ISSN: 2581-8341

Volume 07 Issue 12 December 2024

DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

IJCSRR @ 2024



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The Importance of Creating Artificial Intelligence Supported Future Scenarios in Decision Making Processes

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ABSTRACT: Artificial intelligence technologies are rapidly developing and having a major impact on the business world. Decision-making processes play an important role for the success of an organization. However, in today's business world with its complexity and uncertainty, it becomes difficult to manage decision-making processes. At this point, creating future scenarios supported by artificial intelligence and working on different scenarios helps businesses to be more prepared for uncertainty.

Artificial intelligence-supported scenarios can be utilized across various sectors and fields of work. AI enables businesses to analyze past data, predict trends, and consequently work on future scenarios to make more informed decisions. The significance of future scenarios lies in identifying risks and opportunities in advance, adapting to future changes, and being proactive in competition. By evaluating potential developments, shaping your business strategy, you can gain a competitive advantage and make more reliable decisions.

Qualitative methods were employed in the research. Interviews were conducted with managers from 6 different professional groups (software, biomedical, public, construction, university, e-commerce). Data was collected and analyzed using semi-structured interview forms consisting of 4 questions. When the findings were evaluated, no concerns or negative expressions regarding the use of artificial intelligence were expressed. Except for public institutions, everyone has AI in their planning. Each sector believes it is important. No negative concerns were expressed. The prominent concepts in the findings are: Speed, big data, gaining competitive advantage, personalized customer experience, risk analysis, cost advantage, technology adaptation, optimization, accurate and fast situation detection, efficiency, etc.

It is thought that the research will create significant awareness for businesses in the turbulent period of the 21st century, where uncertainties are greater than ever. Despite all the positive aspects, AI-supported decision-making processes also carry some risks. The most prominent risks include the applicability of AI-supported scenarios, security concerns, the existence of ill-trained AI models, ethical issues and data privacy.

KEYWORDS: Artificial Intelligence, Competitive Advantage, Decision Making, Future Scenarios, Uncertainty Management

I. INTRODUCTION

Today's business world is shaped by rapidly changing environmental conditions, technological developments and increasing competitive pressures. In this dynamic environment, it is vital for organisations to base their strategic decisions on a solid foundation. However, making the right decisions in an uncertain and complex future is becoming more challenging every day.

At this point, artificial intelligence (AI) technologies play a critical role in increasing the capacity of organisations to predict the future and cope with uncertainties. The data analysis, modelling and forecasting tools offered by AI make decision-making processes faster, more flexible and effective. In particular, AI-supported scenario planning enables businesses to identify potential risks and opportunities in advance. This process not only improves the strategic planning of businesses, but also enables them to be more prepared for unexpected events.

This study examines the contributions of AI to modelling future uncertainties and decision-making processes. Based on findings from literature and field research, the effects of AI-enabled scenario building in different sectors are evaluated. The research also draws attention to the potential risks and limitations of these technologies.

II. LITERATURE REVIEW

II.I. THE ROLE OF ARTIFICIAL INTELLIGENCE IN STRATEGIC DECISION MAKING PROCESSES

Artificial intelligence (AI) has become an important tool in modern organisations, transforming strategic decision-making processes. The data-driven analysis capability offered by AI not only accelerates decision-making processes, but also increases accuracy and

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Available at: www.ijcsrr.org

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ISSN: 2581-8341

Volume 07 Issue 12 December 2024

DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

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predictive capability. This technology strengthens decision-making mechanisms through methods such as big data analytics, machine learning and deep learning algorithms and makes organisations more prepared for uncertainties (Wu et al., 2022). Integrating AI into decision-making processes allows organisations to better analyse the environment. In this way, businesses can optimise problem identification and solution generation processes quickly and accurately. For example, in the field of cyber security, artificial intelligence provides support to security analysts in making more effective decisions by managing large data sets (Lee et al., 2023). In medical applications, artificial intelligence helps doctors in the diagnosis of diseases and treatment planning (Miller & Brown, 2017). AI systems used in strategic planning evaluate alternative scenarios and suggest the most appropriate decision options and provide support to human decision makers (Bader & Kaiser, 2019). This situation reveals the breadth of potential areas of use of artificial intelligence.

