0,2670	0,3870	0,0676	0,1673	62
Starbucks	0,1825	0,1602	0,3634	0,0634	0,1118	82
Align Technology	0,3630	0,3185	0,2863	0,0500	0,1842	49
Fast Retailing	0,3781	0,3318	0,0000	0,0000	0,1659	63
Expedia	0,7481	0,6565	0,0000	0,0000	0,3282	10
Visa	0,0975	0,0856	1,0110	0,1765	0,1310	75
Anheuser-Busch İnbev	0,2542	0,2231	0,7224	0,1261	0,1746	56
Keyence	0,2660	0,2334	0,4883	0,0853	0,1593	66
Oriental Land	1,1396	1,0000	0,0000	0,0000	0,5000	2
Molson Coors Breewing	0,4976	0,4367	0,8494	0,1483	0,2925	15
Booking Holdings	0,3914	0,3434	0,0000	0,0000	0,1717	58
China Molybdenum	0,5598	0,4912	1,8254	0,3187	0,4050	4
Intutitive Surgical	0,3082	0,2704	0,2325	0,0406	0,1555	69
Baidu	0,4093	0,3592	0,0418	0,0073	0,1832	50
Mastercard	0,1629	0,1429	0,9266	0,1618	0,1524	70
Falabella	0,5393	0,4732	0,0305	0,0053	0,2393	25
Dassault Systemes	0,4595	0,4032	0,0064	0,0011	0,2022	40
General Mills	0,5054	0,4435	0,0000	0,0000	0,2217	32
Roper Technologies	0,3870	0,3396	0,0627	0,0109	0,1753	55
Intuit	0,2860	0,2510	0,0516	0,0090	0,1300	76
Essilor Luxottica	0,4032	0,3538	0,2020	0,0353	0,1945	42
Coca Cola	0,2683	0,2354	0,4687	0,0818	0,1586	67
Inditex	0,1789	0,1570	0,1822	0,0318	0,0944	84
Edwards Lifesciences	0,3310	0,2904	0,3719	0,0649	0,1777	54
Reckitt Benckiser Group	0,5987	0,5254	0,0000	0,0000	0,2627	20
Experian	0,4237	0,3718	0,0237	0,0041	0,1880	47
Constellation Brands	0,8273	0,7259	0,0000	0,0000	0,3630	5
Kone	0,4532	0,3976	0,0388	0,0068	0,2022	39
Brown Forman	0,5401	0,4739	0,1697	0,0296	0,2518	21
Mondelez International	0,2490	0,2185	0,0620	0,0108	0,1147	80
Compass Group	0,6141	0,5388	0,5442	0,0950	0,3169	13
Jiangsu Hengriu Medicine	0,3409	0,2992	0,2808	0,0490	0,1741	57
Boston Scientific	0,5356	0,4700	0,0000	0,0000	0,2350	27
Procter & Gamble	0,2237	0,1963	0,7122	0,1244	0,1603	65
Pepsico	0,2349	0,2061	0,4622	0,0807	0,1434	72
Cerner	0,5555	0,4875	0,0000	0,0000	0,2437	24
Unilever	0,1893	0,1661	0,3089	0,0539	0,1100	83
Colgate-Palmolive	0,4063	0,3565	0,1187	0,0207	0,1886	45
Sodexo	0,6507	0,5710	0,4536	0,0792	0,3251	11
United Parcel Service	0,1041	0,0914	1,1595	0,2025	0,1469	71
Asml Holding	0,1307	0,1147	0,6446	0,1126	0,1136	81
Paychex	0,4254	0,3733	0,2941	0,0514	0,2123	33
Clorox	0,7682	0,6741	0,0000	0,0000	0,3371	7
Assa Abloy	0,4171	0,3660	0,0000	0,0000	0,1830	51
Alphabet	0,0000	0,0000	3,5122	0,6133	0,3066	14
Nidec	0,3717	0,3262	0,0729	0,0127	0,1694	59
Fanuc	0,3401	0,2984	0,2251	0,0393	0,1689	60
Hershey	0,4547	0,3990	0,1285	0,0224	0,2107	35

Waste Connections	0,5057	0,4438	0,1505	0,0263	0,2350	26
Relx	0,3876	0,3401	0,1029	0,0180	0,1791	53
Larsen & Toubro	0,4337	0,3806	0,3832	0,0669	0,2237	30
Shiseido	0,6196	0,5437	0,0000	0,0000	0,2718	17
Kellogg	0,5181	0,4547	0,0000	0,0000	0,2273	29
Republic Services	0,4823	0,4232	0,0000	0,0000	0,2116	34
Hikvision	0,2273	0,1995	0,3064	0,0535	0,1265	79
China Shipbuilding Industry	1,0776	0,9456	0,0000	0,0000	0,4728	3
Bharti Airtel	0,7274	0,6383	0,0122	0,0021	0,3202	12
Ecolab	0,5092	0,4468	0,0000	0,0000	0,2234	31
Loreal Group	0,1093	0,0959	0,1540	0,0269	0,0614	86
Nxp Semiconductors	0,4354	0,3820	0,0201	0,0035	0,1928	43
Sun Pharma Industries	0,5609	0,4922	0,0281	0,0049	0,2486	22
The Estee Lauder Companies	0,3408	0,2991	0,1642	0,0287	0,1639	64
Diageo	0,2733	0,2398	0,0969	0,0169	0,1284	77
Norilsk Nickel	0,2421	0,2125	0,7101	0,1240	0,1682	61

5. CONCLUSION

In recent years, the landscape of global business has undergone a profound transformation due to the advent of globalization. This shift has given rise to an increasingly intense competitive environment, presenting companies with formidable challenges. In the face of this dynamic and rapidly changing landscape, the dual objectives of achieving a sustainable competitive advantage and ensuring survival become intricate tasks. Companies aspiring to innovate and introduce novel products also find themselves navigating the delicate balance between elevating productivity and bolstering profitability. In this context, the imperative for companies to continually reinvent themselves in tandem with evolving conditions becomes not only crucial but existential.

Within this context, a strategic emphasis on innovation becomes paramount, offering companies the means to not only adapt to market dynamics but also to thrive in the face of challenging conditions. Consequently, the concept of innovation has become a focal point that captures the attention of companies

striving for relevance and resilience in an era defined by rapid change.

The focal point of this study is to meticulously evaluate the performance of 86 companies listed in both the Global 2000 and Forbes' prestigious "The World's Most Innovative Companies" list. This evaluation entails a comprehensive analysis of various criteria, including sales values, total assets, market values, return on assets, net profit margin, total number of employees, and 12-month sales growth. Employing an integrated approach, combining the CRITIC and EDAS methods, is crucial in addressing the complexities of this evaluation.

The CRITIC method is initially employed to analyze the weights of the evaluation criteria. This critical step reveals the relative importance of each criterion, with C4 emerging as the most significant, and C1 as the least. Once the weights are determined, the EDAS method is then applied to rank the companies based on their performance. Notably, the results indicate that Amazon stands out as the best-performing company, while the Loreal Group ranks as the least performing entity.

This paper contributes a novel approach by employing CRITIC-based EDAS for identifying the best-performing firm, laying the groundwork for future research endeavors. Beyond this study, alternative methodologies such as ELECTRE, TOPSIS, ARAS, among others, hold promise for further exploration. As a result, the methodologies presented herein offer versatility and applicability across diverse fields and sectors, providing a robust framework for future investigations into performance evaluations and innovation in various organizational contexts.

REFERENCES

Akın, N. G. (2019). Makine Seçimi Probleminde Entropi - ROV ve CRITIC - ROV Yöntemlerinin Karşılaştırılması. Dumlupınar Üniversitesi Sosyal Bilimler Dergisi(62), 20-39.

Altınkurt, T., & Merdivenci, F. (2020). AHP Tabanlı EDAS Yöntemleriyle Havayolu İşletmelerinde Hizmet Kalitesinin Değerlendirilmesi. Aksaray Üniversitesi İktisadi Ve İdari Bilimler Fakültesi Dergisi, 12(4), 49-58.

Clegg, B. & Birch, P. (2006), Instant Creativity: Simple Techniques to Ignite Innovation and Problem Solving, Kogan Page.

Chatterjee, P., Banerjee, A., Mondal, S., Boral, S., & Chakraborty, S. (2018). "Development Of A Hybrid Meta-Model For Material Selection Using Design Of Experiments And Edas Method", Engineering Transactions.s. 1-21.

Çalışkan, A, Akkoç, İ., & Turunç, Ö. (2011). Örgütsel Performansın Artırılmasında Motivasyonel Davranışların Rolü: Yenilikçilik Ve Girişimciliğin Aracılık Rolü", SDÜ İİBF Dergisi, 16(3), 363-401.

Diakoulaki, D., Mavrotas, G., & Papayannakis, L. (1995). Determining Objective Weights In Multiple Criteria Problems: The Critic Method. Computers & Operations Research, 22(7), 763-770.

Ecer, F. (2018). "Third-party logistics (3PLs) provider selection via Fuzzy AHP and EDAS integrated model", Technological and Economic Development of Economy, 24(2), s. 615-634.

Ghorabaee, M. K., Amiri, M., Zavadskas, E. K., Turskis, Z., (2017). Multi-Criteria Group Decision-Making Using an

Extended EDAS Method With Interval Type-2 Fuzzy Sets, Economics and Management

Ghorabaee, M. K., Zavadskas, E. K., Amiri, M., Turskis, Z., (2016). Extended EDAS Method For Fuzzy Multi-Criteria Decision-Making: An Application To Supplier Selection, International Journal of Computers Communications & Control, 11(3), 358-371.

Ghorabaee, M. K., Zavadskas, E. K., Olfat, L., Turskis, Z., (2015). Multi-Criteria Inventory Classification Using A New Method Of Evaluation Based On Distance From Average Solution (EDAS), Informatica, 26(3), 435-451.

Juodagalvienė, B., Turskis, Z., Šaparauskas, J., & Endriukaitytė, A. (2017). "Integrated multi-criteria evaluation of house's plan shape based on the EDAS and SWARA methods", Engineering Structures and Technologies, 9(3), s. 117-125.

Karabasevic, D., Zavadskas, E.K., Stanujkic, D., Popovic, G., Brzakovic, M. (2018), "An Approach to Personnel Selection in the IT Industry Based on the EDAS Method", Transformations in Business & Economics, 44, s. 54-65.

Kazan, H. & Özdemir, O. (2014), Financial Performance Assessment of Large Scale Conglomerates Via TOPSIS and CRITIC Methods, International Journal of Management and Sustainability, 3 (4), 203-224.

Kiracı, K. & Bakır, M. (2019). "Critic Temelli Edas Yöntemi ile Havayolu İşletmelerinde Performans Ölçümü Uygulaması" Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, sayı 35,s.157-174.

Madic, M. & Radovanovic, M. (2015), Ranking of Some Most Cpmmonly Used Non-Traditional Machining Processes

Using ROV and CRITIC Methods, UPB Sci. Bull., Series D, Vol.77, Iss.2.

Mathew, M., & Sahu, S. (2018). "Comparison of new multi-criteria decision making methods for material handling equipment selection", Management Science Letters, 8(3), s.139-150.

Paksoy, H. M. & Ersoy, N. (2016). A Research on Investatigation of Relationship Between Innovation and Business Performance in Four and Five-Star Hotels in Antalya . Gaziantep University Journal of Social Sciences , 15 (2) , 413-433 . DOI: 10.21547/jss.256718

Ulutaş, A. (2017). EDAS Yöntemi Kullanılarak Bir Tekstil Atölyesi İçin Dikiş Makinesi Seçimi, İşletme Araştırmaları Dergisi, 9/2 (2), 169-183.

Ulutaş, A & Karaköy, Ç. (2019). "CRITIC ve ROV Yöntemleri ile Bir Kargo Firmasının 2011-2017 Yılları Sırasındaki Performansının Analiz Edilmesi", Manas Sosyal Araştırmalar Dergisi, 8(1): 223-230

Wang, D. & Zhao, J. (2016), Design optimization of mechanical properties of ceramic tool material during turning of ultra-high-strength steel 300M with AHP and CRITIC method. Int J Adv Manuf Technol 84, 2381–2390

HUMBLE LEADERSHIP AND CREATIVITY IN THE WORKPLACE

Süleyman Cem BOZDOĞAN[1]

1. INTRODUCTION

Character traits such as humility, have received more attention in the psychological literature since the introduction of positive psychology in the early 2000s (Owens, Rowatt, & Wilkins, 2011). The field of positive psychology expanded on Tangney's (2000) definition of humility by describing it as an inclination to assess oneself honestly and not seek acclaim for one's achievements. According to Daft (2014), a novel approach in leadership studies emphasizes leaders' facilitative and nurturing role in fostering workers' development so that they may contribute more effectively to corporate objectives. Humble leadership (HL), which is at the core of this staff-focused strategy, has been recognized by both academics and professionals as a potential new direction in management (Ou et al., 2014; Owens & Hekman, 2012). The notion of HL centers on the demonstrated humility of the leader in relationships with others, which are then evaluated by those observing or working under the leader (Rego et al., 2017). Humble leaders are better equipped to manage their organizations because they are realistic about their abilities, lack hubris, and demonstrate mutually beneficial behaviors by giving workers' ideas and proposals due consideration (Ali, Zhang, Shah, Khan, & Shah, 2020). To be a humble leader, one must not only demonstrate certain traits but also acknowledge and value the

[1] Öğr.Gör.Dr., Osmaniye Korkut Ata Üniversitesi, Bahçe MYO, cembozdogan@osmaniye.edu.tr, ORCID: 0000-0001-7844-9973.

expertise and direction of the superego (Standish, 2007). In addition to acknowledging their limitations, humble leaders recognize the benefits of their followers' accomplishments and gain knowledge from them. HL traits like these might help employees feel less pressure to succeed at new things, which in turn can lead to more creative thinking and innovative behavior (Hennessey & Amabile, 2010). The trust and encouragement of their superiors fosters a team that is enthusiastic about their job (Li, Liang, & Zhang, 2016). Individuals operating within a rigid management structure are prone to withdrawn behavior and reduced levels of initiative. However, arrogant, self-righteous, and narcissistic management can inhibit employees from realizing their potential (Owens, Wallace, & Waldman, 2015). As a result, leaders who possess humility are anticipated to have a constructive impact on the inventive behaviors of their subordinates (Özkan, Ardıç, & Özsoy, 2022). The perception of HL, which does not create pressure on employees, is believed to positively impact their psychological well-being as it promotes comfort and happiness, thus fostering a more positive work environment (Owens, Johnson, & Mitchell, 2013; Zhang & Song, 2020).

2. LITERATURE REVIEW

2.1. Humble Leadership

An "other-enhancing" attitude characterizes humility, a persistent and long-lasting positive human quality (Chancellor & Lyubomirsky, 2013). In previous times, humility was commonly regarded as an individual flaw (Morris et al., 2005) and linked to traits such as lack of ambition, passivity, shyness, or low self-confidence (Vera & Rodriguez-Lopez, 2004, p. 393). However, contemporary perspectives in positive organizational psychology have shifted the focus from highlighting the negative attributes of

individuals to emphasizing their positive strengths (Criddle, 2006). Vera and Rodriguez-Lopez (2004) view humility as an important asset for those who possess it, while they view it as a potential detriment for those who do not. Nielsen, Marrone, and Slay (2010) define humility as an asset that comes from understanding oneself, including one's strengths and weaknesses. According to Owens et al. (2013), the term "humility" refers to a trait in interpersonal relationships that signifies a person's inclination to see oneself with accuracy, acknowledge the contributions and strengths of others, and demonstrate a readiness to learn and be receptive to novel ideas and comments. Leadership marked by humility consists of openness and honesty about one's growth, a methodical and grassroots approach that includes active listening and paying attention, as well as gaining experience through practical application.

2.2. Psychological Well-being

An individual's psychological well-being (PWB) is associated with their outlook on life, including their feelings and thoughts, and reflects how they view their life in general (Ryff, 1989). The idea of psychological well-being is significant in conveying the notion that genuine pleasure and virtue may be attained by engaging in meaningful pursuits in life (Hefferon & Boniwell, 2014, p. 77). Ryff drew upon a variety of theories when describing the concept of psychological well-being, including Neugarten's characteristics of personality change in adulthood and old age, Allport's maturation, Bühler's basic life tendencies, Maslow's self-actualization, Erikson's personal development, Birren's developing mental health, Rogers' fully functional human, Jahoda's mental health, and Jung's individualization (Ryff, 1995, 2013; Ryff & Singer, 2008).All people need to feel psychologically well to continue their lives in a happy way, because individuals who do not feel well may face various problems in business life (Ren & Zhang, 2015).

2.3. Innovative Work Behavior

Innovation in the workplace is a multifaceted term that includes employees' actions that foster new ideas within a business (Aghighi & Manteghi, 2020). Innovative work behavior (IWB) is geared toward making the company more efficient, so it should not only describe how new concepts are generated but also show and put those concepts into action (Ren & Zhang, 2015). According to Carmeli and Schaubroeck (2007), IWB includes the full sequence of events that begins with the identification of a need, continues with the development of a novel solution, and concludes with the promotion and adoption of that solution by the organization. Shin, Kim, Lee, and Bian (2012) described IWB as the practice of creating, embracing, and enacting innovative goods, services, and methods of doing business. In the context of organizational work environments, it is essential for workers to effectively navigate and adjust to evolving business and organizational dynamics. Consequently, strategies are actively pursued to foster employee innovation, thus facilitating the generation and implementation of novel ideas to address growing challenges (Wang, Meng, & Cai, 2019).

2.4. Hypothesis Development

When humble leaders make their followers feel aware of their own limitations, they instill trust in their workforce and contribute to the emergence of innovative behaviors and creative ideas by taking risks (Burke, Stagl, Salas, Pierce, & Kendall, 2006). Humble leaders also give their staff members more personal space to think and behave in ways that are beneficial to their careers and ultimately provide novel and creative results (Zhou & Wu, 2018). Studies on behavioral psychology have shown a correlation between organizational psychological freedom and innovative work behaviors (Wang, Liu, & Zhu, 2018). Humble leaders who draw on the expertise and knowledge

of their employees are more likely to appreciate their subordinates' creative efforts and want them to solve challenging problems. Subordinates whose proposals and ideas are appreciated by leaders have a higher likelihood of participating in decision-making processes, which in turn generates fresh ideas and creative outputs for the organization (Zhou & Wu, 2018). Thus, it can be inferred that the perception of HL positively affects IWB.

