IMPACT OF IT TEAMS ON DIGITAL TRANSFORMATION AND INNOVATION

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ABSTRACT

In today's rapidly evolving business landscape, digitization has become an essential aspect for companies across various industries. The integration of digitization has resulted in improved efficiency, productivity, and profitability for businesses. The transition towards digitization has allowed companies to streamline operations, reach new customers and markets, minimize costs, and increase their revenues. As the world becomes increasingly interconnected, companies that fail to embrace digital transformation may risk becoming irrelevant and missing out on opportunities for growth. Therefore, digitalization has become a crucial component for companies to remain competitive in today's market. The aim of this study is to determine the criteria required for IT teams to be more effective in their digital transformation and innovation projects. The thesis evaluates the topics of digital transformation and innovation, risk tolerance, digital governance, corporate entrepreneurship, and knowledge sharing by dividing them into sub-headings through a survey of 143 IT professionals from different sectors. As stated in our hypotheses, it was observed that these sub-headings positively influence each other. The thesis is prepared to assist organizations in achieving greater success in their digital transformation and innovation projects.It specifically focuses on the impact and contribution of IT teams and provides managerial recommendations.

Keywords: Digital transformation; innovation; it teams; project management

ÖZET

Günümüzün hızla gelişen iş ortamında, dijitalleşme, çeşitli sektörlerdeki şirketler için önemli bir unsur haline geldi. Dijitalleşmenin entegrasyonu, işletmeler için gelişmiş verimlilik, üretkenlik ve karlılıkla sonuçlanmıştır. Dijitalleşmeye geçiş, şirketlerin yeni müşterilere ve pazarlara ulaşarak operasyonları kolaylaştırmasına, maliyetleri en aza indirmesine ve gelirlerini artırmasına olanak sağladı. Dünya giderek birbirine bağlı hale geldikçe, dijital dönüşümü benimsemeyen şirketler ilgisiz kalma ve büyüme fırsatlarını kaybetme riskiyle karşı karşıya kalabilir. Bu nedenle dijitalleşme, şirketlerin günümüz pazarında rekabetçi kalabilmeleri için çok önemli bir bileşen haline geldi. Bu çalışmanın amacı, BT ekiplerinin dijital dönüşüm ve inovasyon projelerinde daha etkin olabilmeleri için gerekli olan kriterleri belirlemektir. Tez, dijital dönüşüm ve inovasyon konularını, risk toleransı, dijital yönetişim, kurumsal girişimcilik ve bilgi paylaşımı konularını farklı sektörlerden 143 BT profesyonelinin katıldığı bir anket aracılığıyla alt başlıklara ayırarak değerlendirdi. Hipotezlerimizde de belirtildiği gibi bu alt başlıkların birbirini olumlu yönde etkilediği gözlemlendi. Tez, kuruluşların dijital dönüşüm ve inovasyon projelerinde daha başarılı olmalarına yardımcı olmak amacıyla hazırlanmıştır. Özellikle BT ekiplerinin etkisi ve katkısına odaklanılır ve yönetimsel öneriler sunulur.

Anahtar Kelimeler: BT ekipleri; dijital dönüşüm, proje yönetimi; yenilik

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Samet Çulha,2023

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.INTRODUCTION

Digitization, according to Gartner's Glossary of Information Technology, is the process of transitioning from analog to digital, while digitalization involves using digital technology to transform a business model and generate value-creating possibilities. Through digital technology, companies can now provide their customers with more efficient, higher quality, and long-term services. In contrast, digital transformation includes improvements that provide value to customers as well as the inclusion of digital technology and new business models into industries. (Piccinini et al, 2015).

Many companies interpret digital transformation as digitizing only the data on paper. In fact, digitalization represents much more. The biggest impact of digitalization on organizations is to make information more accessible and more transparent (Kuusisto, 2015). Digital transformation encourages businesses to rethink their traditional ideas and business models, allowing company processes to gain a more flexible structure.

Digital transformation is changing value chains in businesses and causing companies to reconsider the way they conduct business. The failure of more than half of the world's largest corporations to adapt to digitization has been the primary factor for their decline since 2000. To be successful in the digital transformation environment, businesses must embrace digital transformation (Baur and Wee, 2015). Today, businesses have started to redesign their business processes to become compatible with digitalization. International organizations and governments are developing strategic foresight studies on the effects of digital transformation (Ebert and Duarte, 2018).

Researchers have referred to digitalization as the "second machine age" (Brynjolfsson and McAfee, 2014) or "computerization" (Bowles, 2014; Frey and Osborne, 2017), while Germany uses the term "Industry 4.0.". As the internal and external environments of organizations align with the fourth industrial revolution, future project teams will consist of both humans and non-human systems (Marnewick and Marnewick, 2020).

Digitalization has affected project management, as well as practically every other aspect of business, in recent years. For this reason, traditional project management strategies need to be compatible with Industry 4.0 (Thee and Kham, 2018). Enterprises that use a project management methodology compatible with Industry 4.0 will increase their productivity, reduce overall costs and gain a competitive advantage in this way. When adapting their processes to Industry 4.0, companies must consider the

innovations brought by Industry 4.0 for project management professionals and ensure the incorporation of these innovations into their project management processes. In recent years, universities and training centers have organized certification programs in project management based on digital transformation to develop a qualified workforce for Industry 4.0 and enhance existing human resources. At the same time, many companies are establishing digital transformation departments to give a systematic overview of their work on digital transformation.