Moreover, the role of AI in decision-making processes is not limited to providing a rational decision-making mechanism. When supported by human intuition, both human and AI interaction can be utilised by building hybrid models. Such models make it possible for organisations to make decisions based not only on data but also on human experience (Sobocińska, 2021). However, the impact of AI on strategic decision-making processes is not limited to its positive aspects. The use of this technology raises ethical and legal questions as well as issues of bias. For example, the lack of transparency and accountability in the decisions of AI systems can undermine customer trust. Therefore, the responsible use of AI is critical for the sustainable success of organisations in the long term (Alzyoud, 2023).

II.II. ADVANTAGES OF AI SUPPORTED SCENARIO PLANNING FOR BUSINESSES

AI-supported scenario planning enables businesses to predict future possibilities by analysing historical data. This method offers significant advantages in risk management, opportunity analysis and strategic flexibility (Sohrabi et al., 2018; Mühlroth & Grottke, 2020). AI-supported scenario planning stands out as a strategic tool for modern businesses. This method allows businesses to predict future possibilities based on past data. Thus, businesses can make more informed decisions in dynamic and complex business environments (Babych & Babych, 2023). For example, in strategic forecasting, artificial intelligence has great potential to detect future changes early and develop strategic actions accordingly by analysing trend and customer data (Brandtner & Mates, 2021; Olawoyin & Chen, 2018). AI-based data mining models help firms to identify emerging issues and trends with a higher level of automation (Mühlroth & Grottke, 2020). Artificial intelligence allows organisations to proactively make the necessary changes by modelling future levels of flexibility and agility (Shafiabady et al., 2023).

One of the most important advantages of scenario planning is the convenience it provides in risk management. This approach enables businesses to identify potential threats in advance and develop appropriate strategies against these threats. For example, optimising business processes under uncertainties and recognising opportunities early becomes possible with scenario planning. In particular, AI's data analytics and modelling capabilities make the scenario planning process more predictable and effective (Blaga, 2022). AI-supported scenario planning offers advantages to businesses not only in risk management but also in providing strategic flexibility. Businesses can test their decisions under different scenarios and this makes strategic planning more resilient. For example, in the face of challenges such as changing customer demands in global markets or supply chain disruptions, scenario planning offers critical support in creating alternative paths (Rhoods & Babor, 2018). In addition, scenario planning also helps businesses develop innovative solutions. Especially in start-ups and dynamic industries, exploratory scenario planning has a greater impact than traditional planning methods. This process not only reduces costs but also offers the potential to create new sources of revenue (Hermawan, 2022).

II.III. AI'S CAPABILITY IN UNCERTAINTY MANAGEMENT

AI provides organisations with a powerful decision framework by modelling situations such as uncertainty and complexity. It contributes to better management of uncertainties by providing support in processes such as environmental scanning, identification of alternatives and rapid experimentation cycles (Weiser & Krogh, 2023; Shafiabady et al., 2023). Artificial intelligence (AI) plays a strategic role by providing strong and flexible decision frameworks to organisations in situations involving uncertainty and complexity. The capabilities offered by AI in processes such as environmental scanning, identification of alternatives and rapid experimentation cycles enable organisations to deal with uncertainties more effectively. In particular, technologies such as data analytics, fuzzy logic and machine learning come to the fore for effective management of uncertainties (Qin et al., 2021). These technologies and techniques are used to inform strategic planning processes and improve future forecasting processes

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Volume 07 Issue 12 December 2024

DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

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(Gruetzemacher, 2019). AI can play an effective role in uncertainty management by providing support to humans in sub-processes such as environmental scanning, problem formulation, identification of creative alternatives and scenario modelling (Weiser & Krogh, 2023; Wu et al., 2022; Borges et al., 2020).