H_1: Humble leadership positively impacts innovative work behaviors.

A leadership style known as humble leadership is one that acknowledges one's own fallibility and constraints, recognizes and values the capabilities of subordinates, and is willing to embrace their insights and evaluations. Humble leaders are concerned about their staff members' opinions, providing psychological freedom and security, enabling them to fully function, and helping them to make maximum contribution to the organization (Zhang & Song, 2020). HL demonstrate an awareness of the capabilities and constraints of their teams in relation to their expertise, abilities, and available opportunities (Owens & Hekman, 2016). HL serve as a social buffer for their teams by bringing attention to the group's current state and encouraging employees to network with other teams to share resources and work together on service initiatives (Bhattacharya, Chatterjee, & Basu, 2017). Hence, the following hypothesis can be proposed:

H_2: Humble leadership positively impacts psychological well-being.

The Broaden-and-Build Theory posits that positive emotions are associated with an expanded impact on cognitive processes, particularly via heightened cognitive agility and innovation (Conway, Tugade, Catalino, & Fredrickson, 2013).

Positive feelings also help to increase and broaden our thinking, allowing us to be more flexible and creative and to come up with fresh and new ways of solving problems (Conway et al., 2013). Positive emotions serve as a driving force for people to engage in innovative, imaginative, and spontaneous modes of thinking and behavior, resulting in an expanded cognitive framework (Fredrickson, 1998; Isen, 1987). Based on the broaden-and-build theory, individuals who experience pleasant emotions in the workplace exhibit enthusiasm and the capacity to engage in innovative and distinctive cognitive processes, behaviors, and undertakings (Fredrickson, 1998). It seems possible that psychological well-being will lead to more creative work. Hence, the following hypothesis can be proposed:

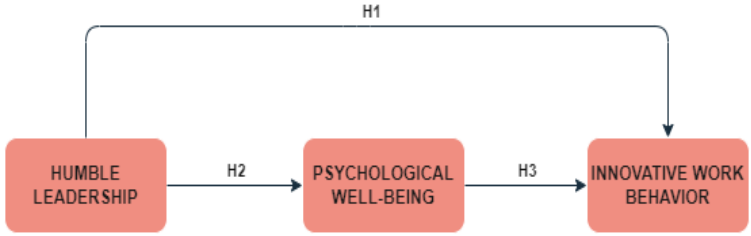
H_3: Psychological well-being positively impacts innovative work behaviors.

Humble leaders strive to increase team members' well-being and self-esteem (Zhong, Zhang, Li, & Zhang, 2020). This leadership style can promote employees' psychological well-being. According to social learning theory (Bandura, 1969), HL characteristics may be imitated by followers to promote originality and creativity, such as acknowledging one's own limitations and mistakes and being open to suggestions from others(Owens & Hekman, 2016). Employees, as a result, may submit new ideas with more confidence and take greater risks innovating. Hence, the following hypothesis can be proposed:

H_4: The relationship between innovative work behaviors and humble leadership is mediated by psychological well-being.

The research model established because of the hypotheses is presented below:

Figure 1. Research Model



3. METHODOLOGY

3.1. Sample and Data Collection

The data for this study were gathered from leather companies that are currently functioning within the provinces of Central Anatolia. The primary rationale for selecting these organizations is in their propensity for embracing innovation, which stems from the intense rivalry within the industry. All staff members working in the relevant company received the questionnaire form via the internet. It contains scales designed for measuring the variables under investigation as well as a form featuring personal data. In this context, a total of 290 questionnaire forms were obtained. However, 11 questionnaires were excluded from the dataset due to incomplete and inaccurate answers.

3.2. Data Collection Tools

Humble Leadership Scale: For HL, the nine-item scale developed by Owens et al. (2013), whose reliability and validity studies were conducted was used. It was also adapted into Turkish by Kerse, Koçak, and Özdemir (2020).

Psychological Well-Being Scale: The scale developed by Diener et al. (2009) consists of one dimension and 8 items. Telef conducted validity and reliability assessments after the scale was translated into Turkish (2013).

Innovative Work Behavior Scale: Scott and Bruce's (1994) one-dimensional, six-item "innovative work behavior scale" was employed. In addition, the internal consistency and structural validity of the scale were also provided in the study of Çalışkan, Akkoç, and Turunç (2019).

4. DATA ANALYSIS

The statistical software packages SPSS and AMOS were used to evaluate the data gathered for the study.

4.1. Findings

The study included 279 employees. Of the participants, 49.5% were female and 48.7% were married. Of the participants, 24.4% were associate degree graduates and 7.9% were bachelor's degree graduates. To test the statistical relationship between the variables in the study, correlation analysis was performed. Statistics and correlations were examined with respect to the descriptive data of the variables considered for the study.

Table 1. Descriptive Statistics, Internal Consistency and Correlation Values

	Mean	Std.Dev.	1	2	3
1.HL	3.75	.840	**(.936)**		
2.PWB	4.63	.509	.566**	**(.842)**	
3.IWB	4.12	.909	.314**	.311**	**(.824)**

N=279, ***p<0.001, numbers in parentheses are Cronbach alpha values

As shown in Table 1, the internal consistency level of the scales used in this study is quite high. The numbers in parentheses are Cronbach's alpha values. The analysis results indicate a positive, significant, and strong relationship between the perception of HL and PWB. The relationship between HL and IWB is positive and significant. There is also a positive and significant relationship between PWB and IWB. Harman's single

factor test was conducted to determine whether there was a common method variance problem.

Within the scope of the Harman single factor test, the explained total variance value of (39.57%), single factor is less than 50%, indicating that there is no common method bias in the scales (Fuller, Simmering, Atinc, Atinc, & Babin, 2016, p. 2).

Table 2. Confirmatory Factor Analysis

	χ2	df	χ2/df	RMSEA	GFI	IFI	CFI	NFI
HL	71.053	26	2.733	.079	.944	.975	.975	.961
PWB	34.702	13	2669	.077	.965	.967	.967	.949
IWB	14.066	8	1.758	.052	.984	.996	.996	.992
MODAL	395.627	204	1939	.058	.900	.956	.956	.914

When the variables and model's goodness of fit are evaluated, the values fall within an acceptable range [$\chi 2/df \leq 3$; RMSEA= ≤.08; GFI=<.90; IFI=>.90; CFI=>.90; NFI=<.90] (Hu & Bentler, 1999; Kline, 2016; MacCallum, Browne, & Sugawara, 1996).

Table 3. Main Effects of HL and IWB

Independent Variables		**Dependent Variables**	Coeff	se	t	p
HL	→	IWB	.2074	.0552	3.7552	***
HL	→	PWB	.3415	.0222	15.36	***
PWB	→	IWB	.3186	.0952	3.3463	***

*** p<.001

According to the standardized path coefficients examined, HL showed a significant positive relationship with IWB (β=0.207). H1 was supported. HL predicts PWB at the level of β=0.34.H2 was supported. PWB predicts IWB at β=0.32. H3 was supported.

Table 4. Direct and indirect Effects of HL on IWB

	Effect	se	LLCI	ULCI
Total Effect HL on IWB	.3162	.0452	.2274	.4049
Direct Effect HL on IWB	.2074	.0552	.0989	.3159
Indirect Effect HL on IWB				
HL→PWB→IWB	.1088	.0418	.0281	.1923

Perception of humble leadership influences innovative work behavior directly β=0.2074, indirectly β=0.1088 and in total β=0.3162. The statistical analysis revealed that the mediation effect of psychological well-being was statistically significant, as shown in Table 4 (g=.1088, SE=.0418,95% CI [.0281, .1923].H4 was supported. In this sense, the enhancing role of PWB was observed in the impact of HL on IWB. Because the relationship between HL and IWB continues even when the mediator variable (PWB) is removed, it is determined that there is partial mediation.

5. CONCLUSION AND DISCUSSION

The results of the study have concluded that HL, PWB, and IWB have a positive, statistically significant relationship. It was concluded that IWB and HL exhibited a strong positive relationship. This finding is also supported by (Ali et al., 2020; Hassan, Suki, Akhtar, Khan, & Hassan, 2022; Özkan et al., 2022). It was also found that HL has a positive impact on PWB.This finding is also supported by (Özkan et al., 2022; Zhang & Song, 2020) studies. The results of this study indicated a positive relationship between PWB and IWB. This finding is also supported by (Koroglu & Ozmen, 2022; Masyhuri, Pardiman, & Siswanto, 2021).

The mediating function of PWB is significant in the relationship between HL and IWB.The study findings also revealed that PWB had a partial impact. This finding is also

supported by (Özkan et al., 2022) study. Humble leaders welcome ideas, recommendations, and contributions to build good connections and provide workers with greater emotional and psychological resources (Ding & Yu, 2020).The fact that this research was conducted only in a specific region and among leather companies constitutes the most significant shortcoming of the study, as it obstructs the conclusion of broad conclusions derived from the findings.The issue of common method variance remained a source of concern in this research because it was constrained by the location of data collection; therefore, it was necessary to assess the variables simultaneously and from the same sources.One such limitation is the inadequate exploration of the antecedents and successors of humble leadership within the existing body of scholarly research. Longitudinal studies are recommended for further research.

REFERENCES

Aghighi, Alireza, & Manteghi, Hanieeh. (2020). Relationship between humble leadership and employee innovation behavior in public libraries in hamadan province: explaining the mediating role of positive psychological capital. *Journal of Studies in Library and Information Science*, *12*(4), 25-40.

Ali, Mudassar, Zhang, Li, Shah, Syed Jamal, Khan, Salim, & Shah, Adnan Muhammad. (2020). Impact of humble leadership on project success: the mediating role of psychological empowerment and innovative work behavior. *Leadership & Organization Development Journal*, *41*(3), 349-367.

Bandura, Albert. (1969). Social-learning theory of identificatory processes. *Handbook of socialization theory and research*, *213*, 262.

Bhattacharya, Oindrila, Chatterjee, Amita, & Basu, Jayanti. (2017). Humility: An emerging construct in moral psychology. *Psychological Studies, 62*, 1-11.

Burke, C Shawn, Stagl, Kevin C, Salas, Eduardo, Pierce, Linda, & Kendall, Dana. (2006). Understanding team adaptation: a conceptual analysis and model. *Journal of applied psychology, 91*(6), 1189.

Carmeli, Abraham, & Schaubroeck, John. (2007). The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly, 18*(1), 35-48.

Chancellor, Joseph, & Lyubomirsky, Sonja. (2013). Humble beginnings: Current trends, state perspectives, and hallmarks of humility. *Social and Personality Psychology Compass, 7*(11), 819-833.

Conway, Anne M, Tugade, Michele M, Catalino, Lahnna I, & Fredrickson, Barbara L. (2013). The broaden-and-build theory of positive emotions: Form, function and mechanisms. *The Oxford handbook of happiness*, 17-34.

Criddle, E. (2006). Financial literacy: goals and values, not just numbers. *Alliance34, 4*.

Çalışkan, Abdullah, Akkoç, İrfan, & Turunç, Ömer. (2019). Yenilikçi Davranış: Bir Ölçek Uyarlama Çalışması. *Uluslararası İktisadi ve İdari Bilimler Dergisi, 5*(1), 94-111.

Daft, Richard L. (2014). *The leadership experience*: Cengage Learning.

Diener, Ed, Wirtz, Derrick, Biswas-Diener, Robert, Tov, William, Kim-Prieto, Chu, Choi, Dong-won, & Oishi, Shigehiro. (2009). New measures of well-being. *Assessing well-being: The collected works of Ed Diener*, 247-266.

Ding, He, & Yu, Enhai. (2020). Follower strengths-based leadership and follower innovative behavior: The roles of core self-evaluations and psychological well-being. *Revista de Psicología del Trabajo y de las Organizaciones, 36*(2), 103-110.

Fredrickson, Barbara L. (1998). What good are positive emotions? *Review of general psychology, 2*(3), 300-319.

Fuller, Christie M, Simmering, Marcia J, Atinc, Guclu, Atinc, Yasemin, & Babin, Barry J. (2016). Common methods variance detection in business research. *Journal of business research, 69*(8), 3192-3198.

Hassan, Shahzad, Suki, Norazah Mohd, Akhtar, Maria, Khan, Khan Zaman, & Hassan, Naveed. (2022). What Is The Role Of Humble Leadership In Shaping Customer Citizenship Behavior And Employee Innovative Work Behavior? Evidence From Service Sector. *Bulletin of Business and Economics (BBE), 11*(2), 235-243.

Hefferon, Kate, & Boniwell, Ilona. (2014). *Pozitif psikoloji: Kuram, araştırma ve uygulamalar*: Nobel yayınları.

Hennessey, B.A., & Amabile, T.M. (2010). Creativity. *Annual Review of Psychology, 61*(1).

Hu, Li-tze, & Bentler, Peter M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal, 6*(1), 1-55.

Isen, Alice M. (1987). Positive affect, cognitive processes, and social behavior. In *Advances in experimental social psychology* (Vol. 20, pp. 203-253): Elsevier.

Kerse, Gökhan, Koçak, Daimi, & Özdemir, Şefik. (2020). Mütevazı liderlik ölçeğinin Türkçe uyarlaması ve

mütevazı liderliğin seslilik davranışına etkisi: Kuşak farklılığının düzenleyici rolü.

Kline, RB. (2016). Principles and Practice of Structural Equation Modelling, 4th edn. New York. *NY: The Guilford Press.[Google Scholar]*.

Koroglu, Şennur, & Ozmen, Omur. (2022). The mediating effect of work engagement on innovative work behavior and the role of psychological well-being in the job demands–resources (JD-R) model. *Asia-Pacific Journal of Business Administration, 14*(1), 124-144.

Li, Jie, Liang, Qiao Zhuan, & Zhang, Zhen Zhen. (2016). The effect of humble leader behavior, leader expertise, and organizational identification on employee turnover intention. *Journal of Applied Business Research (JABR), 32*(4), 1145-1156.

MacCallum, Robert C, Browne, Michael W, & Sugawara, Hazuki M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods, 1*(2), 130.

Masyhuri, Masyhuri, Pardiman, Pardiman, & Siswanto, Siswanto. (2021). The effect of workplace spirituality, perceived organizational support, and innovative work behavior: the mediating role of psychological well-being. *Journal of Economics, Business, & Accountancy Ventura, 24*(1), 63-77.

Morris, J Andrew, Brotheridge, Céleste M, & Urbanski, John C. (2005). Bringing humility to leadership: Antecedents and consequences of leader humility. *Human relations, 58*(10), 1323-1350.

Nielsen, Rob, Marrone, Jennifer A, & Slay, Holly S. (2010). A new look at humility: Exploring the humility concept and

its role in socialized charismatic leadership. *Journal of Leadership & Organizational Studies, 17*(1), 33-43.

Ou, Amy Y, Tsui, Anne S, Kinicki, Angelo J, Waldman, David A, Xiao, Zhixing, & Song, Lynda Jiwen. (2014). Humble chief executive officers' connections to top management team integration and middle managers' responses. *Administrative science quarterly, 59*(1), 34-72.

Owens, Bradley P, & Hekman, David R. (2012). Modeling how to grow: An inductive examination of humble leader behaviors, contingencies, and outcomes. *Academy of Management journal, 55*(4), 787-818.

Owens, Bradley P, & Hekman, David R. (2016). How does leader humility influence team performance? Exploring the mechanisms of contagion and collective promotion focus. *Academy of Management journal, 59*(3), 1088-1111.

Owens, Bradley P, Johnson, Michael D, & Mitchell, Terence R. (2013). Expressed humility in organizations: Implications for performance, teams, and leadership. *Organization Science, 24*(5), 1517-1538.

Owens, Bradley P, Rowatt, Wade C, & Wilkins, Alan L. (2011). Exploring the relevance and implications of humility in organizations.

Owens, Bradley P, Wallace, Angela S, & Waldman, David A. (2015). Leader narcissism and follower outcomes: The counterbalancing effect of leader humility. *Journal of applied psychology, 100*(4), 1203.

Özkan, Sema ALİMOĞLU, Ardıç, Kadir, & Özsoy, Emrah. (2022). Mütevazı Liderliğin Yenilikçi İş Davranışına Etkisinde Psikolojik İyi Oluşun Rolü. *MANAS Sosyal Araştırmalar Dergisi, 11*(3), 1179-1191.

Rego, Arménio, Owens, Bradley, Leal, Susana, Melo, Ana I, e Cunha, Miguel Pina, Gonçalves, Lurdes, & Ribeiro, Paula. (2017). How leader humility helps teams to be humbler, psychologically stronger, and more effective: A moderated mediation model. *The Leadership Quarterly, 28*(5), 639-658.

Ren, Feifei, & Zhang, Jinghuan. (2015). Job stressors, organizational innovation climate, and employees' innovative behavior. *Creativity Research Journal, 27*(1), 16-23.

Ryff, Carol D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology, 57*(6), 1069.

Ryff, Carol D. (1995). Psychological well-being in adult life. *Current directions in psychological science, 4*(4), 99-104.

Ryff, Carol D. (2013). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and psychosomatics, 83*(1), 10-28.

Ryff, Carol D, & Singer, Burton H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *Journal of happiness studies, 9*, 13-39.

Scott, Susanne G, & Bruce, Reginald A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management journal, 37*(3), 580-607.

Shin, Shung J, Kim, Tae-Yeol, Lee, Jeong-Yeon, & Bian, Lin. (2012). Cognitive team diversity and individual team member creativity: A cross-level interaction. *Academy of Management journal, 55*(1), 197-212.

Standish, N Graham. (2007). *Humble Leadership: Being Radically Open to God's Guidance and Grace*: Rowman & Littlefield.

Tangney, June Price. (2000). Humility: Theoretical perspectives, empirical findings and directions for future research. *Journal of Social and Clinical Psychology, 19*(1), 70-82.

Telef, Bülent Baki. (2013). Psikolojik iyi oluş ölçeği: Türkçeye uyarlama, geçerlik ve güvenirlik çalışması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 28*(28-3), 374-384.