There are some criteria for the successful completion of the projects. According to Venczel et al, (2021), it is vital to identify the project success criteria, determine the project success components, and choose the project success model at the start of the project. Failure to choose the success model correctly increases the risk of project failure. Choosing an appropriate success model in this direction increases the likelihood of successful completion of the project.

This study will discuss how IT and business unit managers need to digitize their teams and processes to keep up with the competition. The study will also evaluate the success factors needed by digital transformation and innovation projects that can be adapted to digital project management processes based on existing literature. Moreover, the study will provide practical proposals and recommendations for digitizing project management processes, considering potential IT project management issues in real-world scenarios.

1.2. Innovation

Innovation drives growth and helps address social challenges (OECD, 2005). The definition deals with product, process and two methods; marketing and organization (Gault, 2018). Since 2005, the Oslo Manuak's articles 146 and 150 have been utilized to define statistical measures of corporate innovation (OECD, 2005).

> Paragraph 146. An innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.
>
> Paragraph 150. A common feature of an innovation is that it must have been implemented. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organizational methods are implemented when they are brought into actual use in the firm's operations.

According to Gault, Product and process innovation must be "new or significantly improved," while two approaches must be "new." A survey responder determines the condition of the product, process, or methodologies in an innovation survey (Gault, 2018).

Approaches to innovation systems concentrate on how these connections work and the impact of cultural, organizational, and institutional variables in influencing innovation. Boteltho (2020) noted that all key economic, social, political, organizational, institutional, and other aspects that impact the creation, spread, and application of innovations should be included in a description of national innovation systems. According to Julia et al, different criteria can be used to classify inventions. The OECD recognizes four categories of innovations: Product innovations entail major changes in the capabilities of goods or services, including both fully new goods or services and significant upgrades to current ones. Significant changes in manufacturing and delivery processes are represented by process innovations. Organizational innovations are the changes in company operations, workplace organization, or the firm's external interactions resulting from the deployment of new organizational approaches. (Naranjo-Valencia et al, 2016).

1.3. Industry 4.0 And Digital Transformation

Since the beginning of Industry 4.0, there has been a significant emphasis on the use of digital technology. Organizations and scholars later discovered that digital technologies represented more than just a technological shift (Henriette et al, 2015). Digital transformation has an impact on businesses' processes, operational procedures, and organizational capacities (Li et al, 2018); it has revolutionized the way companies do business as well as the way they engage with their consumers, suppliers, and other stakeholders (Matarazzo et al, 2021). In addition to evolving technology, digitalization encompasses themes such as strategy, people, culture, talent development, and leadership (Goran et al, 2017).

According to Verhoef et al.(2021), the definition of digital transformation is "a company's use of digital technologies to create more value or develop a new digital business model." According to PwC (2013), digital transformation refers to new internet-enabled technologies becoming foundational to business and social life.

According to Hess et al, (2016), digital transformation includes the use of digital technology to change business models and modify products, organizational structures, and processes. Implementing new digital technologies to improve customer experience, boost operational efficiency through automation, and improve fundamental business processes is referred to as digital transformation (Horlacher et al, 2016).

The integration of digital technology and new business models into all sectors results in significant changes in how industries operate and deliver value to consumers, and this is known as digital transformation. Silvia et al, envision three distinct but interconnected aspects: digital transformation and innovation, business process factors, and digital technology.

Digital innovation and digital transformation directly affect consumption and production patterns. Every day, a new venture for a different sector emerges, influencing our daily lives to a greater extent. According to a recent poll of prominent retailers, approximately 64% regard digital innovation to be crucial to their business, and 28% believe it to be at least very significant. The basis of the digital transformation process is to invest in new technologies and to replace existing systems with better systems. Although these stages are important, this definition does not reflect the whole of digital transformation. If an organization wants to compete with other organizations, it should strive to be on the side of finding innovations rather than merely integrating changes within itself. To achieve this, companies need to plan and design their future accordingly. This is where the digital transformation strategy starts (Albukhitan, 2020). Simply incorporating Information Technology (IT) procedures is insufficient to enable firms to remain innovative and competitive in the Digital Age (Gomes et al, 2019).

As Amy Van Looy pointed out, in the 2000s, IT and IT managers concentrated on business process automation. Digital innovation in company operations is becoming increasingly important. Thus, business process management (BPM), which strategically aligns company processes through methodologies, strategies, and management concepts to achieve improved business outcomes, compliance, and long-term competitiveness, has become a valuable topic for many practitioners. (Looy, 2021).

According to the report prepared by the World Economic Forum in 2018, the digitalization of aviation, travel and tourism is projected to contribute $1 trillion to industry and society over the next decade. Moreover, digitalization digitalization brings

societal benefits by providing cost and time savings for consumers and reducing environmental footprints.

1.4. Industry 4.0 in Digital Transformation and Innovation Project Management

In his research on the conceptual development of project management over time, Lehmann (2010) summarized two main approaches: traditional project management and new project management. The main difference between these two approaches lies in the shift of perspective towards project management from a mechanical to an organic viewpoint. This change stems from external factors such as technological advancements, globalization, and customer orientation, alongside the shift in focus within businesses. The shift to a new project management approach has also been supported in the research conducted by Whyte et al, (2016). In these studies, basically, new approaches have been cited as an impact in the field of project management due to the rise of emerging industries such as digitally enabled organizations, consumer electronics, and software development.