AI makes uncertainty management more systematic by optimising decision-making processes. For example, fuzzy logic-based approaches provide effective tools for analysing uncertain situations and developing appropriate solutions to these situations. Such methods are not only based on past data, but also guide the decision-making process by modelling future possibilities (Teke & Kiraz, 2018). One of the contributions of AI in uncertainty management is that it increases the ability of organisations to evaluate alternative scenarios. Especially in complex systems, the rapid experimentation cycles provided by AI enable decision makers to test and optimise different scenarios. This process allows not only to manage uncertainties but also to better identify opportunities and risks (Beauregard, 2018). Furthermore, one of the advantages of AI in uncertainty management processes is that it provides strategic flexibility. Organisations can respond quickly to unexpected changes thanks to the analysis and modelling capabilities provided by AI systems. For example, in a dynamic market environment, decision makers can make more accurate predictions and strategic adaptation with AI-supported simulations (Castro et al., 2020).

II.IV. RISKS AND ETHICAL LIMITATIONS OF AI SUPPORTED SYSTEMS

Although AI-supported systems improve decision-making processes, they harbour some risks and ethical concerns. These risks include data privacy, model biases, consequences of mis-trained systems and security concerns (Borges et al., 2020). Although AI-supported systems provide organisations with great advantages in decision-making processes, they face various risks and ethical limitations. Data privacy, model biases, errors caused by improperly trained systems, and security vulnerabilities are among the potential problems of these systems. Such risks can threaten the security and sense of justice of both individuals and organisations (Chen et al., 2021). Data privacy is one of the most prominent ethical issues in AI-enabled systems. Since these systems are designed to analyse large datasets, privacy violations may occur during the collection and processing of personal data. In particular, data breaches by malicious actors can have serious consequences for both individuals and businesses. Furthermore, lack of transparency in data use can reduce user trust (Gruetzemacher, 2019).

One of the ethical limitations of AI is model bias. Biases in educational data can directly affect the results of AI systems and increase social inequalities. For example, an AI-based system used in a recruitment process may reproduce biases based on gender or racial discrimination in the data and thus produce discriminatory results (Efe, 2023). Security risks are also an important problem of AI. The malfunctioning of autonomous systems or their vulnerability to cyber-attacks carries serious risks for organisations. In particular, the effects of such failures in AI systems used in critical infrastructures can have far-reaching consequences. For example, manipulation of systems by exploiting vulnerabilities can cause both financial losses and reputational damage (Morris et al., 2020).

III. METHOD

This research was conducted within the framework of qualitative research methods. Semi-structured interview technique was used in the research. This technique aims to understand the participants' perspectives on the impact of artificial intelligence in the business world and the shaping of future scenarios by allowing them to reveal their in-depth knowledge and ideas. Qualitative methods are particularly recommended as an effective approach to explore the societal and sectoral impacts of AI (Creswell & Poth 2016).

The population of the study consists of managers working in IT, biomedical, public, construction, university (management information systems) and e-commerce sectors in Turkey. The sample was determined by maximum diversity sampling method. A total of 23 people from six different sectors were interviewed, with at least 3 participants from each sector. This method was considered as an effective strategy to increase the diversity of views and to perform a more inclusive analysis (Patton, 2015).

The data were collected through a semi-structured interview form. The interview form includes the following four basic questions:

- What do you think about the importance of artificial intelligence?
- How do you assess the role of artificial intelligence in your industry in the future?
- How do you foresee how artificial intelligence will affect the managerial role in the business world, which skills and competences will become more important?
- What do you think about creating AI-supported scenarios for the future in your organisation/business?