Vera, Dusya, & Rodriguez-Lopez, Antonio. (2004). Strategic virtues:: humility as a source of competitive advantage. *Organizational dynamics, 33*(4), 393-408.

Wang, Yanfei, Liu, Jieqiong, & Zhu, Yu. (2018). How does humble leadership promote follower creativity? The roles of psychological capital and growth need strength. *Leadership & Organization Development Journal, 39*(4), 507-521.

Wang, Zhining, Meng, Lijun, & Cai, Shaohan. (2019). Servant leadership and innovative behavior: A moderated mediation. *Journal of Managerial Psychology, 34*(8), 505-518.

Zhang, Zheng, & Song, Peng. (2020). Multi-level effects of humble leadership on employees' work well-being: the roles of psychological safety and error management climate. *Frontiers in Psychology, 11*, 571840.

Zhong, Jie, Zhang, Li, Li, Ping, & Zhang, Duo Zhen. (2020). Can leader humility enhance employee wellbeing? The mediating role of employee humility. *Leadership & Organization Development Journal, 41*(1), 19-36.

Zhou, Fei, & Wu, Yenchun Jim. (2018). How humble leadership fosters employee innovation behavior: A two-way

perspective on the leader-employee interaction. *Leadership & Organization Development Journal, 39*(3), 375-387.

ARTIFICIAL INTELLIGENCE APPLICATIONS IN THE SUPPLY CHAIN MANAGEMENT

Bulut DÜLEK[1]

Reha SAYDAN[2]

Narmin ESMAIELI[3]

1. INTRODUCTION

Every product we have is the result of a process called supply chain. On the other hand, new technologies such as artificial intelligence (AI) have affected most industries. AI-powered supply chain management solutions can help organizations deal with the challenges of longer and more connected physical flows, market volatility and the environmental impact of supply chains. Artificial intelligence has the potential to change the game because of its capacity to analyze vast volumes of data, comprehend relationships, offer visibility into operations, and assist in making smarter decisions (Alavi, 2022).

Modern supply chains can be made more efficient, more cost-effective, and more decision-making capable with artificial intelligence. Artificial intelligence (AI) is rapidly transforming the supply chain industry, creating significant improvements in efficiency, productivity and decision-making. Artificial

[1] Doç. Dr., Van Yüzüncü Yıl Üniversitesi, / İİBF/ İşletme Bölümü, bulutdulek@yyu.edu.tr, ORCID: 0000-0002-3474-7220.

[2] Prof. Dr., Van Yüzüncü Yıl Üniversitesi, / İİBF/ İşletme Bölümü, rsaydan@yyu.edu.tr, ORCID: 0000-0002-8091-9396.

[3] PhD Student, Van Yüzüncü Yıl University, nares.60420@gmail.com, ORCID: 0009-0003-1774-0785.

intelligence applications perform tasks mechanically and without human intervention, optimize processes and provide real-time insights that enable businesses to make better decisions and respond more effectively to changing market conditions (Dash et al., 2019).

In recent years, one of the logistics trends is the use of artificial intelligence technology. With a sufficient view of this technology and its benefits in the logistics industry, we can benefit from it in various cases. Although many businesses try to deny the importance of artificial intelligence, but research into this technology has shown that its use can help various companies outpace their competitors. Overall, artificial intelligence is revolutionizing the supply chain industry and providing businesses with powerful tools to increase efficiency, productivity and decision-making (Sharma et al., 2022).

Familiarity with artificial intelligence and its applications in the field of supply chain has led many professors and experts to believe that the use of modern technology can best be considered as a solution to improve the supply chain (Foster and Gardner, 2022).

For these reasons, in this article, we have discussed the role of artificial intelligence in the supply chain management to further investigate this important issue. Next, the effects of artificial intelligence applications on the supply chain were investigated and in this study it was found that the modern automation of the supply chain is not possible without artificial intelligence and many of the current issues and problems that we are facing at the global level are related to the poor management of communication with Suppliers are connected in the supply chain, and in the meantime, artificial intelligence can help to improve the management of relationships with suppliers by creating more stability and efficiency in the supply chain. It was

also found that SRM software equipped with artificial intelligence can help in selecting a supplier based on factors such as price, purchase history, sustainability, etc. From the results of this research, sustainability has been raised as one of the increasing concerns of managers in the supply chain, which can be attributed to the increase in indirect problems of an organization caused by the supply chain.

2. ARTIFICIAL INTELLIGENCE OVERVIEW

2.1.Artificial Intelligence Concept

An Oxford Dictionary definition of artificial intelligence is "the theory and development of computer systems capable of performing tasks that usually require human intelligence, such as speech recognition, visual perception, decision making, and language translation." According to Syam and Sharma (2018), artificial intelligence technology is capable of simulating cognitive functions like learning and problem-solving that are similar to those of the human mind.

Artificial intelligence's job is to process and recognize the data it has collected, after which it will carry out predetermined actions. The term "narrow artificial intelligence" refers to this type of intelligence, which is capable of carrying out tasks within a specific domain (Shanahan, 2015). General intelligence is the second kind of artificial intelligence, with a cognitive range that is nearly identical to that of the human brain. However, it may be argued that the existing capabilities of artificial intelligence are limited to specific tasks, and these activities—machine learning, deep learning, and natural language processing—are realized with the aid of three different types of technology. These tasks involve reasoning (Jarek and Mazurek, 2019).

Artificial intelligence is derived from information technology and by using the capabilities of artificial intelligence; different devices can adapt to new data and replace human tasks. Artificial intelligence also automates the process of learning, iterative discovery and recognition through data. The history of artificial intelligence dates back to 1956. In this article, an attempt has been made to refer to various examples of artificial intelligence applications in industries and work environments.

Artificial intelligence systems are designed to learn from data, identify patterns, and make decisions based on that data (Syam and Sharma, 2018). Machine learning (ML) has taken the application of artificial intelligence to a higher level than predefined rule sets. ML enables computers to learn based on existing data and by making connections between them (Shanahan, 2015). Deep learning (DL) is a higher level than ML because it does not require manual management and is based on learning algorithms (Sterne, 2017). One of the applications of ML and DL is natural language processing (NLP), which aims at speech recognition. Artificial intelligence has advanced and developed in a number of disciplines, including speech, text, and picture recognition, decision making, robots, and autonomous vehicles, thanks to the improvements made in the technologies stated above (McIlwraith et al., 2017). Voice recognition is available, for example, in smartphones (e. For example, Google Assistant is available for voice recognition on smartphones (Domingos, 2016).

Artificial intelligence systems are built to learn from data, spot trends, and draw conclusions from data. These systems, based on a combination of extensive amounts of data with fast and recurrent data, work with smart algorithms, and software to automatically learn and automatically learn from the patterns or features in the data and Improve. Most of the

examples of artificial intelligence you have heard- from chess computers to cars- relies heavily on deep learning and natural language processing (McCarthy, 2007).

2.2.History of Artificial Intelligence

But today, this technology has become very popular due to the increase in the amount of data, the existence of advanced algorithms, the improvement of the level of computing power, and the possibility of storing information in large volumes. In the 1950s, the initial research of artificial intelligence was done on problem solving and symbolic methods (Dreyfus, 2012).

The US Department of Defense developed an interest in this field in the 1960s and taught computers to mimic the fundamental ideas of human thought. As an illustration, the US Defense Advanced Research Projects Agency (DARPA) finished mapping streets in the 1970 (Canbek and Mutlu, 2016). Although in Hollywood movies and science-fiction novels, artificial intelligence is introduced in the form of humanoid robots that take control of the world, but it is clear that today, the evolved form of this technology is not so scary or intelligent. On the other hand, today artificial intelligence has advanced to such an extent that it can provide special capabilities to many industries, which we will mention in the rest of this article (McCarthy, 2007). There are tales and legends about sentient robots and machines that stretch back to the early days of artificial intelligence (AI).

Today, various examples of artificial intelligence applications can be found in many industries and work environments. The following are excerpts from the Harvard Business Review report that examines the outlook and future of artificial intelligence, in fact, to various industries, including healthcare, finance, transportation, and entertainment, which are

the result of the evolution of artificial intelligence (Pyzer-Knapp et al., 2022).

Artificial intelligence is used in medical imaging to identify and diagnose diseases such as cancer. It is also used in drug discovery to identify new drug candidates and predict their effectiveness. Artificial intelligence is used in fraud detection to identify fraudulent transactions and prevent financial crimes. These are just a few examples of how to use artificial intelligence in different fields.

2.3.Importance of Artificial Intelligence

Artificial intelligence is capable of learning, inferring, and making deft choices. One of artificial intelligence's primary benefits is its ability to accurately diagnose and forecast issues through pattern recognition and data-driven learning. Because artificial intelligence has so many uses across a wide range of industries, it has gained attention as a tool for improving problem solving (Ghahramani, 2015).

Artificial intelligence is not about automating manual tasks, it focuses on organizing repetitive tasks with computers in a reliable and tireless way. To implement this kind of theory, an artificial intelligence can perform at the level of a human or even better in areas such as memory and so on. Especially in repetitive tasks that require attention to detail, AI tools perform tasks faster and with relatively fewer errors. Existing products gain intelligence from artificial intelligence. Massive volumes of data can be used to connect automation, conversational platforms, bots, and intelligent machines with other technologies to improve a variety of home and office technologies, from investment analytics to security intelligence. Through algorithms for continual learning, artificial intelligence adjusts such that programming is guided by data. Artificial intelligence finds structure and order in the data to train the algorithm so that

the algorithm becomes a classification or prediction, and these models adapt as new data is received. So diffusion is an artificial intelligence technique that allows the model to adapt when the answer isn't quite right, through training and additional data (Burgess, 2017).

In order to provide artificial intelligence, more and deeper data is analyzed using neural networks with numerous hidden layers. By employing more data, the solutions are essentially hidden from view (Suhel et al., 2020). Today, the role of data is more important than ever, and this issue has become the basis for creating a competitive advantage. For example, in entertainment, artificial intelligence is used in video games to create intelligent and adaptive game characters (Gao et al., 2022).

3. SUPPLY CHAIN MANAGEMENT

Supply chain management includes controlling demand and supply, obtaining raw materials, assembling and producing goods, storing them, keeping track of inventories, fulfilling orders, and delivering goods to clients, among other tasks. It encompasses the information systems needed to support all of these activities in addition to the activities themselves (Yüksel, 2004: 144). The network of interconnected organizations that work jointly and cooperatively in controlling and managing the flow of materials and information from suppliers to users is called supply chain (Handfield et al, 1999: 2).

Supply chain can be defined as the whole of the activities carried out in a way that can provide much higher added value to the products and services produced in the ongoing process from the raw material source to the end customers (Vrijhoef and Koskela, 2000: 170). As you may be aware, the supply chain is a network that links a variety of operations, such as purchasing,

production, marketing, and sales. Integrated planning helps businesses balance these operations and maximize revenue (Lummus and Vokurka, 1999). In many organizations, supply chain management is focused on dynamically optimizing global enterprise value rather than simply improving internal operations (Teuteberg AND Wittstruck, 2010). But companies have to deal with other challenges as well (Lambert & Cooper, 2000):

- Forecasting demand in different geographical areas
- Dynamic identification of trade-offs, with hundreds or thousands of related variables and countless technical constraints
- Integration of artificial intelligence solutions (such as process optimization, predictive maintenance) to manage the broader value chain
- Ensure that programs are implemented and can adapt to the effects of sudden changes (such as demand shocks, production stoppages, and transportation disruptions) in a timely and appropriate manner

Supply chain management covers the management of materials/supply starting from the basic raw material supply of the finished product. Supply chain management focuses on how businesses can use their capabilities and technologies in their suppliers' processes to improve their competitive advantages. Supply chain management is a management philosophy that is an extension of traditional in-house activities by bringing together commercial partners for the common purpose of optimization and efficiency (Tan, 2001).

In recent years, supply chain management has become significantly more challenging, and artificial intelligence (AI)-based supply chain management solutions are expected to be a

powerful tool to help organizations meet these challenges. In other words, an integrated approach can address the opportunities and limitations of all functions and functions of a business, from buying to selling**.** Artificial intelligence (AI) has the potential to change the game because of its capacity to analyze vast volumes of data, comprehend relationships, offer visibility into operations, and assist in making better decisions. But with all these descriptions, companies should take organized steps towards the full exploitation of artificial intelligence and not just be satisfied with using a part of it (Stank et al., 2015).

4. ARTIFICIAL INTELLIGENCE APPLICATIONS IN THE SUPPLY CHAIN MANAGEMENT

Artificial intelligence is defined as a network of computers that can simulate the human mind and make decisions instead of humans in different situations and approaches (Bunker, 2018). Because AI-based solutions can help organizations maximize their performance and achieve more, an all-encompassing and multifaceted AI solution for the supply chain can help businesses stay agile, accelerate response times, improve decision-making, and optimize operations to drive stability and resilience (Sheng et al., 2021).

Supply chain resilience can be improved by artificial intelligence through the development of skills related to visibility, risk, sourcing, and distribution. Artificial intelligence can help organizations achieve next-level performance in supply-chain management. Purchasing and supply chain companies should make enterprise data and generative artificial intelligence tool investments as a strategic objective. By using artificial intelligence, organizations can identify weaknesses in their supply chain and allocate resources accordingly.

Businesses can use artificial intelligence (AI) to help them create the best products possible by using it to quickly identify customer expectations, gauge the market, look into various failure modes, optimize internal and external supply chains, and foster a more creative workforce by automating repetitive tasks (Modgil et al., 2022).

In today's world, customers want a supply chain that provides them with personalized and reliable solutions. Currently, artificial intelligence has provided a system for companies to identify the profile of each customer and offer them personalized products without compromising the security of people and violating their privacy (Sharma et al., 2022).

4.1.A Comprehensive and Multifaceted Solution of Artificial Intelligence in The Supply Chain

There are artificial intelligence technologies available to help firms improve their supply chain management performance. These solutions have a variety of features: demand forecasting models, transparency throughout the supply chain, integrated business planning, dynamic planning optimization, and physical flow automation, all based on prediction models and correlation analysis models for A better understanding of the reasons and impacts in the supply chains are among these features (Stank et al., 2015).

Successful implementation of artificial intelligence - based supply chain management allows the technology to improve its logistics costs 15 %, 35 % inventory level and 65 % service level compared to their competitors (Helo et al., 2022). Organizations can establish a stronger, more flexible supply chain and optimize their performance with the use of artificial intelligence-based solutions. The following will focus on the potential effects and applications that this technology can have in the supply chain (Dauvergne, 2022):

Production Algorithms: These patterns with AI can have a much wider view of the supply chain and allow supply chain managers to provide shipping and delivery options based on real -time traffic patterns, weather and weather conditions Optimize other items.

Inventory Management: Inventory Management Systems can monitor the level of real -time, identify possible or surplus deficiencies, and propose re -filling strategies. This helps jobs to maintain optimal inventory levels, reduce shipping costs, and improve customer satisfaction.

Procurement Optimization: Artificial intelligence algorithms can optimize transport routes, shipping and fleet management plans to reduce costs, improve delivery time, and minimize environmental impacts. By analyzing traffic patterns, weather conditions and driver behavior, artificial intelligence can dynamically adjust paths and programs to ensure efficient and timely delivery.

Risk Reduction: Artificial intelligence can analyze large amounts of data to identify potential disorders in the supply chain, such as natural disasters, geopolitical events, or supply disorders.

Supplier Management: Artificial intelligence can analyze supply performance data, identify potential risks, and optimize supply selection and evaluation processes. This helps jobs to maintain a reliable and affordable supply chain network. This helps prevent unexpected failure, reduce maintenance costs, and improve overall equipment effectiveness (OEE). This increases efficiency, reduces labor costs, and increases safety in the workplace.

So it can be found that artificial intelligence can help organizations get the next level of performance in the supply chain management. Its multilateral programs can convert any

aspect of the supply chain, from demand and inventory management, into logistics optimization and risk reduction. This enables jobs to optimize the level of production, prevent excessive stock trading, and make their marketing strategies more effectively.

4.2.The Impact of Artificial Intelligence on Supply Chain Automation

Modern supply chain automation is not possible without artificial intelligence. Artificial Intelligence of Supply Chain Automation Technologies, such as digital workers, warehouse robots, vehicles, robotic process automation (RPA), etc. through the supply chain, the following can be automated (Min, 2010):

Office Automation: Things like processing document can be automated thanks to smart automation or digital workers who combine artificial intelligence with the party.

Procurement Automation: Effective supply chain procurement can also be achieved through artificial intelligence and automation.

Warehouse Automation: By using automated warehouse management, they contribute to an increase in safety, production, and output.

Automatic Quality Control: CVs equipped with artificial intelligence can help automatically check the quality of the products.

In general, companies that lead their supply chain to digitalization, flexibility, and stability, while changing costs, create a powerful source of competitive innovation and advantage.

Artificial intelligence plays an important role in supply chain automation by increasing transparency and accelerating decision -making processes. It can also be said that the impact of

artificial intelligence on supply chain management performance can also change the supply chain industry by improving the supplier communication management, increasing transparency and accelerating decision -making processes. Artificial intelligence can provide a complete view of the supply chain by integrating data from various sources such as sensors, GPS and IoT devices. This allows jobs to identify the bottlenecks, manage the disorders preventively, and make data decisions for the supply chain optimization (Richter et al., 2022). Using artificial intelligence in supplier management quality control, companies can automatically perform manual and time consuming tasks, improve accuracy, efficiency and stability, and achieve greener warehouse processes.

4.3.The Impact of Artificial Intelligence on Supply Chain Forecasts

The winner of the supply chain manager is the ability to predict the future in terms of demand, market trend, and so on. Although there is nothing like an error -free prediction, using machine learning helps managers and leaders to make more accurate predictions. For example, in the prediction of inventory, artificial intelligence-based tools can help determine the optimal inventory by analyzing data and the process of historical supply and demand.

In regional forecasts, a supply chain with artificial intelligence power can provide accurate regional demand to help job leaders in better decisions. Using the specific parameters of the region, artificial intelligence -based prediction tools can help customize processes based on the needs of the region. Therefore, artificial intelligence -based prediction tools can help control the impact of demand fluctuations and supply by using data collected from customers, suppliers, manufacturers and distributors (Agrawal et al., 2019).