Taner and Biçer (2020) investigated the influence of technology on project management aspects. Their research provided insights into the impact of technical advancements on project management variables i.e. organization, coordination, efficiency, standardization, and restrictions). With the advent of Industry 4.0, companies have had to evaluate the new technologies that shape their growth and development within them and adapt to the new scenario. As a result of these changes, project management has become critical for the digital transformation success of many companies (Santos, 2018). Digitalization is a event that affects technological processes, organizational structures, and management practices across industries and nations. Project management, which is frequently used as a change management technique, also plays a significant role in driving and executing digital transformation. (Braun et al, 2020).

In the classical project approach, projects include unique tasks, temporary organizations, and strategic building blocks. In the fourth industrial revolution, they should turn to project management tools for businesses to improve their processes with increased agility and without compromising on quality (Esteves et al, 2020). As a result, standard project management methodologies must be updated for Industry 4.0. In Industry 4.0, project managers must deal with new technologies such as the internet of things, system integration, autonomous systems, augmented reality, simulation, big

data, cyber security, and cloud technology (Thee and Kham, 2018). Even when digital innovations have a less significant impact than expected on the cost and quality of projects, the adoption of digital innovations is essential for organizations to be competitive (Morford, 2020).

Stoll, a company operating in the construction and engineering field, increased project and cooperation in the organization by using digital transformation in their social network application. (Klein, 2020). Triglav Group, an insurance company based in Slovenia, decided to launch its customer-oriented digital transformation project in 2013. Within the scope of the project, they installed the finance, payroll, and IT systems they designed themselves in their branches and transferred the management of this process to the project management offices. Following the work carried out by Triglav Group's project management office on digitalization, the company experienced a 160% increase in online sales and a 15% decrease in operating costs (PMI, 2019).

When reviewing the literature on digitalization in the field of project management, it is observed that the studies have intensified, particularly after 2017. Khan (2020) conducted research on the implementation of Industry 4.0 concepts in project management, project monitoring, and control Morford (2020) conducted a study on the application of digital transformation to project management offices. According to Simion et al, (2018), project management in Industry 4.0 encompasses digitalization, virtualization, internationality, professionalization, agile project management and project-organization relationship.

In their paper, Marnewick and Marnewick (2020) concentrate on what is expected from project team members in Industry 4.0 and the abilities needed to satisfy these expectations. The study concludes that future project team members will need critical thinking and problem-solving skills. Furthermore, the report highlights that the introduction of robots with artificial intelligence as team members would drastically alter the organization of future project teams. Feise and von Hatzfeldt (2019) have investigated the effects of digitalization on project teams in an information technology company. Bajwa and Deichmann (2018) investigated the adoption level of cloud-based project management tools by project managers. Esteves et al, (2020) examined the importance of project management in Industry 4.0 and the capabilities that project managers should possess in the fourth industrial revolution. Blaskovics (2018) investigated the effects of digitalization on project managers. In their study, Barthel and Hess (2019) examined the difference between digital transformation projects and

traditional project management and discussed this through four quantitative case studies. Pinto et al, (2021) investigated the scenarios that should be used to analyze and select digital transformation projects and applied the ground theory method (GTM) to seven Brazilian telecommunications operators. Kaya et al. (2014) demonstrated that the "Digital Pulse Methodology", which is widely used in Sweden to manage deviations in product development efforts, has also extended management to include global projects of companies. Milin and Arsenijević (2012) investigated the link between the use of software tools in project management and the success of projects. It was stated that more than 70% of the participants in the research did not use any software tool for project management in their work, but this directly reduced the quality of the project management process and had negative effects on the project. Ribeiro et al, (2021) examined the knowledge and skills that project managers should have in Industry 4.0. Morford (2020) explained the relationship between digitalization and project management in project-based companies and studied the application of digitalization in project management offices. Taner and Biçer (2020) conducted a study on the effects of technologies used in Industry 4.0 on project management. Marnewick and Marnewick (2020) paper focused on various leadership styles and which leadership style is more appropriate for implementing new technologies. They also contributed to determining the best way to manage project teams during the Industrial Revolution.

Digitalization and related rapid advances in information technology have also led to changes in the various tools and techniques used to carry out the project in accordance with criteria such as cost, time and quality (Bajwa and Deichmann, 2018). This circumstance alters the knowledge areas of project management as well. Inclusion, the scope, time, cost, quality, resource, communication, procurement, stakeholder, and risk management are the 10 knowledge areas of project management. (PMBOK, 2017):

1) Project management involves procedures and activities to identify, define, consolidate, unify, and coordinate numerous processes and project management activities within process groups.

2) Project scope management entails the necessary activities to guarantee that the project includes the work required to complete it effectively and only includes what is needed.

3) Project Time Management encompasses the scheduling of projects and the necessary activities to manage the timely completion of the project.

4) Project cost management refers to the procedures of organizing, foreseeing, budgeting, financing, management, and controlling expenses for the project to be completed within the allocated budget.

5) Project quality management entails the procedures of planning, managing, and regulating the project and what it needs to fulfill the expectations of stakeholders while also incorporating the appropriate organization's quality policy.

6) Project resource management refers to the procedures of identifying, procuring, and handling the resources required for the project's effective completion.

7) Project communication management refers to the processes that must be followed to guarantee the timely and proper collection, development, shipping, storage, retrieval, management, control, monitoring, and ultimate disposal of the project information.

8) Risk management planning in a project covers the steps of risk identification, analysis, intervention planning, implementing actions, and risk monitoring.

9) Project supply management encompasses the processes required to buy or get the items, services, or results from sources other than the project team.