The interviews were conducted face-to-face or online, depending on the preference of the participants. Each interview lasted an average of 45 minutes and was audio recorded. The collected data were analysed with the consent of the participants. The collected

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Volume 07 Issue 12 December 2024

DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

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data were analysed using content analysis method. Firstly, the statements in the interviews were coded and these codes were grouped under themes. Both descriptive and interpretive analysis techniques were used in the coding process. This method used in the study enabled the qualitative data to be analysed systematically and produced meaningful results (Miles, Huberman, & Saldaña, 2014). In order to ensure the validity of the research, the interview questions were reviewed by experts in the field and tested by applying pilot interviews. In this process, attention was paid to ensure that the questions were clear and understandable and necessary arrangements were made. For reliability, the collected data were analysed independently by more than one researcher and consistency between the interpretations was ensured. The objectivity and reliability of the themes used in data analysis were increased (Lincoln & Guba, 1985). Within the scope of the research, informed consent was obtained from the participants. The data were used only for scientific purposes and the principle of anonymity was observed. In the research process, ethical principles were followed and the privacy of the participants was protected (Israel & Hay, 2006).

IV. RESULTS

The data obtained from 23 participants with a semi-structured interview form are given in tables below. Firstly, an answer to the question 'What do you think about the importance of artificial intelligence?' was sought. The findings obtained are given in Table 1.

Table 1. Findings on the Question: "What Do You Think About the Importance of Artificial Intelligence?"

Main Themes	F	Percentage	Example Opinions
Artificial Intelligence Provides Competitive Advantage in Business	8	%35	P-1: Artificial intelligence plays a critical role in enabling businesses to gain a competitive edge. P-23: It enhances efficiency by accelerating business processes. P-6: Companies must utilize this technology to remain competitive.
Artificial Intelligence Improves Business Processes	7	%30	P-2: Artificial intelligence enhances operational efficiency, enabling processes to be faster and more accurate. P-15: Automation of business processes can be made more effective with artificial intelligence. P-7: It allows for more efficient use of employees.
Artificial Intelligence Is Important in Data Analytics and Security	5	%22	P-4: Artificial intelligence provides significant benefits in big data analytics and security. P-8: It is an essential tool for data security. P-19: It strengthens decision support systems by analyzing data faster.
Artificial Intelligence Supports Education and Learning Processes	3	%13	P-10: Artificial intelligence makes employee training more personalized. P-12: It facilitates data-driven decision-making in educational processes. P-15: It optimizes employees' development processes.

Participants generally stated that artificial intelligence provides competitive advantage in the business world, improves business processes and plays an important role especially in data analytics and security. In addition, it was also stated that artificial intelligence will be useful in education and learning processes. The prominent themes were competitive advantage (35%), improving business processes (30%), data analytics and security (22%) and contribution to education processes (13%). A sample opinion: P-1: 'Artificial intelligence has become a necessity for businesses to survive. In a world where competition has increased so much, it is essential to use artificial intelligence technologies to increase efficiency and speed up processes.'

Within the scope of the research, the second question 'How do you evaluate the role of artificial intelligence in your sector in the future?' was searched for an answer. The findings obtained are presented in Table 2.

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DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

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Table 2. Findings on the Question: "How Do You Evaluate the Future Role of Artificial Intelligence in Your Industry?"

Main Themes	F	Percentage	Example Opinions
Artificial Intelligence Will Increase Efficiency in the Industry	12	%52	P-11: "It's certain that artificial intelligence will enhance efficiency. Particularly in production and operational processes, time and labor losses will be minimized. Things will be much faster in the future." P-14: "With automation brought by technology, business processes will speed up, and errors will decrease. Efficiency will rise."
Artificial Intelligence Will Improve Decision Support Systems	6	%26	P-2: "Artificial intelligence will assist us in making better decisions. By analyzing data, forecasting the future will become easier." P-18: "Thanks to artificial intelligence, we will be able to make more accurate and faster decisions, providing significant advantages in both trade and strategic planning."
Artificial Intelligence Will Be Significant in Security and Data Protection	4	%17	P-17: "Artificial intelligence will be a crucial tool for ensuring data security. Potential security threats will be detected faster, allowing for preventive measures."
Artificial Intelligence Will Enhance Customer Experience	1	%4	P-15: "It will be highly beneficial for personalizing customer experiences. Tailored solutions will be offered for each customer's needs."