4.4.The Impact of Artificial Intelligence on Improving Supplier Relationship Management

We are currently facing several challenges in global supply chains, many of which may be traced back to inadequate supplier relationship management. By increasing the efficiency and consistency of the supply chain, artificial intelligence can aid in the improvement of supplier relationship management (SRM).

- Improvement in the supply selection process: SRM software equipped with artificial intelligence can help the supplier's choice based on factors such as pricing, purchase date, stability, etc.

- Improvement of supplier communication: Artificial intelligence -based tools can help automate supplier routine communications, such as invoice sharing and payment reminder. For example, in some cases, when payment delays occur to sellers, they also delay the delivery of their services or products and delay the supply chain.

5. CONCLUSION

The increasing competitiveness of the current world has given new environmental characteristics to industries and businesses, and every day we see new productions in factories, and management methods are changing rapidly accordingly. In this way, the integrity and importance of this issue shows itself more. This is how small and large businesses have concluded that they cannot achieve a specific result except by creating an integrated structure in the use of all production processes. In the meantime, the combination of artificial intelligence in logistics is one of the innovations that has improved and increased the efficiency of the supply chain and supply chain management as

a factor for integrating the proper management of the flow of materials and goods, information, liquidity transfer and the ability to respond in different situations. can be Also, logistics management has also assigned an effective role in this chain in way that it is responsible for the design, implementation methods, control, and increasing efficiency in the processes related to the storage of goods and production flows (Abbasimehr et al., 2020).

As any functional product is the result of the supply chain process, technologies such as artificial intelligence and machine learning with their significant effects on this field have led to fundamental changes in product production and the development of artificial intelligence. The most important developments in this field are focused on how to analyze data and predict demand, improve logistics and transportation routes, and identify inefficient points in the supply chain to be used to improve response to changes in demand, reduce time, and reduce costs. Artificial intelligence (AI) has been playing an increasingly important role in supply chain management. AI-based solutions can help organizations maximize their performance and achieve a more robust, agile, and resilient supply chain (Toorajipour et al., 2021). In examining the impact of artificial intelligence on supply chain management, we found that digitization and artificial intelligence create transparency and increase the speed of decision-making. Thus, in many organizations, supply chain management focuses on the dynamic optimization of global enterprise value rather than simply improving local and internal operations. Therefore, in the continuation of the review, we have come to the point that modern supply chain automation is not possible without artificial intelligence, and through the supply chain, many tasks can be automated. It should be noted that many of the current issues and problems that we face in the global supply chain are

related to the poor management of relationships with suppliers, and one of the effects of artificial intelligence is to improve this relationship and also to improve sustainability. Therefore, it is strongly advised to apply artificial intelligence techniques for huge data processing. The optimization and enhancement of network orchestration can be accomplished more efficiently by artificial intelligence than by humans. An essential component of artificial intelligence's broad use is the development of computer chip technology. Finally, it is important to bring up the topic of artificial intelligence and supply planning. This technology enables companies to dynamically adjust the parameters and flow of their supply plans by analyzing demand in real time.

Additionally, we found that the network-based nature of logistics provides a natural framework for implementing artificial intelligence. For instance, a network of suppliers produces a lot of data and necessitates quick decision-making. Big data analysis using artificial intelligence techniques is therefore strongly advised. Because AI facilitates the optimization and improvement of network orchestration in an efficient manner, something that humans cannot achieve. Thus, studies on interactive decision-making systems provide a better comprehension of artificial intelligence (AI) solutions and thereby validate their utility. Through the use of such technologies, artificial intelligence (AI) will assist industry in redefining how things are done by transforming operations from reactive to proactive, procedures from manual to automated, services from standardized to personalized, and production planning from predictive to defined. A key component of artificial intelligence's broad application is the development of computer chips. Since logistics is related to transportation, the use of computer chips for tracking is a vital step. Research into these processes is crucial to the success of these technologies

since tracking generates vast amounts of data that may be studied and interpreted for a variety of purposes. The return on investment is a crucial component of marketing. Customer support requests can be automated very effectively with the help of these virtual assistants, as they are designed to facilitate more in-depth talks with clients.

Lastly, it's important to remember that AI-powered supply planning enables companies to dynamically adjust the parameters for flow planning and supply chain optimization by analyzing demand in real-time.

REFERENCES

Abbasimehr, H., Shabani, M., & Yousefi, M. (2020). An optimized model using LSTM network for demand forecasting. *Computers & Industrial Engineering*, *143*, 106435.

Agrawal, A., Gans, J. S., & Goldfarb, A. (2019). Exploring the impact of artificial intelligence: Prediction versus judgment. *Information Economics and Policy*, *47*, 1-6.

Alavi, S. M. (2022). Bioeconomy: a new economic paradigm in the era of global challenges and complexities. *Iranian Journal of Biology*, *6*(11), 1-25.

Bunker, S. (2018). Artificial Intelligence: Building Smarter Machines. *Children's Book and Media Review*: 39 (5).

Burgess, A. (2017). *The Executive Guide to Artificial Intelligence: How to identify and implement applications for AI in your organization*: Springer.

Canbek, N. G., & Mutlu, M. E. (2016). On the track of artificial intelligence: Learning with intelligent personal assistants. *Journal of Human Sciences*, *13*(1), 592-601.

Dash, R., McMurtrey, M., Rebman, C., & Kar, U. K. (2019). Application of artificial intelligence in automation of supply chain management. *Journal of Strategic Innovation and Sustainability*, *14*(3), 43-53.

Dauvergne, P. (2022). Is artificial intelligence greening global supply chains? Exposing the political economy of environmental costs. *Review of International Political Economy*, *29*(3), 696-718.

Domingos, P. (2016). *Naczelny Algorytm: Jak jego odkrycie zmieni nasz świat*: Wydawnictwo Helion.

Dreyfus, H. L. (2012). Making a mind versus modeling the brain: Artificial intelligence back at a branchpoint. In *Machine Intelligence* (pp. 191-220). Routledge.

Foster, S. T., & Gardner, J. W. (2022). *Managing quality: Integrating the supply chain*: John Wiley & Sons.

Gao, C., Min, X., Fang, M., Tao, T., Zheng, X., Liu, Y., ... & Huang, Z. (2022). Innovative materials science via machine learning. *Advanced Functional Materials*, *32*(1), 2108044.

Ghahramani, Z. (2015). Probabilistic machine learning and artificial intelligence. *Nature*, *521*(7553), 452-459.

Handfield R.B., Nichols E.L. (1999). *Introduction to Supply Chain Management,* Prentice Hall.

Helo, P., & Hao, Y. (2022). Artificial intelligence in operations management and supply chain management: An exploratory case study. *Production Planning & Control*, *33*(16), 1573-1590.

Jarek, K., & Mazurek, G. (2019). Marketing and Artificial Intelligence. *Central European Business Review*, *8*(2).

Lambert, D. M., & Cooper, M. C. (2000). Issues in supply chain management. *Industrial marketing management*, *29*(1), 65-83.

Lummus, R. R., & Vokurka, R. J. (1999). Defining supply chain management: a historical perspective and practical guidelines. *Industrial management & data systems*, *99*(1), 11-17.

McCarthy, J. (2007). From here to human-level AI. *Artificial Intelligence*, *171*(18), 1174-1182.

McIlwraith, D. G., Babenko, D., & Marmanis, H. (2017). *Inteligentna sieć: algorytmy przyszłości*: Wydawnictwo Helion.

Min, H. (2010). Artificial intelligence in supply chain management: theory and applications. *International Journal of Logistics: Research and Applications*, *13*(1), 13-39.

Modgil, S., Singh, R. K., & Hannibal, C. (2022). Artificial intelligence for supply chain resilience: learning from Covid-19. *The International Journal of Logistics Management*, *33*(4), 1246-1268.

Pyzer-Knapp, E. O., Pitera, J. W., Staar, P. W., Takeda, S., Laino, T., Sanders, D. P., ... & Curioni, A. (2022). Accelerating materials discovery using artificial intelligence, high performance computing and robotics. *npj Computational Materials*, *8*(1), 84.

Richter, L., Lehna, M., Marchand, S., Scholz, C., Dreher, A., Klaiber, S., & Lenk, S. (2022). Artificial intelligence for electricity supply chain automation. *Renewable and Sustainable Energy Reviews*, *163*, 112459.

Sharma, R., Shishodia, A., Gunasekaran, A., Min, H., & Munim, Z. H. (2022). The role of artificial intelligence in supply

chain management: mapping the territory. *International Journal of Production Research*, *60*(24), 7527-7550.

Shanahan, M. (2015). The Technology Singularity. In: MIT Press.

Sheng, J., Amankwah-Amoah, J., Khan, Z., & Wang, X. (2021). COVID-19 pandemic in the new era of big data analytics: Methodological innovations and future research directions. *British Journal of Management*, *32*(4), 1164-1183.

Stank, T., Autry, C., Daugherty, P., & Closs, D. (2015). Reimagining the 10 megatrends that will revolutionize supply chain logistics. *Transportation Journal*, *54*(1), 7-32.

Sterne, J. (2017). *Artificial intelligence for marketing: practical applications*: John Wiley & Sons

Suhel, S. F., Shukla, V. K., Vyas, S., & Mishra, V. P. (2020). Conversation to automation in banking through chatbot using artificial machine intelligence language. In *2020 8th international conference on reliability, infocom technologies and optimization (trends and future directions)(ICRITO)* (pp. 611-618). IEEE.

Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. *Industrial marketing management*, *69*, 135-146.

Tan, K. C. (2001). A framework of supply chain management literature. *European Journal of Purchasing & Supply Management*, *7*(1), 39-48.

Teuteberg, F., & Wittstruck, D. (2010). A systematic review of sustainable supply chain management. In *Multikonferenz Wirtschaftsinformatik* (p. 203).

Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P., & Fischl, M. (2021). Artificial intelligence in supply chain management: A systematic literature review. *Journal of Business Research*, *122*, 502-517.

Vrijhoef, R. & Koskela, L. (2000), The four roles of supply chain management in construction, *European Journal of Purchasing & Supply Management*, Number. 6 (3-4): 169-178.

Yüksel H. (2004). Tedarik Zincirleri İçin Performans Ölçüm Sistemlerinin Tasarımı, *Yönetim ve Ekonomi*, 143-154.

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The impact of artificial intelligence and blockchain on the accounting profession. *Ieee Access*, *8*, 110461-110477.

SUSTAINABILITY AND SECURITY: EXAMINING THE RELATIONSHIP BETWEEN GREEN TECHNOLOGY AND MILITARY EXPENDITURES IN TÜRKİYE[1]

Dilek ÇİL[2]

1. INTRODUCTION

The increase in natural disasters caused by global warming increases problems that threaten human life, such as problems of access to clean water resources, decreases in agricultural productivity, and decreases in air quality. The management of these problems is one of the most important issues to be solved. Thus, it is concluded that the implementation costs to prevent environmental problems are more sustainable than the socio-economic damages. In this context, it is seen that efforts to develop technology for environmentally friendly activities have accelerated in policies aimed at improving environmental quality.

Today's world meets its energy needs largely through the use of fossil fuels. Fossil fuel use increases the amount of CO_2 emitted into the atmosphere. The increase in CO_2 is one of the most important factors contributing to global warming and environmental pollution (Akpan and Akpan, 2012; Florides and Christodoulides, 2008; Kabir et al., 2023).

---

[1] This study is an improved version of the abstract presented at the SABEM Conference held in Poland on November 24-25, 2023.

[2] Assoc. Prof. Dr., Trabzon University, Vocational School of Tourism and Hospitality, Trabzon, Türkiye, dilekcil@trabzon.edu.tr, ORCID: 0000-0002-8242-1970.

In 2018, the Intergovernmental Panel on Climate Change (IPCC) announced its first report on the need to limit the global temperature increase to 1.5 °C in the first instance. The report emphasizes the requirement to progressively reduce global emissions. It is stated in this report that the negative consequences of climate change can be managed by reducing emissions to 0% by 2050. In order to achieve this goal, the necessity of meeting the energy demand from renewable resources to a large extent is among the steps to be taken in order to reduce emissions.

The subject of green technology is technological studies applied to improve the quality of the environment. Examples of projects in this field include renewable energy generation, the development of environmentally friendly practices in production processes, waste management, solutions developed to achieve clean air and water resources, and projects for the efficient use of resources. Therefore, green technology studies are particularly focused on new searches for renewable energy sources that do not harm the environment and efforts to advance existing green technologies. These projects, which include steps to ensure the sustainability of natural resources and the continuation of healthy and equal living conditions for all living beings on the planet, form the basis of progress in this field.

Sectors in the economy demand energy to sustain their activities. The majority of energy demand is met by fossil fuels, which negatively affect environmental quality. Therefore, looking at planning for the negative environmental impacts of climate change at the sectoral level can contribute to progress in this area. This is because these negative impacts bring about an inevitable transformation towards the use of environmentally friendly energy. On the other hand, it is seen that countries are not interested in environmental planning since the environmental impacts of their defense-oriented practices cannot overcome security concerns. However, the magnitude of the energy need for

military expenditures in today's world emphasizes the need to accelerate the steps to be taken in this field. Therefore, the aim of this study is to determine the relationship between green technology, which is an important means of combating environmental threats, and military expenditures, which manage the indispensable practices of national security. This is because the steps taken by countries that rank high in military expenditures in the world towards defense industry green transformation projects will necessitate the acceleration of the steps to be taken in this field in the world of the future. Therefore, the importance of green technology applications for military expenditures for Türkiye, which is a party to environmental agreements and has a very important geopolitical position in the field of defense, emerges automatically.

Military expenditures constitute an important area that causes deterioration in environmental quality as they include applications for high energy demand (Bildirici, 2017; Clark et al., 2010; Gökmenoglu et al., 2021; Pata et al., 2023). Hooks and Smith (2005) refer to the Treadmill Theory of Destruction to explain the consequences of military spending and operations on environmental change. This theory emphasizes that military activities lead to increased energy consumption and toxic wastes that harm the environment (Hooks and Smith, 2005:559). Defense activities for military expenditures are high-energy-consuming activities, from the production of military equipment to its testing and implementation. Moreover, defense activities have a continuous characteristic,regardless of peace or war periods. Studies in the literature reveal that there is a relationship between military expenditures and the environment (Bildirici, 2019; Gokmenoglu et al., 2021; Pata et al., 2023). Therefore, efforts to improve the relationship between these practices and the environment are important. At this point, the importance of

determining the relationship between green technology studies and military expenditures emerges

This is because Türkiye has made significant breakthroughs in defense expenditures, especially in recent years, with its domestic production attacks in the military field. Therefore, the importance of military expenditures for Türkiye also reveals the necessity of determining the environmental relationship with the activities in this field. In this motivated study, the literature review revealed that the relationship between military expenditures and green technology has not been investigated for Türkiye using Toda-Yamamoto causality analysis. The fact that the study will contribute to this gap in the literature reveals another importance of the study. In the second part of the study, a summary of the available studies in the literature on the subject is presented. In the third and fourth sections, the data set, econometric method, and results are presented, respectively. In the last part, the results obtained are evaluated.

2. LITERATURE REVIEW

In this part of the study, the results of the studies that examine the relationship between green technology, military expenditures, and environmental quality will be presented.

There are various studies in the literature to determine the factors affecting environmental quality. It has been determined that there are few studies examining the impact of military expenditures on environmental quality. When these studies are analyzed, it is found that they generally contain two different results. Accordingly, the majority of studies investigating the impact of military expenditures on environmental quality have revealed that they have a deteriorating effect on environmental quality (Hooks and Smith, 2005; Bildirici, 2017; Gokmenoglu et

al., 2021; Erdogan et al., 2021; Pata et al., 2023). For example, Bildirici (2019) estimated the relationship between military spending and CO_2 for G20 countries for the period 1965–2016 using the panel data method. Dumitrescu-Hurlin causality test results revealed a unidirectional causality relationship from military spending to CO_2 emissions. Türedi and Yıldız (2022) investigated the impact of military expenditure activities on environmental pollution in MENA countries for the period 1995–2018 using the two-step generalized method of moments (GMM). The results show that military expenditures have a positive effect on CO_2. Jorgenson et al. (2010) investigated the relationship between military expenditures, military participation, and CO_2 in 72 countries for the period 1970–2000 with five-year data using the panel data method. The results revealed that militarization has a positive effect on CO_2. Tarczynski et al. (2023) investigated the relationship between military expenditures and CO_2 for 47 countries in 2000–2015 using the panel data method. The GMM results show that military expenditures increase CO_2. Asogu and Ndour (2023) analyzed the relationship between military expenditures and CO_2 in Sub-Saharan Africa for the period 2010–2020 using the panel data method. GMM results revealed that military expenditures increase CO_2 for the country group in question.

In addition, there are some studies that do not reveal a relationship between military expenditures and CO_2. For example, Saba (2023) investigated the effect of military expenditures on CO_2 for South Africa for the period 1960–2019 using the time series method. The results revealed that there is no relationship between military expenditures and CO_2. Similarly, Aydın (2020) analyzed the relationship between military expenditures and environmental quality in Türkiye for the period 1961–2016 using the Fourier Toda-Yamamoto causality test. The

results indicate that there is no causal relationship between the variables.

Few studies in the literature have found that military expenditures positively affect environmental quality. For example, Solarin et al. (2018) investigated the impact of military expenditures on CO_2 in the United States for the period 1960–2015 using the time series method through various models. The findings of the study reveal that the impact of military expenditures on CO_2 is positive and negative through various models. Accordingly, military activities that consume large amounts of fossil fuels, such as ships, airplanes, and tanks, and are far from technological development, cause a decrease in environmental quality. On the other hand, it is determined that the activities that occur with the use of technology in military applications increase environmental quality. For example, developments such as the internet, microwave, and global positioning system (GPS) have led to the discovery of innovations in transportation, logistics, and the ability to work remotely. ICT investments are thus driving a shift away from traditional energy towards environmentally friendly renewable energy sources. Similarly, Ullah et al. (2021) investigated the impact of military expenditures on CO_2 for Pakistan and India for the period 1985–2018 using the NARDL method. The results revealed that the increase in military expenditures decreases CO_2. Konuk et al. (2023) estimated the effect of military expenditures on environmental pollution for G7 countries for the period 1971–2019 using the panel data method. The results revealed that military expenditures decrease CO_2.