10) Project stakeholder management entails identifying the individuals, groups, or organizations who may influence or be affected by the project, analyzing stakeholder expectations and their impact on the project, and developing appropriate management strategies for the effective inclusion of stakeholders in project decisions.

Simion et al, (2018) have studied the innovations that Industry 4.0 technologies have brought about in seven of the project management knowledge areas.

According to them, Industry 4.0 is defined by eleven technologies. The internet of things, intelligent manufacturing plants, cyber-physical systems, dimensional printers, big data, cloud computing systems, cyber security, integration of systems, autonomous robots, augmented reality, and simulation are examples of these technologies. The use of these technologies together in harmony is important for the company to catch up with the digital transformation, these technologies can be defined as follows (Ömürgönülşen, 2019):

1) The Internet of Things is defined as objects communicating with each other, interacting with each other, and finding data. The communication of objects with each other is obtained from real-time data. In this case, it will make real-time decision making possible.

2) Smart factories are environments where the people factor is significantly restricted and production-related data is obtained automatically. Thanks to smart factories,

production processes will change completely, resulting in safer, more cost-effective, and environmentally friendly systems. In these factories, concepts such as machine learning, automation, artificial intelligences are becoming integrated with production processes.

3) Cyber-physical systems are technologies that allow smart objects to communicate with each other. The main purpose of these systems is to create an intelligent control and production system by obtaining and transferring data in real time. Cyber-physical systems connect the physical and virtual world with the help of sensors.

4) Three-dimensional printers are the process of creating a physical object by printing it in layers. In this process, three-dimensional digital drawings or models are used. This type of printer is especially used in the production of special products that need to be produced in limited numbers. At the same time, it becomes easier to produce and make design changes as soon as the customer's demands are made.

5) Big data can be defined as the acquisition of meaningful information from data sets. Big data consists of five components: volume, speed, variety, accuracy, and value. With the increase in the size and variety of data, storing big data has become costly. Methods such as data compression and size reduction are used to overcome this problem.

6) Cloud computing systems effectively provide solutions to the data storage problem that comes with the concept of big data. Thanks to this technology, businesses store their data on the internet instead of data centers. In this way, it is possible to access the data at any time.

7) Cyber security: Along with the advantages of big data and cloud computing systems, the security problem of storing data has also come to the forefront. Thanks to this technology, precautions are taken against computer network attack.

8) System integration is defined as the integration of many subsystems with each other to increase the usefulness of the systems. There are three different types of digital integration: horizontal, vertical and end-to-end integration. Horizontal integration defines the integration of information technologies into different stages within the company (procurement, logistics, production, etc.), while vertical integration can be defined as the integration of hierarchical levels (production management and company planning). Vertical integration and horizontal integration are the basis for end-to-end digital integration. End-to-end integration refers to the integration provided throughout the entire engineering process in the real and digital world along the entire value chain of a product and between different companies.

9) Autonomous robots are machines that work through a computer program and perform programmed tasks. Robots are used in the production lines of the factories to accelerate production. In this way, labor productivity increases, and human-induced errors decrease.

10) Augmented reality is called the presentation of data that will affect people's senses to people's perception through the computer. This technology is especially used in educational activities.

11) Simulation is defined as the representation of a real system through a mathematical model. The experiments are repeated many times by changing the inputs of the model. 5000 simulations and 5000 experimental results are the results of effort. However, unlike this technical optimization, it does not produce a single best result. The technologies used in digital transformation bring progress to organizations. It also helps to optimize project management by contributing to real-time decision-making and better control of the activities carried out in the project (Silva, 2017).

2. LITERATURE REVIEW

This section will address the factors that affect project success and compile studies conducted in this field. An attempt will be made to establish a relationship between the factors affecting digital transformation and the factors affecting project management.

2.1. Success Factors in Digital Transformation

Digital transformation is a worldwide current issue that is of great importance for all companies operating in any sector, as it creates value in customer relations and internal processes of companies (Zaoui and Souissi, 2020). Organizations, on the other hand, cannot prosper solely by going digital. Many technology and success factors contribute to success (Zaoui and Souissi, 2020).

In 2018, McKinsey released the final report of years of survey research on digital transformation. The published report reveals that the digital transformation success of companies is less than thirty percent, showing that the concept of digital transformation is actually more difficult than it is thought. Sixteen percent of respondents stated that although their organizations have successfully improved digital transformation, they have not evolved themselves to sustain changes in the long term. Many organizations fail to adapt their digital transformation processes. The reasons for this failure are the lack of knowledge about Industry 4.0 technologies and the leadership problem that comes with the changing environment, and the fact that corporate leaders do not have enough time to raise awareness (Fairoos et al, 2020).

In the literature, there are studies with success factors in the field of digitalization. In their research, Morakanyane et al, (2020) seek answers to the question, "What do digital samples do to ensure that they are successful in their digital journey, and how do they do it?" Bolatan and Gözlü (2019) identified critical success factors in the transition to Industry 4.0 projects and conducted a survey to cover 31 companies operating in Turkey. As a result of the research, big data management was identified as the most important success factor of Industry 4.0. While smart factories are defined as the second most important success factor, the third most important success factor is the strategic vision.