Participants assessed the future role of artificial intelligence as being largely effective in the areas of increasing productivity, improving decision support systems and security. 52% stated that artificial intelligence will increase productivity. 26% emphasised the contribution of artificial intelligence to decision-making processes and stated that this technology will make future strategic decisions more accurate. In addition, 17% emphasised the role of AI in security and stated that it has great potential in ensuring data security. The potential of AI to improve the customer experience was mentioned by a smaller number of respondents, with only 4% emphasising this. A sample opinion: P-11: 'It is certain that artificial intelligence will increase efficiency. Especially in production and operational processes, time and labour loss will be minimised. Things will be much faster in the future.'

Thirdly, the question 'How do you predict that artificial intelligence will affect the managerial role in the business world and which skills and competences will become more important?' was sought to be answered. The findings obtained are presented in Table 3.

Table 3. Findings on the Question: "How Do You Predict Artificial Intelligence Will Impact the Managerial Role in Business, and Which Skills and Competencies Will Become More Important?"

Main Themes	F	Percentage	Example Opinions
Data-Driven and Strategic Thinking	13	%57	P-22: "With artificial intelligence, managers will need to think more data-driven and strategically." P-15: "Managers must improve their data analytics skills. Analyzing information correctly will be a crucial factor in guiding business strategies." P-19: "I believe artificial intelligence will be a great assistant for managers in making meaningful decisions. Making data-driven decisions will enable managers to act more clearly and quickly."
Team Management and Change Management Skills	8	%35	P-7: "Artificial intelligence will transform the way managers work, making team management skills even more critical.

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Volume 07 Issue 12 December 2024

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DOI: 10.47191/ijcsrr/V7-i12-34, Impact Factor: 7.943

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			Managers will need to adapt their teams to these changes, not just manage technology." P-16: "In workplaces transformed by AI, managers' ability to adapt their teams to innovations will be crucial. Skills like human resources and change management will take center stage." P-13: "Managers will need to manage not only technology but also the human factor effectively."
Technological Adaptation and Learning Skills	2	%8	P-4: "In the past, managers relied on a specific knowledge base to make decisions, but now the ability to follow technology and use it efficiently will become far more critical." P-10: "AI applications and technological innovations are evolving so rapidly that managers' continuous learning and quick integration of new knowledge into business processes will be essential."

Most participants emphasize that artificial intelligence will lead to radical changes in the managerial role and that managers will need to develop a variety of new skills. While 57% stated that data-oriented and strategic thinking skills will gain importance, 35% stated that team management and change management skills will become increasingly critical. Another 8% expressed the necessity of technological adaptation and continuous learning. An example view: K-7: "Artificial intelligence will change the way managers do business, and team management skills will become even more important. The rapid implementation of technological changes will make change management skills mandatory. Managers must not only manage technology, but also adapt their teams to these changes." They will have to."

The fourth question within the scope of the research is "What do you think about creating future artificial intelligence-supported scenarios in the institution/business you work for?" The answer to the question has been sought. The findings obtained are presented in table 4.

Table 4. Findings obtained for the question 'What do you think about creating AI-supported scenarios for the future in the organisation/business you work for?

Main Themes	F	Percentage	Example Opinions
Integration of Artificial Intelligence into Future Business Processes	12	%52	P-16: "AI-supported scenarios are crucial for the future of our organization. I believe creating such scenarios is essential to keeping up with the pace of technological advancements. The future will undoubtedly be an AI-driven domain." P-21: "Planning for the integration of AI into business processes provides us with a significant advantage. We can make our current work much more efficient."
Increasing Efficiency in Business Processes	9	%39	P-7: "I believe AI contributions will make business processes faster and more efficient. Integrating AI into our business processes can increase our efficiency and make our processes more manageable." P-18: "With the creation of AI-supported scenarios, enhancing the efficiency of our business processes becomes much more feasible. We can save both time and resources."
Developing Creative and Innovative Solutions	2	%9	P-6: "By leveraging the potential of AI, we can produce creative and innovative solutions. In the future, we will have the opportunity to work with smarter systems, bringing a fresh perspective to the industry."