Green technology studies include all activities carried out to improve environmental quality. Carrying out studies in many areas, from energy efficiency to diversifying and increasing environmentally friendly energy sources, constitutes their main subject. In the literature, it is observed that studies analyzing the

effects of green technology on environmental quality are mostly concentrated. Bilal et al. (2021) estimated the impact of green technology on CO_2 for One Belt, One Road (OBOR) countries for the period 1991–2019 using the panel data method. The findings revealed that green technology reduces CO_2. Lantz and Feng (2006) investigated the impact of technology on CO_2 in Canada using a province-level panel data set from 1970–2000. The results indicate that technology reduces CO_2. Similarly, Sun et al. (2008) investigated the impact of technology on CO_2 for China for the period 1986–2005 and found that technology reduces CO_2.

Demirtaş et al. (2023) investigated the impact of military spending on green investments for G-20 countries for the period 2004–2020 using the panel data method. Green investment is represented by expenditures for the transition to green energy, and military expenditures are represented by military expenditures or GDP. The findings reveal that military expenditures reduce green investments. The fact that this result is in the expected direction is seen as an indication that security concerns for countries take priority over every situation, as well as environmental sensitivity. Das and Hussain (2023) investigated the relationship between military expenditures and green capital, which is represented by the public research and development budget related to the environment, for 20 countries, including Türkiye, with the highest military expenditures for the period 1993–2018 using the time series method (Engle Granger Co-integration, Granger Causality, and Error Correction Model). The findings revealed the existence of a long-run relationship between military expenditures and green capital in the majority of countries. It is also found that military expenditures generate green capital in the long run. When the results for Türkiye, which is one of the countries analyzed, are analyzed, the existence of a long-run relationship between the variables is determined.

Granger causality test results reveal a unidirectional causality relationship from green capital to military expenditures.

Defense spending to secure national interests is one of the most important issues for every nation, without exception. Therefore, national security issues constitute one of the areas that may reduce sensitivity towards the protection of environmental quality. Moreover, the fact that military expenditures involve high energy demand in terms of size and that defense weapons are often environmentally damaging necessitates the investigation of this effect. Therefore, this study aims to draw attention to this situation. It has been found that there are few studies focusing on the relationship between green technology and military expenditures in the literature. On the other hand, there is no study investigating the relationship between military expenditures and green technology in Türkiye using the Toda Yamamoto causality test approach. Therefore, contributing to this gap in the literature reveals another importance of this study. For this purpose, the direction of the relationship between military expenditures and the number of green technology patents is investigated. As a result of the literature review conducted in this context, it has been determined that the variables in question and the subject of this study have not been analyzed in Türkiye. Therefore, this study aims to contribute to the developing literature in this field and to fill this gap in Türkiye.

3. DATA SET

In this study, the causal relationship between military expenditures and green investment in Türkiye is investigated for the period 1992–2019 with the help of Toda-Yamamoto causality analysis. The choice of the period in question was determined on the basis of data availability according to the criterion of complete longest period data availability. In this context, the variables used

in the study focusing on the relationship between green technology and military expenditures and their explanations are given in Table 1.

Table 1. Data, Explanation and Source

Variables	Defination	Source
Green Technology (GT)	Number of patents, with country fractional value	OECD
Military Expenditures (ME)	Military expenditures (% of GDP)	World Bank

The GT and ME variables in Table 1 are logarithmically transformed and included in the analysis.

4. ECONOMETRIC METHOD AND RESULTS

Toda-Yamamoto's (1995) causality analysis, which is used to determine the causality relationship between variables, is based on VAR analysis with level values regardless of the stationarity levels of the variables. Even if the variables do not have the same stationarity levels, the causal relationship between them can be determined by the MWALD test. In Toda-Yamamoto (1995) causality analysis, the optimal lag length (k) of the VAR model is first determined. Then, the maximum degree of integration (d_{max}) determined by the stationarity tests of the variables is determined. Finally, in the VAR($k+d_{max}$) system established with the level values of the variables, whether the first k lags of each variable are equal to zero as a group is investigated by the MWALT test applied, and the existence of a causal relationship is decided. Accordingly, if the coefficients are not equal to zero as a group, the H_0 hypothesis is rejected, and the existence of a causal relationship between the variables is determined (Tandoğan and Genç, 2016: 66).

The VAR ($k+d_{max}$) model estimated in the Toda-Yamamoto causality test for GT and ME variables is given in Equations (1) and (2).

$$GT_t = \gamma_0 + \sum_{i=1}^{k} \alpha_{1i} GT + \sum_{i=k+1}^{k+d_{max}} \alpha_{2i} GT_{t-i} + \sum_{i=1}^{k} \beta_{1i} ME_{t-i} + \sum_{i=k+1}^{k+d_{max}} \beta_{2i} ME_{t-i} + \varepsilon_{1t} \quad (1)$$

$$ME_t = \mu_0 + \sum_{i=1}^{k} \sigma_{1i} ME + \sum_{i=k+1}^{k+d_{max}} \sigma_{2i} ME_{t-i} + \sum_{i=1}^{k} \theta_{1i} GT_{t-i} + \sum_{i=k+1}^{k+d_{max}} \theta_{2i} GT_{t-i} + \varepsilon_{2t} \quad (2)$$

$H_0 = \beta_{1i}=0$, i=1,...,k, and $H_0 = \theta_{1i}=0$,i=1,...,k for equations (1) and (2), respectively, are tested by the MWALD test. Rejection of the H_0 hypothesis determines the causal relationship.

In order to determine the level of d_{max}, the stationarity tests of the variables are investigated with the Extended Dickey-Fuller (ADF) unit root test, and the results are presented in Table 2.

Table 2. Results of ADF Unit Root Test

Variables	Statistical Values	Constant	Constant and Trend
GT	Test statistics	-1.960 (1)	-3.417[c] (0)
	Probability Value	0.301	0.070
ME	Test statistics	-1.281 (0)	-0.888 (0)
	Probability Value	0.622	0.942
ΔME	Test statistics	-5.046[a] (0)	-5.190[a] (0)
	Probability Value	0.000	0.001

Note: a and c indicate that the coefficients are significant at 1% and 10%. The values in parentheses indicate the lag lengths and are determined by the Schwarz Infocriterion (SCI) information criterion.

As seen in Table 2, in the model with constant and trend, the GT and ME variables are stationary at level and first difference, respectively. Based on this result, $d_{max} = 1$ is determined.

Table 3. Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-21.95289	NA	0.023297	1.916232	2.013742	1.943277
1	12.28599	60.26044	0.002078	-0.502879	-0.210349	-0.421744
2	18.87885	10.54858*	0.001703	-0.710308	-0.222758*	-0.575082
3	24.27067	7.764218	**0.001554***	**-0.821654***	-0.139083	**-0.632338***

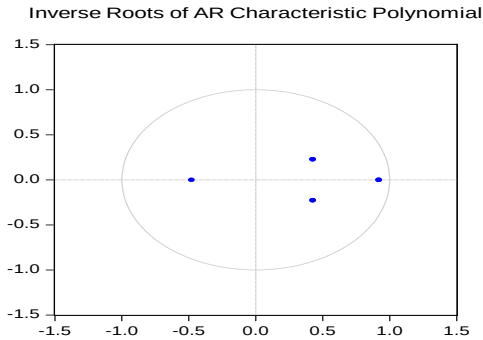
As seen in Table 3, the optimal lag length is determined as 2 according to the LR and SC information criteria and 3 according to the FPE, AIC, and HQ information criteria. The results of the diagnostic tests (autocorrelation, heteroscedasticity, and normality) for both systems are unproblematic for k = 3, which leads us to set the optimal lag length as 3. Diagnostic test results are presented in Table 4.

Table 4. Diagnostic Test Results

Autocorrelation LM Test Results		
Lag	LM Statistics	Probability Value
1	3.284437	0.5118
2	4.937038	0.2943
3	2.458761	0.652
Heteroskedasticity Tests Results	Chi-sq	Probability Value
	44.623	0.153
Doornik-Hansen Normality Test	1.597	0.206
	1.575	0.209

As can be seen from Table 4, the VAR system is free from autocorrelation, heteroscedasticity, and normality problems. Moreover, Graph 1 shows that the inverse roots of the VAR (3) system are within the unit circle, and the stability condition of the system is satisfied.

Graph 1. Inverse Roots of AR Characteristic Polynomial



Whether there is a causal relationship between GT and ME is tested through the VAR(4) model, and the results are presented in Table 5.

Table 5. Toda-Yamamoto Causality Test Results

H_0	χ^2 statistic	Probability Value	Decision
$H_0 = \beta_{1i} = \beta_{2i} = \beta_{3i} = 0$	3.458	0.484	GT **Φ** ME
$H_0 = \theta_{1i} = 0\ \theta_{2i} = \theta_{3i} = 0$	8.791	0.066	ME ➔ GT

Note: **Φ** indicates that there is no causality relationship between the variables, ➔ indicates that there is a causality relationship in the direction of the arrow.

As can be seen from Table 5, the H_0 hypothesis, which states that there is no causality from ME to GT, could not be rejected. On the other hand, the H_0 hypothesis, which states that there is no causal relationship from GT to ME, was rejected at the 10% significance level, and a unidirectional causal relationship was determined from GT to ME.

5. CONCLUSIONS AND DISCUSSIONS

In today's world, energy demand is largely supplied by fossil fuels. Fossil fuels increase the amount of CO_2, causing global warming and decreasing environmental quality. The defense-oriented military activities of countries are among the areas with high energy demand. Therefore, the importance of defense activities also emerges in projects to reduce environmental pollution for a more livable world by reducing the amount of CO_2. Green technology investments contribute to the improvement of environmental quality by reducing the amount of CO_2.

The national security activities of countries have elements of struggle against internal and external threats to protect territorial integrity and secure the vital future of their citizens. Action plans against these threats are, of course, important to ensure the security of the country. However, the high energy demand of national security practices has detrimental effects on environmental quality. Therefore, if the deteriorating effects of defense expenditure activities on the environment are not taken into account, threats to the sustainability of living conditions may endanger the continuation of the human generation from another perspective. Due to the indispensable nature of defense expenditure activities and the high demand for energy, the importance of defense activities in projects to reduce environmental pollution for a more livable world by reducing the

amount of CO_2 is also revealed. Green technology investments contribute to the improvement of environmental quality by reducing the amount of CO_2. From this point of view, the study aims to determine the causal relationship between military expenditures and green technology in Türkiye. As a matter of fact, Türkiye, which ranks high in the world in terms of military expenditures, has made progress in the field of defense industry in recent years with attacks on local production. It has managed to increase its success in this field by becoming an exporter in the production of technological products (unmanned aerial vehicles, tanks, aircraft, missiles, etc.). Therefore, the environmental impacts of defense expenditure activities in Türkiye are increasingly attracting the attention of researchers. The importance of investigating the relationship between green technology and military expenditures in Türkiye arises naturally due to technological progress.

When the studies in the literature are analyzed, it is determined that the relationship between military expenditures and green technology has not been investigated with Toda-Yamamoto causality analysis in Türkiye. Therefore, contributing to this gap in the literature reveals another importance of this study.

The relationship between military expenditures and green technology in Türkiye is investigated for the period 1992–2019 with the help of Toda-Yamamoto causality analysis. Military expenditures are represented by military expenditures (% of GDP), and green technology is represented by the number of patents with a country's fractional value. The findings reveal the existence of a unidirectional causal relationship from green technology to military expenditures. This finding is similar to that of Das and Hussain (2023).

The importance of this result is that green technology applications cause military expenditures. Therefore, this result is important in terms of revealing the necessity for policymakers to consider supportive steps in this area. In this context, regulations to create and encourage funding budgets for green technology-oriented defense activities may contribute to accelerating the results to be obtained. Moreover, the fact that policymakers are in a facilitating and guiding position by establishing standards that will facilitate the development in this field seems to increase the interest of private sector actors and researchers in this field and pave the way for defense-oriented green projects.

REFERENCES

Akpan, U. F., & Akpan, G. E. (2012). The contribution of energy consumption to climate change: a feasible policy direction. *International Journal of Energy Economics and Policy*, *2*(1), 21-33.

Asongu, S. A., & Ndour, C. T. (2023). Military Expenditure, Governance, and Environmental Degradation in Sub-Saharan Africa. *Environmental Processes*, *10*(4), 51.

Aydın, M. (2020). Askeri harcamalar, ekonomik büyüme ve çevre kirliliği arasındaki ilişki: Türkiye için yapısal kırılmalı nedensellik testinden kanıtlar. *Ekonomi Politika ve Finans Araştırmaları Dergisi*, *5*(2), 261-275.

Ben Youssef, S. (2023). The relationships between renewable energy, net energy imports, arms exports, military expenditures, and CO2 emissions in the USA. *Environmental Science and Pollution Research*, 1-13. https://doi.org/10.1007/s11356-023-27649-z

Bilal, A., Li, X., Zhu, N., Sharma, R., & Jahanger, A. (2021). Green technology innovation, globalization, and CO2

emissions: recent insights from the OBOR economies. *Sustainability*, *14*(1), 236.

Bildirici, M. E. 2017. The causal link among militarization, economic growth, CO2 emission, and energy consumption. Environmental Science and Pollution Research, 24, 4625-4636. 6 https://doi.org/10.1007/s11356-016-8158-z

Bildirici, M. (2019). CO2 emissions and militarisation in G20 countries: Panel cointegration and causality approaches. International Journal of Oil, Gas and Coal Technology, 22(1), 104-121.

Clark, B., Jorgenson, A. K., Kentor, J. 2010. Militarization and energy consumption: A test of treadmill of destruction theory in comparative perspective. International Journal of Sociology, 40(2), 23-43. https://doi.org/IJS0020-7659400202

Das, R. C., & Hussain, I. (2023). Relationships between Military Spending and Green Capital Formation: Complementary or Substitutes?. *Social Sciences*, *12*(10), 1-17.

Erdogan S, Gedikli A, Çevik Eİ, Öncü MA. Does military expenditure impact environmental sustainability in developed Mediterranean countries? Environ Sci Pollut Res Int. 2022 May;29(21):31612-31630. doi: 10.1007/s11356-021-18226-3. Epub 2022 Jan 10. PMID: 35006569.

Florides, G. A., & Christodoulides, P. (2009). Global warming and carbon dioxide through sciences. *Environment international*, *35*(2), 390-401.

Gokmenoglu, K. K., Taspinar, N., & Rahman, M. M. (2021). Military expenditure, financial development and environmental degradation in Turkey: a comparison of

CO2 emissions and ecological footprint. International Journal of Finance & Economics, 26(1), 986-997. https://doi.org/10.1002/ijfe.1831

Hooks, G., & Smith, C. L. (2005). Treadmills of production and destruction: Threats to the environment posed by militarism. *Organization & environment*, *18*(1), 19-37.

IPCC, (2018). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. et al. (eds.)]. In Press.

Jorgenson, A. K., Clark, B., & Kentor, J. (2010). Militarization and the environment: a panel study of carbon dioxide emissions and the ecological footprints of nations, 1970–2000. *Global Environmental Politics*, *10*(1), 7-29.

Kabir, M., Habiba, U. E., Khan, W., Shah, A., Rahim, S., Farooqi, Z. U. R., ... & Shafiq, M. (2023). Climate change due to increasing concentration of carbon dioxide and its impacts on environment in 21st century; A mini review. *Journal of King Saud University-Science*, 102693.

Konuk, F., Kaya, E., Akpınar, S., & Yıldız, Ş. (2023). The relationship between military expenditures, financial development and environmental pollution in G7 Countries. *Journal of the Knowledge Economy*, 1-16. https://doi.org/10.1007/s13132-023-01122-1

Pata, U. K., Destek, M. A., Manga, M., & Cengiz, O. (2023). Militarization of NATO countries sparks climate change? Investigating the moderating role of technological progress and financial development. *Journal of Cleaner*

Production, 409, 137241. https://doi.org/10.1016/j.jclepro.2023.137241

Saba, C. S. (2023). CO2 emissions-energy consumption-militarisation-growth nexus in South Africa: evidence from novel dynamic ARDL simulations. *Environmental Science and Pollution Research, 30*(7), 18123-18155.

Solarin, S. A., Al-Mulali, U., & Ozturk, I. (2018). Determinants of pollution and the role of the military sector: evidence from a maximum likelihood approach with two structural breaks in the USA. *Environmental Science and Pollution Research*, *25*, 30949-30961.

Sun, Y., Lu, Y., Wang, T., Ma, H., & He, G. (2008). Pattern of patent-based environmental technology innovation in China. *Technological Forecasting and Social Change*, *75*(7), 1032-1042.

Tandoğan, D., & Genç, M. C. (2016). Türkiye'de turizm ve ticari açıklık arasındaki ilişki: Toda ve Yamamoto nedensellik yaklaşımı. *Ekonomik ve Sosyal Araştırmalar Dergisi*, 12(1), 59-70.

Tarczynski, W., Roman, L., Rejman, K., Salahodjaev, R., & Azam, S. (2023). Military spending and CO2 emissions: Empirical findings from countries with highest per capita military spending. *Journal of International Studies*, *16*(2).

Türedi, S., & Yıldız, F. (2022). Militarizasyon MENA Ülkelerinde Çevresel Kirliliği Nasıl Etkiliyor?. *İstanbul University Journal of Sociology*, *42*(1), 217-235.

Ullah, S., Andlib, Z., Majeed, M. T., Sohail, S., & Chishti, M. Z. (2021). Asymmetric effects of militarization on economic growth and environmental degradation: fresh evidence from Pakistan and India. *Environmental Science and Pollution Research*, *28*, 9484-9497.