In their research, Moeuf et al. (2020) attempted to identify risks, opportunities, and crucial success factors for adopting Industry 4.0 in SMEs. As a result of the research, it

is mentioned that education should have the priority to be successful and that SMEs should be supported by external experts for the success of an Industry 4.0 project. Jonathan (2020) has studied the success factors required for digital transformation in the public sector. Cichosz et al, (2020) conducted research on the barriers, success factors, and pioneering practices of digital transformation in logistics service providers. According to Osmundsen et al, (2018) there are seven success factors for digital transformation success: an enabling and agile organizational culture, well-managed transformation activities, information benefit, involving both managers and staff members, increasing capabilities in the field of information systems, developing changing competencies, developing digital business strategy, and including information systems in the process. Errays and Tourabi (2021) aimed to understand the factors that can contribute to the success of the digital transformation of businesses in their paper. At the end of the research, it was revealed that the interviewees exhibited a positive attitude towards the implementation of digital transformation. It is emphasized that the success of digital transformation depends mainly on internal factors (qualified personnel, lack of funds, leader support, acceptance of technology, etc.) and an external factor related to government support. The results of a study published by McKinsey in 2018 show exactly how companies should make the technology-enabled changes that distinguish successful digital transformations from others. The research has explained several factors that can increase the chances of a successful conversion. These factors fall into five categories.

1) Appoint leaders with digital awareness.
2) Develop skills for the future workforce
3) Encourage employees to work with new methods.
4) Digitize everyday tools
5) Communicate through digital methods.

Barriers to digital transformation can be described as the cost of technological advances, risks associated with digital transformation, a lack of a supportive corporate culture, a lack of digital skills, data management difficulties, and standardization trouble. (Morford, 2020).

Studies on digital transformation success factors in the literature were examined. In the results of the research, the following success factors are mainly defined.

1) A welcoming and adaptable corporate culture
2) Effective transformation actions

3) Information Utilization
4) Involvement of managers and employees
5) To increase the capabilities in the field of information system
6) Developing dynamic competencies
7) To incorporate information systems into the process by developing a digital business strategy
8) Leaders with a digital mindset
9) Developing Skills for the Future Workforce
10) Encouraging people to work in new ways
11) Digitizing everyday tools
12) Communicating frequently through traditional and digital methods
13) Data Management

2.2. Project Success Factors in Digital Transformation and Innovation

Capture (2021) defines the use of digitalization in project management processes in companies as an "accelerator of success.". The digital transformation of a company is defined by projects between many departments that influence each other. Appropriate management tools make it easier to overcome complexity and strategically implement digitalization across the company, highlighting the importance of the following stages for professional project management in digital transformation.

1) Implementation of strategic foresight and operational excellence to bring together the company's digitalization strategy and project implementation.
2) Optimal use of resources to make good use of existing budgets and human resources
3) Using the art of communication by using figures and data for successful stakeholder management
4) Developing a high-performance project organization, selecting best practices
5) Performing risk management with regular analyzes

2.2.1 Risk Tolerance

Risk in the finance tolerance, which is seen as a key element in the approach to making financial choices, is defined as the greatest degree of uncertainty that individuals are willing to take when making financial decisions. (Aydemir and Aren, 2016).

Individuals' attitudes towards financial risk have a significant influence on their decisions in various areas such as savings, investments, diversification, insurance, and retirement planning. Therefore, the financial decisions that individuals make according to their level of financial risk tolerance will have effects on their own financial well-being, as well as on financial markets and the economy in general (Fisher and Yao, 2017). Financial risk tolerance is becoming even more important, especially in financial markets where uncertainty or risk is high (Gilliam et al, 2010). It is recognized that individuals with a high tolerance for financial risk are better able to tolerate uncertainty and manage the process better during declines or rises in financial markets (Fisher and Yao, 2017). For such reasons, measuring individuals' financial risk tolerance and identifying the factors influencing financial risk tolerance has been a topic of interest not only by researchers, but also by practitioners and policymakers such as portfolio managers and investment advisors.

Age, gender, marriage status, and education level are examples of demographic characteristics; income, wealth, job status, and property ownership are examples of economic factors. Personality characteristics, attitudes, and beliefs are all psychological elements that determine (Grable and Joo, 2004). Apart from these, past experiences in financial decisions, expectations for the future of financial markets and culture also have an impact on the financial risk tolerance of individuals (Kourtidis et al, 2017). As can be seen, there are many factors that affect financial risk tolerance, in other words, financial risk tolerance has a multidimensional structure.

Considering individuals' own personality traits and possible psychological biases when making financial decisions will play an important role in making the right decisions (Jameel and Siddiqui, 2019). In addition, attempting to establish the impact of personality traits on financial risk tolerance and therefore financial decisions will help portfolio managers and investment advisors make better decisions on behalf of their clients and/or provide advice that is more appropriate to their financial goals and expectations.

In the Turkish Language Association (TDK) Dictionary, the meaning of the word risk originatingfrom the French word "risqué", is defined as the "possibility of incurring loss or decrease in economic benefit that may lead to damage." The concept of risk is defined in different ways in various branches of science. In financial terms, risk can be defined as the probability of a monetary loss related to a transaction or a decrease in the economic benefit that may result in the occurrence of a loss (Demireli, 2007). Financial

risk tolerance refers to the maximum level of uncertainty that an individual may endure while making financial decisions, and it reflects an individual's risk-taking attitude in the face of a variety of dangerous financial scenarios. Grable (2000). Risk aversion is the inverse of financial risk tolerance (Hallahan et al, 2003). In other words, those who have a low (high) risk tolerance are more inclined to avoid danger.

The behavior of individuals with high and low risk tolerance differs from each other. Individuals with a low financial risk tolerance generally want to suffer less harm when they perform a financial activity. In addition, they want to have more information about the activities they will carry out by avoiding the activity in case of high uncertainty. Individuals with high financial risk tolerance, on the other hand, are more confident in themselves and able to risk losses than individuals with low risk tolerance (Anbar and Eker, 2009). Individuals with a high tolerance for financial risk are more likely to include stocks in their portfolios and trade in the financial markets more often. Because they are more risk-willing, they may place less emphasis on portfolio diversification (Kourtidis et al, 2017).