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With a rate of 52%, the participants believe that the integration of AI-supported scenarios into business processes is of great importance. Those who support this view are of the opinion that artificial intelligence will play a more active role in the business world in the future and that organisations should develop strategies to keep up with this change. 39% emphasise that AI-supported scenarios can increase efficiency in business processes. A group of 9% state that such scenarios will contribute to the development of creative and innovative solutions. A sample opinion: "P-16: "AI-supported scenarios are very important for the future of our organisation. I think such scenarios should be created in order to keep up with the pace of technological developments. The future will definitely be a field driven by artificial intelligence."

V. CONCLUSION AND DISCUSSION

The findings of this study emphasise the contributions of artificial intelligence (AI) to strategic decisions and scenario planning processes in the business world. The majority of the participants adopted the view that AI will play an important role in increasing organisational efficiency, improving decision support systems and security. These findings are in line with some studies in the literature. In particular, the effectiveness of AI in decision-making processes and its contribution to the strategic planning of organisations have been frequently emphasised in recent studies. For example, Yigit & Kanbach (2021) stated that AI technologies enable faster and more efficient decisions in business processes. In addition, AI-supported scenario creation and integration of these scenarios into business processes help organisations adapt faster to changing environmental conditions (Kaur & Aslam, 2020).

The fact that the participants in the study emphasised the impact of AI on providing competitive advantage and improving business processes is also in line with the findings in the literature. The potential of AI to create competitive advantage in the business world is associated with its contributions especially in the fields of data analytics and security. In particular, the contribution of AI in the fields of big data analytics and security has been addressed in many studies. For example, Huang et al. (2021) stated that AI enables businesses to operate in a more secure environment by increasing data security. In this context, the importance given to the role of AI in the field of security in our study is in line with previous research. However, another noteworthy finding in the study is that the participants drew low attention to the potential of AI to improve customer experience. This is different from some studies in the literature. For example, Torres Rivera and Díaz-Torres (2021) stated that AI can significantly improve customer experience, especially in terms of providing personalised services and better understanding customer needs. Although the issue of customer experience was addressed to a low extent in our study, this indicates that organisations need to develop more awareness of the customer-oriented use of AI technologies.

The findings obtained in terms of managerial skills support the views of the participants that AI will lead to radical changes in managerial roles. In particular, the views that data-driven thinking and strategic management skills will gain importance are in line with many studies in the literature. Li (2022) emphasises that AI technologies create change in leadership and management skills, so managers need to develop new skills. However, there are also some studies that adopt an opposite approach to these findings. For example, Picirillo (2020) argued that AI can fully automate managers' decisions and this may lead to managers' skills becoming less important. However, the findings in our study indicate that AI will help managers to manage business processes from a more strategic perspective.

Finally, the findings regarding the integration of AI-supported scenarios into business processes suggest that organisations should invest in these technologies in the future, in line with the research in the literature. In our study, 52% highlighted the importance of this integration and believe that this will help organisations cope with future uncertainties. These findings are in line with studies such as Campos et al. Again, although the emphasis on the role of AI-supported scenarios in developing creative solutions is in line with some studies, it is understood that more focus should be given to this issue.

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ISSN: 2581-8341

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Available at: www.ijcsrr.org

ISSN: 2581-8341

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Cite this Article: Mehmet Fatih Kanoğlu (2024). The Importance of Creating Artificial Intelligence Supported Future Scienarios in Decision Making Processes. International Journal of Current Science Research and Review, 7(12), 8954-8962, DOI: https://doi.org/10.47191/ijcsrr/V7-i12-34

8962 *Corresponding Author: Mehmet Fatih Kanoğlu Volume 07 Issue 12 December 2024