AN ACADEMIC PERSPECTIVE ON THE HEALTH TOURISM POTENTIAL OF TÜRKIYE: A LITERATURE REVIEW BETWEEN 2013-2023

Bilgen AKMERMER[1]

1. INTRODUCTION

Health tourism which has a massive upswing worldwide, brings great economic benefits to the host country and contributes to a significant increase in tourism revenues. Therefore, countries seeking to gain a greater share of the global tourism industry and its economic benefits, as well as the tourism industry operating in these countries, are seeking to gain a competitive advantage in the area of health tourism. Türkiye is one of the world's most popular countries for health tourism due to its quality of health services, affordable prices, geographical location and cultural richness. According to the International Health Services Cooperation [USHAŞ], 1,258,382 people received health services and the amount of income obtained was 2,119,059,000 USD. By the end of 2023, Türkiye aims to have 2 million foreign patients and more than $2.5 billion in foreign exchange from health tourism. With this growing interest in health tourism in Türkiye, significant academic research has gained a momentum. Based on this interest, the aim of this study is to examine the recent scientific studies published in the Turkish literature in the last ten years, 2013-2023. We hope that this study will help to identify the

[1] Asist. Prof., Karadeniz Technical University, Faculty of Economics and Administrative Sciences, Business Administration, bakmermer@ktu.edu.tr, ORCID: 0000-0003-4201-5254.

current state of health tourism and contribute to the future of health tourism policy in Türkiye.

As a first step, we discussed the different definitions given by the authors and the types of health tourism that have been diversified in different studies into medical, thermal, third age and disabled health tourism. In the second part, we focused on the potential of health tourism of Antalya, Nevşehir, Ordu, Diyarbakır, Erzincan, Isparta, Balıkesir, Muğla, Eskişehir, Alanya and Sivas from different perspectives. We also examined the studies that focused on the comparison of the approach to health tourism between Türkiye and other countries through different analyses. Finally, we discussed the marketing strategies and service standards of health tourism in Türkiye and the policy development of health tourism in Türkiye. All sources were included in the study without any type of restriction using the Google Scholar database in the period 2013-2023. Using content analysis, 35 sources were brought together, ranging from journal articles, book chapters, conference proceedings, and master's and doctoral theses.

2. CONCEPT OF HEALTH TOURISM

2.1. Definitions of Health Tourism

There are various definitions of health tourism in the literature. According to the report of the Health Tourism Coordination Board (SATURK) of the Ministry of Health, health tourism is defined as the visits of individuals to another country to receive both treatment and rehabilitative and health-promoting services. The World Tourism Organization (WHO) defines health tourism as a type of tourism that contributes to human mental, physical and spiritual health through health-related services. Özer and Sonğur (2013) defined health tourism as “travel that includes holiday elements as well as health services for the purpose of

improving, protecting and regaining health". Aydın and Aydın (2015) expressed health tourism as "*travels made to a different country from the place of residence to receive medical (such as surgeries, diagnosis and treatment) or non-medical services (such as healthy life and care)"*. Arsezen et al. (2015) defined health tourism as "*a planned initiative to attract tourists, where health services and facilities are developed as well as touristic features*".Based on these definitions, we can define health tourism as the movement of individuals from their country of residence to another country for the purpose of receiving high quality medical treatment and care. In this context; health tourist is defined as tourists who travel to other places to seek and receive health, medicine and/or wellness services for different reasons. However, some authors approach the development of health tourism from different perspectives. According to Korkmaz et al. (2014), wealthy individuals from developing countries visit developed countries because of the lack of accessible healthcare. Arı (2020) attributes the growing demand for health tourism to the increasing world population and the aging population in developed countries. Individuals are increasingly struggling with intense work life, stress and mental health conditions, and generally encounter expensive health services in many countries to deal with these living conditions.

2.2. Types of Health Tourism

According to the classification of the Ministry of Health of the Republic of Türkiye (2022a), health tourism is divided into four groups as medical tourism, thermal tourism, third age tourism, and disability tourism.

2.2.1. Medical Tourism

Medical Tourism is a branch of health tourism that covers the activities carried out for medical treatment and applications. Within the framework of medical tourism, modern medical

science applications are offered as a service to tourists coming to the country for medical treatment. These applications include eye, dental, orthopedics, cardiovascular diseases treatment and surgery, aesthetic and plastic surgery, infertility and IVF applications, cancer diseases treatment and organ transplantation. Individuals (as patients) in this group may wish to be treated in a country other than their own because of the high cost of their treatment, long waiting times, quality of service and the nature of the procedure to be performed. Thus, these individuals choose among alternatives the country where they can receive the necessary treatment at a lower cost and where information is easier to obtain. Therefore, these individuals will choose the country where they can get the treatment they need at a lower cost, with higher quality, and where information is easier to obtain. Thus, as medical tourism is the most comprehensive and technical area of health tourism, it is important that different institutions such as public institutions, health institutions, accommodation centers, insurance institutions and transport services work in coordination. In Türkiye, the Medical Tourism Council of Türkiye, which was established for this purpose, implements many programs to promote medical tourism, under which the state covers part of the costs of participation in international exhibitions, conferences, educational programmes and promotional tours.

2.2.2. Thermal and Wellness Tourism

Thermal tourism is a branch of health tourism in which people make use of thermal water resources from underground (Charlier and Chaineux, 2009) in order to protect themselves from diseases, to eliminate existing ailments and to increase their vitality. In this context, treatments such as climatotherapy (treatments based on the characteristics of the climate), balneotherapy (treatments based on mineral waters such as

underground waters, hot springs) and uvalism (treatments based on fruits and vegetables).

Spa-wellness tourism, evaluated in the context of thermal tourism (Aslan et. al, 2022) includes good life practices (such as yoga, detoxification, exercise, balanced diet, algae therapy, mud baths, massage, aromatherapy) and SPA (well-being from water), physical and mental well-being (skin care, massage, natural origin care services, socialization activities, etc.) are included in wellness tourism.

Several factors are contributing to the growth of thermal tourism in Türkiye. The growing interest of people in thermal treatments and the global increase in aging population has played a role in driving the demand for thermal health tourism. The high price in other countries has also contributed to Türkiye's attractiveness in thermal tourism (Selvi, 2011). Moreover, Türkiye has a significant geothermal resource potential, which is crucial for the development of thermal health tourism. Geothermal waters in Türkiye are known for their significant flow rates, considerable depths when reaching the surface, elevated temperatures and abundant mineral content. In addition, the areas where these thermal springs are located enjoy a coastal climate, pristine air quality and vast forested areas, all of which add to their overall appeal(Türksoy and Türksoy, 2010).

2.2.3. Third Age Tourism

Another branch of health tourism is third age tourism. The tourism sector is also sensitive to demographic changes, which have global implications (Nikitina and Vorontsova, 2015: 845). Therefore, with the increase in facilities and travel for the care of elderly tourists, third age tourism has also been included in the tourism sector. Moreover, market research shows that third age tourism has a growing market share. Therefore, it is an important

market segment for the tourism sector (Hacıoğlu and Şahin, 2011).

Third age tourism, which is also referred to as 3rd age tourism or elderly tourism in the literature, is a type of health tourism that includes applications that provide both mental and physical well-being to middle-aged people, treatment of diseases or care needs. Examples of services provided in this context are good living practices for healthy elderly individuals, and curative treatment, rehabilitation and care practices in case of illness. With the increase in the elderly population in the world, it is thought that the demand for advanced age tourism, which includes health protective and curative treatment and care practices, will also increase (Özcan and Aydın, 2015).

2.2.4. Disability Tourism

Disability tourism is a branch of health tourism that provides services for the maintenance of physical and mental health and the treatment of illnesses for people with disabilities or in need of rehabilitation. Disablity tourism is a very valuable market for tourism businesses, given the large number of disabled people around the world and the fact that these people tend to travel with one or more careers rather than alone (Zengin and Eryılmaz, 2013). In addition to the treatment and care applications in the related activity type, health tourism applications can also offer rest, entertainment and accommodation in addition to these applications (Bulut and Şengül, 2019; Satürk, 2020).

3. LITERATURE FOR HEALTH TOURISM POTENTIAL OF THE CITIES IN TÜRKİYE

In the last decade, many studies have been conducted to discuss the place of health tourism in Türkiye's tourism potential.

Researchers have used a range of methodologies including the analysis of specific regions, interviews with stakeholders and the application of SWOT analysis to assess the importance of health tourism. We aim to provide a comprehensive overview of these researches below that have been conducted to explore and evaluate the health tourism potential in different provinces of Türkiye.

Yalçın (2013) prepared a PhD thesis to determine the health tourism potential of Antalya province in Türkiye. He emphasized that Antalya is an ideal destination for the convergence of healthcare providers and seekers due to its robust accommodation infrastructure, convenient transportation and various private and public projects. Despite these advantages, the research results showed that Antalya has considerable potential in the areas of medical tourism, tourism for the elderly and disabled, and spa and wellness tourism. However, its potential in the area of thermal tourism was found to be comparatively lower. Kabukcuoğlu (2013) prepared a master thesis with the aim of identifying the health tourism potential of Nevşehir province and providing recommendations for improving the existing capacity. The researcher conducted interviews with 13 thermal facilities. The results showed that the province has the infrastructure to achieve a favourable position in health tourism. However, challenges related to promotion, international outreach and service presentation need to be addressed in order to fully exploit this potential and achieve prominence in health tourism. Zengin and Eryılmaz (2013) conducted a study to assess the readiness of four- and five-star hotels and holiday villages in Bodrum for the disability tourism market. The aim was to gather insights from the managers of these establishments regarding their perspectives on disability tourism. The analysis revealed a lack of awareness among hotel managers regarding the importance of this market. In addition, the study revealed that while tourism companies

generally comply with disability legislation, the existing legislation in this area falls short when compared to more developed countries.

Aydemir and Kılıç (2017) conducted a comparative assessment of third age tourism practices in Türkiye and globally. Using the archival scanning method as a qualitative research approach, they examined websites, publications of institutions and organizations, relevant news, and domestic and foreign literature. Their findings showed that such practices are mainly located in the field of social tourism in different countries. Meanwhile, Türkiye continues to make progress and progress in this particular field. Yüksel et. al (2017) assessed the existing state of health tourism in Ordu province through the lens of hospital managers. Through interviews with managers from six private and government-run hospitals in Ordu, the research brought to light several key issues. In particular, the findings highlighted challenges related to a lack of coordination between hospital managers and other stakeholders involved in health tourism initiatives. Recommendations included renovating buildings to meet tourism standards, improving the foreign language skills of hospital staff, and advocating for a greater focus on physiotherapy and rehabilitation to increase the attractiveness of Ordu Province in the health tourism sector. Akbaş et. al. (2018) conducted a study to reveal the current potential of Artvin province in terms of third age tourism, which is becoming a lucrative market for tourism companies and destinations every day, and to provide suggestions to activate this potential in line with today's tourism trends.

Bozca et al. (2019) examined the present condition of health tourism in Erzincan, considering its strengths, advantages, vulnerabilities, and shortcomings. The outcomes of these assessments led to recommendations aimed at fostering the growth and attractiveness of health tourism in Erzincan. The

findings suggest that Erzincan possesses substantial potential in the realm of health tourism, particularly in the domains of nature and thermal tourism. Kaplan et al. (2019) analyzed the health services in Isparta province based on the five-force model developed by Porter and made suggestions based on this analysis. According to research results, the most basic step for achieving competitive advantages in health services is differentiation. The researcher advised some politics under the differentiation strategies such as developing new technology surgery applications, supporting projects on new investments in health services by the means of the Development Agency and the Agricultural and Rural Development Support Institutions, and structuring of some branch hospitals in certain areas. Özgon et al. (2019) conducted a study focusing on thermal tourism in Sivas Province, Türkiye. Data was collected from 130 elderly people who had visited the thermal springs in the province of Sivas. The data collection involved the use of the Relevance Quality of Service and Thermal Health Tourism Satisfaction Scale. The results showed that elderly people who visited the spas for health reasons had higher levels of perceived service quality and thermal health tourism satisfaction. Conversely, those who visited for tourist purposes showed lower levels of satisfaction and perceived service quality.

Kılış and Sak (2021) conducted a study to identify the types of health tourism suitable for marketing in Balıkesir Province, showing its current status in health tourism. Despite having considerable capacity and potential, Balıkesir currently has a limited share in the health tourism sector. In particular, the city's natural assets, including its strategic geographical and logistical location, offer significant untapped opportunities for expanding health tourism activities. Balıkesir, with its abundant resources and facilities, particularly in thermal, spa and wellness tourism, with its hot springs and valuable water resources, has the

potential to become a leading health tourism centre in the future. This prospect is in line with the expected growth of health tourism infrastructure in the province. Dalan and Arıkan (2021) aimed to assess the health tourism potential of Muğla province in Türkiye through the lens of different stakeholders, including health institutions, tourism businesses, non-governmental organizations (NGOs) and local government representatives. To achieve this, they conducted a survey with 19 participants to gauge the collective perspectives on health tourism practices within the broader context of health tourism. The results of the research revealed a consensus among health tourism stakeholders, highlighting their recognition of the importance of health tourism and their active support for its growth, driven primarily by the positive economic impacts associated with its development.

Güner and Temizkan (2022) investigated the existing medical tourism potential of Eskişehir using a qualitative research design to explore medical opportunities and tourism attractions. The study included in-depth interviews with health tourism units of hospitals and managers from the Provincial Directorate of Culture and Tourism. The research findings highlighted several positive aspects of Eskişehir, positioning it as a safe and tranquil city with vibrant tourist attractions and an active social scene. The supply of short-term accommodation was found to be sufficient, with reasonable prices compared to other major cities. In addition, Eskişehir's proximity to major cities, combined with a well-established healthcare infrastructure, underlined its significant growth potential in medical tourism. In his master's thesis, Kuzkaya (2022) sought to uncover the perspectives, approaches and recommendations of institutions involved in health tourism. Using a qualitative research method, the study conducted semi-structured interviews with 21 health tourism managers to collect primary data. The results highlighted numerous factors contributing to Alanya's health tourism potential, including its

abundance of sunny days, global recognition as a branded city in tourism, a significant expatriate population and a cadre of well-trained, multilingual doctors. The researcher also suggested a number of strategic initiatives to position Alanya as a health tourism destination. These included addressing the language deficiencies of health professionals, increasing investment in health tourism, prioritizing strategic marketing management, and encouraging greater collaboration between the public and private sectors. Aslan et al. (2022) conducted a thorough SWOT analysis to assess the thermal tourism potential of Akyazı, focusing on aspects such as thermal tourism management, marketing strategies and sustainability. The research included in-depth face-to-face interviews with key stakeholders, including local government representatives and business figures within the health tourism sector. Based on the insights gained from these interactions, the study made several strategic recommendations aimed at uncovering and enhancing the thermal health tourism prospects of the district. Akyazı's inherent strengths highlighted in the study include its natural beauty, abundant thermal water resources and convenient transportation options. At the same time, the weaknesses identified included the lack of urban promotion and designated social activity areas.

These studies highlight Türkiye's diverse strengths in the field of health tourism. Natural resources, in particular thermal waters, stand out in regions such as Akyazı, Antalya and Erzincan, adding to their appeal. In addition, strategic locations, robust infrastructure and accessibility add to the appeal of destinations such as Eskişehir and Alanya. Global trends and a growing interest in health tourism offer promising opportunities, with Türkiye making progress in third age tourism practices. However, challenges remain, including a lack of awareness and coordination, as seen in Nevşehir and Ordu, and competition from larger cities, which limits the potential of regions such as

Balıkesir. Strategic marketing policies and differentiation strategies, such as those recommended in Isparta and Alanya, emerge as crucial to harnessing this potential and overcoming the challenges.

4. COMPARISON OF HEALTH TOURISM IN TÜRKİYE WITH OTHER COUNTRIES

Several studies have delved into the comparative analysis of Türkiye with other countries, shedding light on various aspects of this burgeoning industry. Karababa (2017) conducted an in-depth investigation, using a SWOT analysis to compare the geographical location and cost advantages of Türkiye with those of developed countries. The aim was to uncover the development opportunities and elements crucial for the growth of health tourism.

Similarly, Çam (2021) provided insights into different health practices within medical tourism applications and offered a comprehensive discussion from different perspectives. This study significantly enriched the existing literature by providing an overview of medical tourism approaches in different countries. Şahin (2021) took a strategic approach by evaluating the organizations and policies of successful competitors in health tourism in order to effectively assess the potential of Türkiye. The study focused on key organizations such as International Health Services Inc, the Malaysian Healthcare Travel Council (MHTC) and the Korea Health Industry Development Institute (KHIDI), drawing comparisons with Türkiye's health tourism coordinating organization, USHAŞ. In addition, Kaya and Yılmaz (2020) explored the field of traditional medicine services in the context of health tourism, with a specific focus on Türkiye and India. Their research revealed differences in the provision of traditional medicine services between the two countries, with India primarily

offering philosophy-based intellectual methods controlled by a ministry, while Türkiye struggles with legal regulations and the establishment of infrastructure for similar services. Together, these studies contribute to a more nuanced understanding of health tourism by placing Türkiye in a global context.

5. MARKETING STRATEGIES AND SERVICE STANDARDS IN HEALTH TOURISM

The health tourism landscape is interwoven with considerations of marketing strategies and service standards, and a variety of studies provide valuable insights into these crucial aspects.

Aktepe (2013) compiled different practices (thermal tourism, third age tourism, medical tourism, and disability tourism) within the goal of health tourism along with their reasons and developments in the field. He also analyzed the potential and competitive advantage of public and private health enterprises in Türkiye. The study also focused on the contribution of quality development and standardization in health tourism organizations to the marketing process.

Acar and Turan (2016) conducted a survey to measure the awareness of the healthcare providers (public hospital workers) in health tourism facilities. They also aimed to discuss the effectiveness of being a team and emphasize the importance of the host country’s image over health tourism services. Korkutan and Yıldız (2017) aimed to assess the hospital managers' perceptions of health tourism. Surveys were administered to 45 hospital managers from ten different hospitals in Diyarbakır. The results showed that Diyarbakır is a favorable environment for health tourism according to the hospital managers. In addition, the research presented various strategies for the promotion of

health tourism to policy makers, hospital administrators and other key decision makers.

Kızıldağ (2018) prepared a master thesis with the aim of evaluating the awareness of non-physician health personnel and health managers on medical health tourism. 302 non-physicians and healthcare managers working in Ankara participated in the survey. According to the results, the awareness of non-physician health personnel and healthcare managers differed according to various demographic variables. The research was completed with a SWOT analysis of the health tourism area of the district. Demir (2020) prepared a master thesis on the purpose of monitoring the expectations of foreign patients about health institutions, and reveal the intentions of patients to re-prefer the healthcare service in terms of their satisfaction level and perceived value. According to the results of the study, he mentioned that Türkiye has as a great advantage due to its geopolitical location compared to many other countries in terms of healthcare services. Therefore, the preference levels of foreign patients could be increased by carrying out similar research in local institutions on determining the patient's expectations in detail.