Since the situations, lifestyles, upbringing conditions and personality characteristics of individuals are different, the risk is perceived at a different level by everyone. Therefore, since the risk level of an investment planned or considered to be made will be perceived at a different level for everyone, the decisions to be made by the individuals will also differ. Individuals who can be considered as low risk according to one situation and as high risk in another situation, will be able to perceive the same situation as more or less risky at different levels. In other words, just as different individuals may perceive a situation at different risk levels, an individual may perceive the same risk level differently in different situations (Ceyhan, 2008). This situation reveals that personality is an extremely important element in the perception of risk.

In general, personality can be expressed as a set of unique characteristics that distinguish an individual from other individuals and make him or her different from others (İçerli and Arsu, 2019). Personality is the combination of temperament that is innate and distinguishes the individual from other people and the characteristics that arise in different situations (Horzum et al, 2017). Personality traits are those that allow an individual to be distinguished from other individuals in terms of feelings, thoughts, and behaviors, reflecting their unique, distinctive behavioral tendencies under certain circumstances (Roberts, 2009). In addition to innate biological and psychological characteristics, personality also includes the abilities, motives, attitudes, and

temperament characteristics that individuals acquire in social life and through education (Paksoy et al, 2019).

Although there is no universally accepted definition of the concept of personality, extensive research in the field of personality has led to the development of a model believed to provide a comprehensive personality assessment. This model is the five-factor personality model (Golberg, 1990). The five-factor personality model is based on the language hypothesis. It suggests that the individual differences observed in people will be encoded as the common language of the whole world and will be reflected in the spoken language through these words, and as a result, a classification can be created to cover the personality structure of the individual (Çelebi and Uğurlu, 2014). Various words were first proposed by F. Galton in 1884 to express individual differences, and subsequent studies on this topic were conducted by G. W. Allport and H. S. Odbert (1936). Building on these studies, R. Cattell identified 16 personality factors in 1957 (İçerli and Arsu, 2019). W. Norman, in his study carried out in 1963, applied factor analysis to a 20-scale grading scale and turned it into five basic factors (Deniz and Erciş, 2008). In the late 1970s and early 1980s, P. T. Costa and R. R. McCrae developed the five-factor personality model through their studies (Çelebi and Uğurlu, 2014).

The five-factor personality model, which is accepted and widely used in many fields especially in psychology and sociology, gathers personality under five basic dimensions. These five dimensions or factors are; extroversion, agreeableness, responsibility, emotional balance/imbalance (neuroticism) and openness to experience. The model places these personality factors, also referred to as the "big five," at the highest level of the personality hierarchy, and the model is accepted to cover the entire area of narrower personality traits where these factors are located at lower levels of the hierarchy (Dinç et al, 2013). The five-factor personality model basically has two features (Costa et al, 1991). The first is that the five-factor personality model is based on clear and conceptual values, and the second is that these five factors can clearly determine the differences between people.

2.2.2 Digital Governance

Today, practically every industry in the world is undergoing a multidimensional development. This process can be described as transitioning from industrial society to

information society, from Fordist production to flexible production, from the world of nation states to the world of globalization, and from modernist philosophy to post-modernist thought (Tekeli, 1996) one is confronted with a picture. This multifaceted transformation process erodes the conditions that make management legitimate and feasible, and this process of erosion leads to the emergence of new searches, if not abolishing management. In addition, in this process, the state has difficulty in responding to increasing and complex demands (Yüksel, 2000). Naturally, this environment directly affects the management discipline. The discipline has witnessed the dominance of different names over time such as "Public Administration" in the 1970s, "Public Policy and Management" in the 1980s, and "Governance" in the 1990s as a result of this rapid change process (Dunsire, 1995).

The literature defines governance as "the structure or order formed by the outcomes obtained by the joint efforts of all relevant actors in a socio-political system," which is commonly recognized. (Bozkurt et al., 1998). It illustrates the management styles that have developed at the boundaries between public institutions and the private sector where the distinction of concepts is blurred, emphasizing the restructuring of management in order to manage better (Stoker, 1998). It coordinates different network structures formed by interdependent positions and actors with conflicting and opposing interests, and envisages a heterarchical relationship and division of labor instead of hierarchical relationship and vertical division of labor (Kuzgun, 2015). The concept, defined by the United Nations (UN) as "the use of economic, political and administrative authority in the management of a country's affairs at all levels (Habitat II, 2000), has been considered as an appropriate tool that can ensure the realization of neoliberal policies. In recent years, it has been linked with efficiency and effectiveness within the framework of the development paradigm.

In fact, the concept has long been used to describe the form of relationship between shareholders and company managers in the management process of private companies (Şaylan, 2000), envisaging a system that involves managing together with participation instead of a top-down unilateral management style. The participation of non-governmental organizations and the private sector in the management forms the basis of the concept, from decision making to supervision at every stage (Yılmaz, 2001). This confirms the fact that governance is a phenomenon inherent to self-governing networks of relationships. The actors and institutions involved in the process reach a certain behavioral capacity to nurture and develop their own resources, skills and goals for a

long-term cooperation (Yüksel, 2000) as well as develop a system of roles, norms and values. In addition, they direct rights and powers as far as possible towards the general public interest (Kirlin, 2001) and contribute to the formation of an institutional perspective in this direction.