Çontu (2021) discussed the concept of thermal tourism under health tourism practices and shared detailed information about thermal tourism businesses operating in Türkiye and in other countries. Yılmaz et. al (2022) examined the content and quality of websites as digital health tourism applications to find out how useful they are for consumers' decision-making in health services. Çalhan and Arıcı (2022) evaluated the medical tourism as a touristic product in Türkiye from the perspective of medical tourism stakeholders. The researchers conducted an interview with 72 medical tourism shareholders consisting of health workers, hotel and travel agency managers and discussed the results in SWOT analysis. According to the results, Türkiye's main strengths in medical tourism are; having up-to-dated

technologies, qualified medical education and experienced doctors, lower prices, easy/short time accessible services, geographical location. The weaknesses of Türkiye in medical tourism are; lack of foreign language speaking workforce in public hospitals, insufficient promotion and marketing activities, and terrorist attacks and ongoing political instability in the neighbour countries.

Yaba (2022) conducted research to determine the health tourism awareness levels of students studying in the field of health. 365 people were included in the interview stage. The questions of the surveys were prepared using the Health Tourism Awareness Scale. According to the results both the participants' awareness of health tourism and all of the other sub-dimensions were determined as moderate. As a result of the analyses made within the framework of various variables, it was concluded that the health tourism awareness levels of the participants did not change according to the gender and age variables, but the awareness levels were affected according to the faculty, class, and income. Üstün, U. and Demir Uslu, Y. (2022) focused on the factors that affect the destination preferences of international health tourists who prefer Türkiye. For this purpose, 42 participants were interviewed from different countries and the results were evaluated by the means of Medical Tourism Index consisting of four dimensions. As a result of the content analysis, pushing and pulling factors for health tourism were revealed. The analysis showed that patients' preference for health tourism are affected by factors related to qualified facilities and services. Moreover, Türkiye is the most preferable tourist destination, due to affordable health costs and environmental factors, respectively. This research also suggested that the quality of our health facilities and doctors should be highlighted and promoted cost factors and environmental factors should be emphasized.

6. POLICY DEVELOPMENT ON HEALTH TOURISM IN TÜRKIYE

The literature on health tourism in Türkiye contains extensive research, with a comprehensive focus on the formulation and impact of health tourism policies. According to Doğan and Aslan (2019), Türkiye has been actively developing health tourism policies since 2010. Infrastructure improvements aimed at increasing hospital and bed capacity are ongoing, with a focus on providing high-quality services in medical and thermal tourism. The authors suggest that Türkiye has the potential to become a leading destination for health tourism. However, it is also pointed out that the malfunctions in the data recording systems related to health tourism prevent the acquisition of clear information about the sector and the development of consistent policies.

Top et al. (2018) aimed to contribute to hospital administrators and health tourism professionals by investigating cost analysis in health tourism and tourist health implications. The authors evaluated hospital invoices of 752 health tourism patients and 279 tourist health patients in a Research Hospital using retrospective and descriptive research methods. (Ağaoğlu et al., 2019) was conducted research on health tourism practices and their returns to Türkiye to determine strategies for increasing its share in the global health tourism market. The study recommends that Türkiye re-evaluates its policies by taking countries with high market share as an example and consulting private sector organizations operating in health tourism. It has been suggested that the state should provide subsidies until Türkiye becomes competitive in the international market

Özkan (2019) conducted a study on the potential of Türkiye in medical tourism. The study revealed that development plans included various policies related to health and medical

tourism, and comprehensive services were offered with the commissioning of city hospitals. To enhance Türkiye's position in the competitive health tourism market, it is essential to establish both short and long-term goals. The Ministry of Health, the tourism sector, and private health institutions should collaborate to develop coordinated plans, programs, and investments. Radu (2019) conducted a PhD thesis to examine the labor market dynamics and working conditions of migrant workers in health tourism. The author examined the existing regulations and literature to investigate the situation of the labour force in health tourism. Additionally, they conducted semi-structured interviews with migrant workers employed in health tourism. Based on the thesis results, the most crucial aspect of labour market regulations is to introduce new rules that facilitate the employment of migrants in the health sector. This should be done in parallel with efforts to integrate the field of health with tourism, which was previously closed to foreigners.

Toptaş (2020) aimed to enhance tourists' awareness of Turkey's health tourism potential by identifying the factors that influence their choice of Turkey as a destination. The study also aimed to identify tourists' expectations from health tourism, providing insights for entrepreneurs considering investments in the health tourism sector. The researcher collected data from tourists representing 12 diverse countries engaged in health tourism activities using a qualitative research method and semi-structured interviews. The study included a conceptual examination of health tourism, health services, and tourism entrepreneurship, along with a comprehensive literature review in these interconnected fields. According to the findings, the reasons for choosing Türkiye are; developed health services and affordable prices, seeking a solution to the health problem, Türkiye's capacity to both treat people and make a holiday, and a suitable climate. Yiğit and Demirbaş (2020) aimed to develop

strategies against weaknesses and threats in the field of medical tourism in Türkiye. The researchers used SWOT-AHP method to determine the main and sub-factors affecting the development of medical tourism. According to the results, price advantage was the highest weight value among the 32 factors, while the contribution of the patients to the national economy with foreign currency input was the factor with the lowest importance level. The research also mentioned that Türkiye should develop policies to eliminate the deficiencies in a foreign language and focus on the promotion and marketing activities.

Uslu et. al (2021) employed fuzzy AHP (Analytic Hierarchy Process) as decision-making method to develop health tourism strategies for increasing the international market share. The decision-making group consisted of experts in hospital and universities who have at least twelve years of experiences in health services. According to findings, Insufficient legal sanctions for faulty applications, lack of coordination with agencies and insurance companies abroad and insufficient number of physicians and health personnel who can speak a foreign language and qualified were discussed as the most important obstacles for developing health tourism services. Yıldırım et al. (2021) proposed a model for removing the deficiencies of e-Nabız applications to make the system easier for users (patients, doctors etc.). Thus, face-to-face interviews were conducted with 409 medical tourists from the International Patients Coordinatorship of Hacettepe University and 572 physicians working as faculty members or research assistants at the same university. According to e-Nabız applications should be developed for medical tourists and physicians as well, and also medical tourists would like to have access to their health records. The study also defined the main components and the strategies of the e-Pulse International system, for allowing the medical tourists in Türkiye to have fast and reliable access to their health records

from anywhere in the world. Within this framework, it is expected that the e-Pulse International system would make a great contribution to medical tourists 'satisfaction and the tourists' preferences to Türkiye. Şak (2021) investigated the relationship between health tourism and economic growth using econometric tests and time-varying asymmetric causality analysis. The study also examined the causal relationship between the growth of health tourism and economic growth using the same analysis. The results showed a causal relationship between the positive and negative shocks of the variables. However, it is important to note that this causal relationship did not remain constant over time and showed variations.

Özer ve Yılmaz (2022) discussed the role of intermediary institutions in medical tourism. They classified the institutions under four main headings as Medical Travel Consultants, Travel Agencies/Patient Referrers, Assistant Companies and Healthcare Provider Groups. They mentioned that intermediary institutions have a very important role in medical tourism in terms of the difficulty of making decisions for many medical tourists, the smooth operation of travel planning, the planning of the treatment process by experts, and the planning of touristic activities in addition to the treatment. Arı (2022) examined the health tourism targets determined by the public sector for the public and private sectors by using statistics from TURKSTAT and Ministry of Culture and Tourism. He determined that Türkiye has not reached the targets set within the scope of the 10th and 11th Development Plan and the Thermal Tourism Master Plan and presented some suggestions to policymakers on the subject in order to achieve the targets determined by the state and to develop health tourism.

These studies cover regulatory frameworks, labor dynamics, tourist preferences, and economic implications. Together, they provide a comprehensive foundation for

policymakers and stakeholders seeking to enhance Türkiye's position in the global health tourism landscape.

7. DISCUSSIONS AND CONCLUSIONS

The review of studies conducted in Türkiye over the last decade reveals that the country has made significant progress in providing medical and thermal tourism services. Investigations into medical practices and traditional medicine services provide a broader perspective on Türkiye's position in the global health tourism landscape. However, while the literature suggests that health tourism has diverse potential in Turkish provinces, it also highlights areas for improvement in infrastructure, promotion, and strategic management to fully exploit this growing sector. In this regards, comparative studies that explore health tourism in Türkiye alongside other nations provided a multifaceted understanding of the industry's dynamics. The use of methodologies such as SWOT has enabled analysis of Türkiye's geographical advantages, cost-effectiveness, and developmental prospects. Furthermore, these studies evaluate successful competitors' organizations and policies, highlighting the importance of effective coordination and infrastructure development for strategic considerations. On the other hand, the literature on health tourism policy serves as a valuable resource for policymakers, industry stakeholders, and researchers navigating the intricate landscape of global health tourism. Although the policies for health tourism have gained to Türkiye to be a high-level provider of health tourism services, various policies should be developed for provinces with potential based on the results from the literature. Additionally, policies regarding infrastructure and human resources should be considered.

The literature on marketing strategies in health tourism emphasizes the need for a comprehensive and collaborative

service approach. Strategic marketing should cater to the different segments within health tourism, make effective use of digital platforms, raise awareness among different stakeholders and prioritize the development of quality facilities and services. Each province in Türkiye should conduct marketing activities to promote its own potential. Furthermore, it is necessary to create a comprehensive health tourism map of Türkiye to show the services points and infrastructure. These insights can serve as a valuable roadmap for stakeholders navigating the complex terrain of health tourism marketing.

This study solely examines the sources for health tourism practices in Türkiye and presents a compilation. More studies should be carried out on a provincial basis to assess the potential for health tourism and share the results with regional and national stakeholders. For further research, it is recommended to examine the health tourism practices of countries with a significant share of health tourism in their economy and compare them with Türkiye to improve service quality. Furthermore, there is a lack of research on third age and disability tourism. Further studies can also be conducted in these areas to monitor the potential in Türkiye.

REFERENCES

Acar, N. & Turan, A. (2016). Sağlık çalışanlarının sağlık turizmi farkındalığı üzerine bir araştırma: Ahi Evren Üniversitesi eğitim ve araştırma hastanesi çalışanları örneği. Cumhuriyet Üniversitesi İktisadi ve İdari Bilimler Dergisi, 17 (1), 17-36. http://doi.org/20.500.11787/7398.

Ağaoğlu, F. O, Karagöz, N. & Zabun, S. (2019). Sağlık turizmi uygulamaları ve Türkiye'ye getirilerini ilişkin bir değerlendirme. S.C.Ü. İktisadi ve İdari Bilimler Dergisi, 20 (2), 428-450.

Akbaş, Y., Kaya, M. & Dogan, S. (2018). Artvin'in Üçüncü Yaş Turizmi Potansiyelinin Belirlenmesine Yönelik Bir Araştırma. Uluslararası Artvin Sempozyumu Bildiri Kitabı, 711-730.

Aktepe, C. (2013). Sağlık turizminde yeni fırsatlar ve Türkiye'de yerleşik sağlık işletmelerinin pazarlama çabaları. İşletme Araştırmaları Dergisi, 5(1), 170-188.

Aslan, H., Mete, B., Şimşir, İ. & Örgev C. (2022). Sakarya Akyazı İlçesinin Termal Turizm Potansiyelinin Değerlendirilmesi. Hacettepe Journal of Health Administration, 25(2), 301-318.

Arı, H. O. (2022). Türkiye'deki sağlık turizmi politikalarının, sektörel hedefler bağlamında mevcut durumunun değerlendirilmesi. Journal of Tourism and Gastronomy Studies, 10(1), 571-588.

Aydemir, Burhan ve Kılıç, Sultan Nazmiye (2017). Dünyada ve Türkiye'de Üçüncü Yaş Turizmi. Yüzüncü Yıl Üniversitesi. Sosyal Bilimler Enstitüsü Dergisi. 1 (1), 18-28.

Aydın, İ. (2021). Sağlık Sektöründe Pazarlama. Sektörlerde Stratejik Pazarlama, Nobel Akademik Yayıncılık, Ankara.

Biçer, E. B., Yurcu, G. & Özgün Ova, P. (2019). Yaşlılarda termal sağlık turizmi hizmet algısı: sivas ili örneği. Gümüşhane Üniversitesi Sosyal Bilimler Dergisi, 10(1), 140-153.

Bozça, R., Kıraç, F. Ç. ve Kıraç, R. (2017). Sağlık turizmi SWOT analizi. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 6(3), 157-163.

Çalhan, H. & Arıcı, A. (2022). Bir turistik ürün olarak medikal turizmin değerlendirilmesi. Türk Turizm Araştırmaları Dergisi, 6(4), 1091-1112.

Çam, O. & Çılgınoğlu, H. (2021). Sağlık turizmi kapsamında medikal turizmde öne çıkan sağlık uygulamaları. Oğuzhan Sosyal Bilimler Dergisi, 3(2), 197-216.

Çontu, M. (2021). Sağlık turizmi kapsamında termal turizm işletmelerinde hizmet standartları. Sağlık Turizmi ve İşletmeciliği

Dalan, C., & Arıkan Saltık, I. (2021). Paydaşların bakış açısıyla Muğla ili sağlık turizmi. Türk Turizm Araştırmaları Dergisi, 5(2), 1451–1473. https://doi.org/10.26677/TR1010.2021.775

Demir, H. (2020). Medikal Turizmde hastaların algılanan değer ve memnuniyet düzeylerinin yeniden hizmet alma tutumlarına etkisi (Master's thesis, Sakarya Üniversitesi).

Demir Uslu, Y., Kedikli, E., Yılmaz, E., Çiçek, A., Karataş, M. & Aydın, S. (2021). Developing strategies for ıncreasing market share of Turkey on health tourism by using Fuzzy AHP method. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 10(2), 159-171. DOI: 10.37989/gumussagbil.869887.

Güner, D. & Temizkan, S. P. (2022). Eskişehir'in medikal turizm potansiyeli üzerine nitel bir araştırma. Gastroia: Journal of Gastronomy And Travel Research, 6(2), 478-498.

Hacıoğlu, N., & Şahin, B. (2011). Üçüncü Yaş Turizmi. N. Hacıoğlu ve C. Avcıkurt (Ed.) içinde, Turistik Ürün Çeşitlendirmesi (2. Basım, s. 17–39), NobelYayıncılık, Ankara.

Kabukcuoğlu, S. (2013). Nevşehir ili Kozaklı ilçesindeki sağlık turizmi potansiyeli ve bu potansiyeli artırabilmek için yapılabilecekler (Master's thesis, Sosyal Bilimler Enstitüsü).

Kaplan M., Çelik A., Turak K. B. (2019). Beş kuvvet modeline bağlı olarak Isparta sağlık hizmetleri sektörü rekabet

analizi. Balkan ve Yakın Doğu Sosyal Bilimler Dergisi, 5, 115-121.

Korkmaz, M., Aytaç, A., Yücel, A. S., Kılıç, B., Toker, F., & Gümüş, S. (2014). Türkiye'de Sağlık Turizmi ve Ekonomik Boyutlarının Uygulamalı Örneği. 8. Sağlık ve Hastane İdaresi Kongresi Bildiri Kitabı, 1146-1159.

Korkutan, M. & Yıldız, A. (2017). Hastane yöneticilerinin medikal turizme ilişkin algılarının değerlendirilmesine yönelik bir araştırma. Dicle Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 385-397.

Kılıç, B. & Sak, H. (2021). Balıkesir ilinin sağlık turizmi yönünden analizi. Balıkesir Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 2(2), 161-178.

Kuzkaya, Ü. (2022). Sağlık turizmi paydaşlarının sağlık turizmi potansiyel ve uygulamalarına yönelik tutum, yaklaşım ve önerileri: Alanya örneği (Master's thesis, Alanya Alaaddin Keykubat Üniversitesi/Lisansüstü Eğitim Enstitüsü).

Nikitina, O. & Vorontsova, G. (2015). Aging Population and Tourism: Socially Determined Model of Consumer Behavior in the “Senior Tourism” Segment. Procedia - Social and Behavioral Sciences, 214, 845–851. http://doi.org/10.1016/j.sbspro.2015.11.736

Özcan, Z. K., & Aydın, V. (2015). Sağlık Turizmi (Teori ve Politika) (1. Baskı). Umuttepe Yayınları, Kocaeli.

Özgün Ova P., Biçer E. B. & Yurcu G. (2019). Yaşlılarda termal sağlık turizmi hizmet algısı: Sivas ili örneği. Gümüşhane Üniversitesi Sosyal Bilimler, Enstitüsü Elektronik Dergisi, 10(1), 140-153.

Özer, E. & Yılmaz, N. (2022). Medikal turizmde aracı kurumların rolü. Mesleki ve Sosyal Bilimler Dergisi, 3(1), 19-28.

Özer, Ö. & Sonğur, C. (2013). Türkiye'nin dünya sağlık turizmindeki yeri ve ekonomik boyutu. Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 4 (7), 69-81.

Radu, G. E. (2019). Türkiye'de hizmet sektöründe göçmen istihdamı: Sağlık turizmi örneği [Doctoral dissertation, Marmara Üniversitesi (Türkiye)

Selvi, M. S. (2011). Sağlık turizmi. In N. Hacıoğlu & C. Avcıkurt (Eds.), Turistik Ürün Çeşitlendirmesi (2nd ed., 274–294). Nobel Akademik Yayıncılık.

Şahin, S. K. (2021). Sağlık turizminin geliştirilmesinde sağlık bakanlıklarının koordinatör kuruluşları: Türkiye, Malezya ve Güney Kore karşılaştırması. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 10(4), 983-992. DOI: 10.37989/gumussagbil.908166

Şak, N. (2021). Sağlık turizmi ve ekonomik büyümede asimetrik etkiler: Türkiye uygulaması. Uluslararası Yönetim İktisat ve İşletme Dergisi, 17 (3), 781-799. DOI: 10.17130/ijmeb.785591

Toptaş, A. (2021). Sağlık turizminde Türkiye'nin önemi ve tercih edilme sebeplerinin belirlenmesine yönelik bir araştırma. Türk Turizm Araştırmaları Dergisi, 4(4), 3191–3208.

Türksoy, A., & Türksoy, S. S. (2010). Termal turizmin geliştirilmesi kapsamında Çeşme ilçesi termal kaynaklarının değerlendirilmesi. Ege Akademik Bakış, 10(2), 701–726.

Mehmet, T. O. P., Aslan, H., & Zengin, N. (2018). Sağlık Turizmi ve Turistin Sağlığı Uygulamalarının Hasta Faturaları ve Teşhis İlişkili Gruplara Göre Maliyet Analizi. Finans Politik ve Ekonomik Yorumlar, (640), 109-125.

Üstün, U. & Demir Uslu, Y. (2022). Türkiye'nin sağlık turizminde tercih edilme nedenleri üzerine bir çalışma:

Medikal Turizm Endeksi. Avrupa Bilim ve Teknoloji Dergisi, (33), 344-353. https://doi.org/10.31590/ejosat.1020647.

Yıldırım, B. F., Özdemirci, F. & Soydan, G. (2021). Sağlık turizmi hastaları için e-nabız uygulamalarının geliştirilmesi: bir model önerisi. Bilgi Yönetimi, 4 (1), 25-55. DOI: 10.33721/by.934150.

Yaba, M. (2022). Sağlık turizmi farkındalık düzeyinin belirlenmesi üzerine bir alan araştırması. International Social Mentality and Researcher Thinkers Journal, 8(65), 2127-2139.

Yılmaz, S., Sarıaydın, İ., & Sönal, T. (2020). İngiltere özelinde Türkiye'nin sağlık turizmi fırsatları. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, 7(1): 74-85

Yılmaz, H. & Yılmaz, N. (2022). Dünyada ve Türkiye'de dijital sağlık turizmi uygulamaları, Sağlık Akademisyenleri Dergisi, 9(1), 64-72.

Yiğit, A. & Demirbaş, M. B. (2020). Türkiye'de medikal turizmin gelişimine etki eden faktörlerin SWOT-AHP yöntemi ile tespit edilmesine yönelik bir araştırma. Karadeniz Sosyal Bilimler Dergisi, 12 (22) , 173-192.

Yüksel, F., Kement, Ü., Kabacık. M. & Aksu, S.C. (2022). Hastane yöneticilerinin bakış açısıyla ordu ili medikal sağlık turizmi: fenomenolojik bir değerlendirme. Journal of Gastronomy, Hospitality and Travel, 5(4), 1795-1809.

Zengin, B., & Eryılmaz, B. (2015). Bodrum Destinasyonunda Engelli Turizm Pazarının Değerlendirilmesi. Uluslararası İktisadi Ve İdari İncelemeler Dergisi, 6(11), 51-74. https://doi.org/10.18092/ijeas.67730.

INSTITUTIONAL SUSTAINABILITY AND SUSTAINABLE ACCOUNTING[1]

Havva ARABACI[2]

1. INTRODUCTION

These issues are discussed on international platforms because the world population is rapidly increasing and natural environment is in danger of extinction. These discussions bring about various organizations and new formations. One of the concepts that has been on the agenda of countries and companies, especially since the second half of the 20th century, is sustainable development (Engin and Akgöz, 2013: 87).

The concept of sustainable development was first brought to the agenda at the United Nations Conference on Man and the Environment held in 1972 and was included in the report of the United Nations World Commission on Environment and Development published in 1987. This concept, which has three dimensions: economic, social and environmental, entered the business world at the end of the 1980s.

Development is a process that generally includes changes in the economic, social and political structure of a country due to the continuous increase in its national income level (Boyacıoğlu ve Taşkın, 2012: 14).” Sustainable development is defined by the World Commission on Environment and Development as

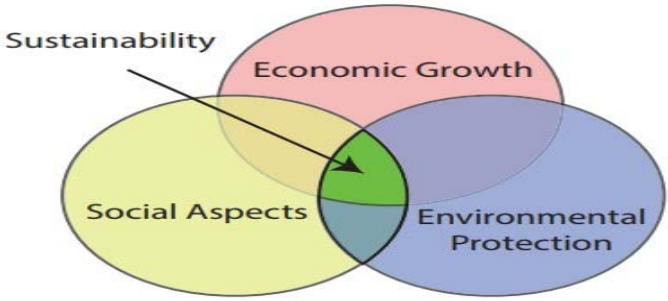
---

[1] It was presented as an oral presentation at the 13th International Conference on Governance Fraud Ethics and CSR, organized by Gedik University in Istanbul, Turkey, between 01-02 December 2023.

[2] Instruc., University of Trakya, Edirne Vocational School of Social Sciences, arabacih@hotmail.com, ORCİD: 0000-0003-0212-6590.

meeting the needs of the present generation without compromising the ability of future generations to meet their own needs" (Tıraş, 2012: 60). The relationship between the social, economic, health and environmental elements of sustainable development is shown in Figure 1 below.

Figure 1 Relationship Between the Social, Economic, Health and Environmental Elements of Sustainable Development



Source: Price and Dube, 1997: 29.

The three elements of the concept of sustainable development, namely economic, social and environmental, are not independent of each other. They influence, interact and sometimes overlap with each other.

Sustainable development became an active policy at the global level with the United Nations Conference on Environment and Development held in 1992. Agenda 21, which is a concrete outcome of the United Nations Conference on Environment and Development, emphasizes that nature and humans are a whole and that every human being has the right to live a quality life. Local Agenda 21, the basis of which is Agenda 21, has been implemented in Turkey since 1997 within the scope of the United Nations Development Programme.

The content of "Agenda 21" consists of four parts as stated below (Eş, 2008):

1. In the first part, where social and economic dimensions are discussed, people, environment and development are discussed in an integrated manner.

2. In the second part, where resources are evaluated, prevention of nature pollution, protection of the environment and management of harmful waste are discussed.

3. In the third part, the roles of basic groups are discussed and the roles of human groups are explained and their strengthening is emphasized.

4. In the last section, the measures taken and the financial resources required to achieve the goals, education and science, law and technology issues are included.

Sustainable development is a method of realizing efforts to increase economic growth and welfare while protecting the environment and the quality of life of all people on earth.

Accounting subunit that records, analyzes, classifies and reports environmental, economic and social impacts and the interaction of 3 dimensions of corporate sustainability caused by companies which is in the field of sustainable development during their activities is called sustainable accounting (Schaltegger ve Burrit, 2010: 377).

2. CORPORATE SUSTAINABILITY

Concept of corporate sustainability emerged as companies became involved in sustainable development activities. Corporate sustainability can be defined as the company's strategic and profit-oriented response to the social and environmental issues caused by businesses while carrying out their activities. Corporate

sustainability includes two basic features. First, it proposes a new model of doing business. Second, it also requires businesses to invest in the future (Tokgöz ve Önce, 2009: 252).

According to Wilson, the contribution of sustainable development to corporate sustainability is two-staged. First of all, sustainable development reveals the areas that businesses should focus on, including environmental, social and economic performance. In the second stage, sustainable development sets a common social goal for businesses, governments and civil society, including ecological, social and economic sustainability (2014: 62). Corporate sustainability; It is examined in three dimensions: environmental, social and economic sustainability.

Environmental sustainability generally refers to "the careful use of today's natural resources, taking into account the needs of future generations for these natural resources" (Uysal, 2005). Social sustainability appears in cultural and social obligations as well as the continuous supply of basic needs. Economic sustainability covers the variability of business income, expenses, profitability, financial performance of the business, how it manages natural capital, people and production, which are other capital elements, and sustainability in investment matters (Eş, 2008).

3. SUSTAINABLE ACCOUNTING

“In corporate sustainability, the most important information that forms the basis of the company's sustainability strategy is obtained from sustainability accounting” (Tüm, 2014: 68). Sustainability accounting examines, firstly, the financial effects of a defined economic system caused by environmental and social factors, secondly, its ecological and social effects, and perhaps most importantly, it is defined as the sub-branch of accounting that deals with the activities, methods and systems of

the business in order to record, analyze and report the interactions and relationships between social, environmental and economic issues that constitute the three dimensions of sustainability (Altınay, 2016: 60).

Data collection within the scope of sustainability accounting in businesses should be done based on economic, social and environmental data. Controllability requires that the data and information presented be recorded, edited, analyzed and published in a way that enables auditors to certify the reliability of the data (Fülöp and Hernádi, 2013: 334; Demircioğlu and Ever, 2019: 67). Reliability of information is ensured through controllability.

Sustainability accounting information aims to meet the information needs of external users regarding the financial responsibility of businesses on social and environmental issues. Sustainability accounting information provided to internal users can play an important role in strengthening senior management's decision-making process.

Sustainability accounting differs significantly from other types of accounting in terms of both purpose and scope, as well as the method and reporting used. The differences of sustainability accounting from traditional and environmental accounting are shown in Table-1.

Table 1. Comparison of Traditional, Environmental and Sustainability Accounting

Comparison Criteria	Traditional Accounting	Environmental Accounting	Sustainability Accounting
Perspective	Corporate economic (financial) aspect	Link between the economy and the environment	Integration of the economy, society and the environment
Task	Show the general economic situation	Show environmental performance; Show environmental liabilities and environmental costs	Show sustainability performance (economic, social and environmental performance)
Elements	Financial accounting Management accounting	Environmental financial accounting External ecological accounting Environmental management accounting Internal ecological accounting	Sustainability financial accounting Sustainability management accounting
Methodology	Assessment procedures, Cost accounting	Environmental performance evaluation, Life-cycle analysis, Environmental cost-savings analysis	Other disciplines' (biology, sociology) methods; Sustainability Balanced Scorecard
Tools	Financial and accounting statements	Environmental reports	Sustainability reports
Obligational characteristics	Compulsory	Voluntary	Voluntary

Source: Hernadi, 2012:28; Tüm, 2014: 69.

Traditional accounting systems focus on economic factors and do not take into account environmental and social factors. Sustainability accounting takes into account the economic, environmental and social factors of businesses (Imoniana, Soares ve Domingos, 2018: 2046). While in traditional accounting, issues such as the earnings and profitability of the business come to the fore rather than social and environmental issues, in sustainability accounting, both financial information and non-financial information are taken into account.

In sustainability accounting, which aims to create an economically, socially and environmentally sustainable structure in businesses, the role and scope of accounting has expanded significantly. The role of accounting; It has changed from collecting, classifying and recording documents to analyzing and reporting information about sustainability and its development (Senal and Ateş, 2012: 88).

In recent years, in the process of evaluating the performance of businesses, the need to prepare a sustainability report that addresses the three dimensions of sustainability as a whole has emerged. In order to provide a common framework for determining, reporting and comparing sustainability performance, a sustainability report is created based on a standard reporting guideline published by GRI (Global Reporting Initiative), an organization that creates sustainability reporting standards.

Sustainability reports include financial and non-financial elements together. Financial information consists of the amount of money spent on environmental issues, obligations that must be legally fulfilled for the environment, environmental expenses estimated for the future, and non-financial information consists of environmentally related business activities such as the environmental policies of the enterprise and emission reports

(Gray, 1994: 24; Demircioğlu and Ever, 2019: 67). Sustainability reports emerged because information about the extent to which businesses fulfill their economic, environmental and social responsibilities is important for both internal and external information users (Yükçü and Fidancı, 2016: 666). The business must publish updated sustainability accounting information so that its sustainability-related information can be presented up to date to information users.

Tüm (2014: 77) summarized the benefits of the sustainability accounting system for businesses as follows;

- *It contributes to determining the production cost and pricing the products correctly,*
- *It reveals the benefits, financial opportunities and cost savings brought by sustainability-oriented activities,*
- *It helps reduce these risks and costs by evaluating the social and environmental risks and costs that the business will face,*
- *It contributes to increasing resource efficiency by facilitating more accurate monitoring of energy and material flows in businesses,*
- *Strengthens the responsibilities of employees in this regard by increasing the social and environmental awareness of business employees,*
- *It can contribute to making the public aware of the enterprise's corporate responsibility, transparency and reliability in social and environmental issues and thus strengthening the general acceptability of the enterprise,*
- *The company's environmentally sensitive, socially responsible behavior provides a more favorable investment environment for corporate investors,*
- *Helps establish better relationships with external stakeholders.*

4. CONCLUSION

Sustainability has three dimensions: economic, environmental and social. Corporate sustainability considers the three dimensions of sustainability as a whole, establishing a balance between these dimensions and considering their relationships with each other. Reporting sustainability-related information provides advantages in terms of transparency, comparability and accountability. This is important for businesses to gain competitive advantage.

The concept of corporate sustainability emerged as companies became involved in sustainable development activities. The concept of sustainable accounting has been developed so that companies engaged in corporate sustainability activities can obtain information about their activities and report on the process to all their stakeholders.

Sustainable accounting is the accounting subunit that records, analyzes, classifies and reports the environmental, economic and social impacts caused by companies engaged in sustainable development and corporate sustainability activities during their activities and the interaction of the three dimensions of corporate sustainability. The role of accounting in sustainability accounting in businesses; There has been a shift from collecting, classifying and recording documents to analyzing and reporting information on sustainability and development.

Sustainability accounting differs significantly from traditional accounting and environmental accounting types, both in terms of purpose and scope and in terms of the method and reporting used. Sustainability accounting, unlike traditional accounting systems, reveals that not only the economic dimension of business activities, but also the environmental dimension and

the social dimension, which reveals their effects on society, should be taken into account.

In order to provide a common framework for determining, reporting and comparing the sustainability performance of businesses, a sustainability report is created based on the standard reporting guide published by GRI. These reports include financial and non-financial elements together.

The expectation of companies and the state from corporate sustainability and sustainable accounting is that it will create value for the company and the state in the long term. Businesses should present and publish sustainability-related accounting information on their website in a constantly updated manner.

BIBLIOGRAPHY

Altınay, A. (2016). Entegre Raporlama ve Sürdürülebilirlik Muhasebesi, Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 3 (25), 47-64. http://dergipark.gov.tr/download/article-file/275025 (E. T.: 29.11.2017).

Boyacıoğlu, E. Z. ve Taşkın, Ö. (2012). Sürdürülebilir Kalkınmada Sağlık Ekonomisi ve Edirne İlinin Sağlık Sektörü Açısından Analizi. Ekonomi Bilimleri Dergisi, 4 (2), 13-23.

Demircioğlu, E. N. ve Ever, D. (2019). Sürdürülebilirlik Muhasebesinin Teorik Açıdan İncelenmesi. Ç.Ü. Sosyal Bilimler Enstitüsü Dergisi, 28 (3), 59-72.

Engin, E. ve Akgöz, B. E. (2013). Sürdürülebilir Kalkınma ve Kurumsal Sürdürülebilirlik Çerçevesinde Kurumsal Sosyal Sorumluluk Kavramının Değerlendirilmesi, Selçuk Üniversitesi İletişim Fakültesi Akademik Dergisi,

8(1).http://josc.selcuk.edu.tr/article/view/1075000009/1075000006 (E. T.: 10.08.2018).

Eş, A. (2008). Sürdürülebilirlik ve Firma Üzerinde Sürdürülebilirlik Performans Ölçümü. Abant İzzet Baysal Üniversitesi Sosyal Bilimler Enstitüsü, Bolu.

Fülöp, G. and Hernádi, B. H. (2013). Sustainability Accounting: A Success Factor İn Corporate Sustainability Strategy. New Challenges of Economic and Business Development, 229-241.

Gray, R. H. (1994). Corporate reporting for sustainable development: accounting for sustainability in 2000AD. Environmental values, 3 (1), 17-45.

Hernadi, H. B. (2012). Green Accounting for Corporate Sustainability. Club of Economics in Miskolc TMP, 8 (2), 23-30.

Uysal, Ö. (2005). Parasal Genişlemenin Sürdürülebilir Büyümeye Etkileri ve Türkiye Örneği. Yüksek Lisans Tezi. Akdeniz Üniversitesi. Sosyal Bilimler Enstitüsü.

Price C. and Dube P. (1997). Sustainable Development and Health: Concepts, Principlesand Frame Work Foraction For European Cities and Towns, EUR/ICP/POLC060305a – European Sustainable Development and Health, Series: 1.

Schaltegger, S. and Burrit R. L. (2010). Sustainability Accounting for Companies: Catchphrase or Decision Support for Business Leaders?. Journal of World Business, (45), 375-384.

Senal, S. ve Ateş, A.B. (2012). Kurumsal Sürdürülebilirlik İçin Muhasebe ve Raporlama. Muhasebe ve Denetime Bakış Dergisi, Nisan, 83-96.

Sürdürülebilir Kalkınma Türkiye (2012). Birleşmiş Milletler Sürdürülebilir Kalkınma Konferansı (Rio+20) Brezilya 20-22 Haziran 2012 Konferans Çıktısı, http://www.tr.undp.org/content/turkey/tr/home/library/environment_e
nergy/the_future_we_want_june_2012.html. (E. T.: 22.02.2021).

Tıraş, H. H. (2012). Sürdürülebilir Kalkınma ve Çevre: Teorik Bir İnceleme, Kahramanmaraş Sütçü İmam Üniversitesi İİBF Dergisi, 2, 57-73.

Tokgöz, N. ve Önce, S. (2009). Şirket Sürdürülebilirliği: Geleneksel Yönetim Anlayışına Alternatif, Afyon Kocatepe Üniversitesi, İİBF Dergisi, XI (I): 249-275.

Tüm, K. (2014). Kurumsal Sürdürülebilirlik ve Muhasebeye Yansımaları: Sürdürülebilirlik Muhasebesi, Akademik Yaklaşımlar Dergisi, 5 (1), 58-81.

Yükçü, S. ve Fidancı, N. (2016). Sürdürülebilirlik maliyeti örneği olarak maden sahası restorasyonu. Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, 30 (3), 663- 677.

Wilson, M. (2003). Corporate sustainability: What Is It And Where Does It Come From?. Ivey Business Journal, March/April, .1-5.

Academic Debates in Social, Humanities and Administrative Sciences

YAZ Yayınları
M.İhtisas OSB Mah. 4A Cad. No:3/3
İscehisar / AFYONKARAHİSAR
Tel : (0 531) 880 92 99
yazyayinlari@gmail.com • www.yazyayinlari.com

ISBN: 978-625-6642-00-3