Governance in general in the literature is divided into three areas. The first one is the economic governance which includes the processes that affect a country's economic activities and relations with other economies (Habitat II, 2000) and has effects on equality, poverty and quality of life (Finance Minister, 2003). The second is the political governance which sets out the decision-making processes in policy-making. Finally, the third area is the administrative governance, which includes the policy implementation system (Habitat II, 2000). Furthermore, in terms of governance, a three-fold classification can be made based on the scale of cooperation between public institutions, the private sector, and civil society organizations, namely supranational, national, and local scales (Karaman, 2000). These are spatial differences that can arise in participation dimensions and be based on ideological foundations. In addition, common types of governance can be specified as global, public, and good governance. Today, digital governance is at the core of our work.

Global governance requires an environment in which international actors, as well as national actors, agree to achieve the goals set in the newly emerging world order (Karaman, 2000). In addition, it goes beyond the capacity of nation states to govern and tries to formulate cooperation between governments and non-profit civil society organizations by implying the absence of a central authority (Özdek, 1999). As it is known, the most important meeting on global governance was held in Birmingham, England in May 1998. In this meeting, where the main points of the Kyoto Agreement signed in 1997 were discussed, developed countries made efforts to solve serious global problems. The global nature of these problems has made clear the necessity of international efforts to solve them. However, the lack of a world government necessitates interstate cooperation to ensure success in global governance (Faulk, 1999). Nevertheless, many states today still persist in using classical methods to solve problems and resist changing the structures of their management processes (Kettl, 2000). Public governance has also become increasingly crucial in this process. The notion encompasses the administration of networks comprised of national, regional, and local political, social, and economic pressure and interest groups, as well as social, private, and commercial organizations. (Kickert, 1997). It is subject to managing the

complex structure formed by the network relations of many different actors. In this process, unlike the classical understanding, it envisages going beyond efficiency and effectiveness in the functioning of public administration (Kickert, 1997).

Good governance, which includes both global and public governance, is a place where rule of law is ensured, citizens' security is provided, rule of law is upheld, the judiciary is independent, public expenditures are managed fairly and accurately, transparent governance allows politicians to be held accountable for their actions to the public or be answerable to the public and all citizens can easily access the necessary services (Yüksel, 2000). In this context, good governance is based on a total of 8 principles: transparency, accountability, participation, responsiveness, rule of law, effectiveness, equality, and strategic vision.

Digital governance has been added to these types of governance in recent years, and efforts have been made to eliminate the lack of technological dimension in the process. Today, classical management systems are being restructured within the scope of digitalization and governance, just as "tectonic plates change valleys and hills". Who has the power? Who makes the decisions? How will multiple actors make their voices heard in the face of the current monopolization? Who will be held accountable and how? By asking such questions, the classical understanding is challenged, and it is intended to change these classical perspectives that lack information, distribute power, and redesign accountability and responsibility (Institute on Governance, 2016). In this process, technological developments are mostly utilized. Technological developments seen throughout the world also affect the understanding of public administration, and efforts are made to benefit from the opportunities provided by information and communication technologies in the service delivery of public institutions (Başa, 2012). In this process, we are witnessing the rapid spread of digital governance elements. While in the past, citizens perceived the state as an entity that stands between themselves and the information or service they demand, whereas in today's understanding of digital governance , citizens are provided with direct access to information and services through technological means. The new understanding envisages considering citizens as partners in government affairs rather than serving them as customers. In this context, the following points should be considered (Gül, 2015).

2.2.3 Knowledge-sharing

Since industrialized nations have now chosen a knowledge-driven growth system rather than capital-based development, knowledge has become a natural phenomenon as it is created and exchanged. Beyond just being a part of the system, knowledge is recognized as a critical component of the management system in businesses. Traditionally, businesses have efficiently managed three sorts of resources: financial, human, and material. Today, the availability of knowledge is the most significant organizational resource (Drucker, 1993). As Drucker (2000) points out, the foundation of 21st-century organizations is no longer money, capital, or technology; it is knowledge (Schwartz, 2006). When scientific studies are examined, many scientists (Grant, 1996) touched on the importance of knowledge in helping organizations gain competitive advantage. Nanda (1996) stated that knowledge is a potential source of competitive advantage due to its unique, rare and very difficult to imitate by others, and Bornemann and Sammer (2003) stated that knowledge is a source of value creation due to its characteristic.

Knowledge has become a product that can be produced continuously, transferred through communication, divided, shared and substituted with production factors (Güredin, 1994). In this respect, managers should support the production of knowledge instead of trying to control it. The production of knowledge here does not only mean the production of new knowledge. Taking an existing knowledge from another organization and using it in its own organization is also a production of knowledge (Erkan, 1998). It is through knowledge sharing that managers spread individual learning throughout the company and integrate it into practical applications (Yang, 2007). In addition, effective knowledge sharing helps organizations to manage their decision-making processes in a healthier way. Because the value of the knowledge shared will directly affect the decision of the organization. For this reason, it is important that the knowledge is accurate, comprehensive, valid, applicable, complete, accessible at the right time, cost-effective, as well as being able to share in a healthy way within the organization.

In today's business world, the fact that businesses are only at a competitive level is not enough to continue their existence. Now, all businesses are striving to reach a competitive level through their employees and thus gain a competitive advantage. In this context, innovation is accepted as the most important phenomenon in providing competitive advantage today (Eren et al, 2013). The primary goal in innovative business

behavior is to enable the willingness to come up with new ideas within the work role, group or enterprise. The aim here is, is to create benefit in role performance, group or organization. In this way, employees adapt to the requirements of the job by developing, encouraging, and improving their thoughts and they can also improve themselves and their organizations (Ceylan and Özbal, 2005). Therefore, it is necessary to focus on the ability of employees to assimilate, internalize and systematically use their innovative behaviors for the benefit of the organization (Beğenirbaş and Turgut, 2016).

In the past, the role of technology as a source of competitive advantage in banks was small. However, today, as soon as a new technology emerges in the banking sector, we live in an age where the adoption of this new technology by banks takes a very short time. When we examine the place and importance of knowledge sharing in the banking sector, we see that knowledge sharing has brought about a change in financial instruments and that this change has undergone a continuous evolution with technological progress. With the use of knowledge and the use of knowledge sharing in the banking sector, the efficiency and competitiveness of the institutions in this sector have increased. When the previous studies on knowledge sharing in our country are examined, it can be seen that this concept is addressed only in the banking sector in the research by Karavardar (2012), where the relationship between employee relations and knowledge sharing within the organization is examined. However, in this study, the factors affecting knowledge sharing processes were not mentioned. Therefore, it is understood that the concept is not adequately addressed in the banking sector, where knowledge is used and shared intensively. Therefore, in this research, individual, organizational and technological factors affecting knowledge sharing and the effect of knowledge sharing process on innovative business behavior were examined on bank employees.

Previous research in this field included Lee's (2001) knowledge sharing; Ipe's (2003) activity of transferring or disseminating knowledge from one person to another or from one organization to another; and Bartol and Srivastava's (2002) process of transforming knowledge possessed by one person into a form that can be understood, assimilated, and used by other individuals. Hendriks (1999) referred to employees who share knowledge about the organization with other employees within the organization. Yang defines knowledge as "the fact that one has the knowledge between at least two individuals or groups and the other obtains this knowledge (2007) as a phenomenon that occurs as a result of an individual's willingness to learn something new from others

in order to improve his or her skills, as well as volunteering to help others. A more inclusive definition of knowledge sharing can be attributed to Lin. According to Lin, knowledge sharing is a culture of social interaction that encompasses the exchange of knowledge, experience, and skills of employees by or through all units of an organization. In this context, knowledge sharing encompasses a set of shared understandings about ensuring that employees have access to relevant information and creating and using information networks within the organization (Lin, 2007). The main features that stand out in the definitions for knowledge sharing include voluntary exchange of organizational-related knowledge or assistance among employees, aiming to develop new skills, and having a positive nature (Karaaslan et al, 2015). In knowledge sharing, it is very important that the information comes from a certain source and reaches a certain goal. Knowledge sharing differs from information transfer in this respect (Yençeri and Demirel, 2007). While knowledge transfer refers to the flow of information, knowledge transfer is the meaning given to the message obtained by the receiver as a result of this message (Nonaka and Takeuchi, 1995). In the transfer of knowledge, there is a distribution of information, and it is not tested whether it has reached its goal. In addition, the party who will accept the information in the sharing of knowledge must be voluntary. In other words, in knowledge sharing, there is an exchange of information without any compulsion between the parties and because of the reconciliation between the individuals themselves (Yençeri and Demirel, 2007).

Knowledge sharing is important because between individuals and organizations, the knowledge possessed by individuals is carried to the organizational level and transformed into an economic and competitive value for the organization (Hendriks, 1999). The focus of knowledge sharing is on individuals who can explain, encode, and communicate knowledge to other individuals, groups, and organizations (King, 2005). Gurteen (1999) stated that knowledge sharing is a synergistic process and that a person's dialogue with others allows the individual to benefit from new understandings and ideas and allows the individual to develop his ideas. Taking advantage of knowledge can only be possible for people to share the knowledge they have and build new knowledge on the knowledge they have learned from others. In this context, the ability of an organization to make effective use of knowledge depends on the employees who produce, share and use knowledge (Ipe, 2003). The ultimate goal of employees sharing the knowledge they also have is to transfer that knowledge to organizational assets and resources (Dawson, 2001). The process of sharing knowledge can be explained as the

production of new information as a result of mutual exchange of knowledge by employees (Lin, 2007). Sharing behavior in the knowledge -sharing process is the combination of two varieties that can be distinguished in terms of explicit knowledge sharing (which is somehow written or encoded) and implicit knowledge sharing (which exists in an individual's mind) (King, 2005). Davenport (1997) defined sharing as a voluntary act and separated it from reporting. Reporting involves the exchange of knowledge based on some routine or structured format. Sharing, on the other hand, refers to a conscious action of a person who exchanges knowledge, but voluntarily participates in this process without any compulsion to do so. The understanding of sharing facilitates the coordination of activities, but effective information integration requires that everyone be aware of everyone else's repertoire of knowledge (Grant, 1996).

Knowledge sharing in organizations is a complex process driven by power equations within the organization since knowledge is dependent on social relations between individuals in terms of its value as well as its sharing and use. Knowledge is shared informally rather than through formal channels, and the knowledge -sharing process often depends on the culture of the work environment (Ipe, 2003). However, there are persistent barriers to learning in the workplace that will hinder the exchange and communication of confidential information between management and employees in teams (Argyris and Schon, 1978). Again, knowledge sharing in organizations is influenced by the extent to which managers and employees share the knowledge, their level of commitment to the organization, and their perceptions of mutual trust in working relationships (MacNeil, 2003). Some individuals exhibit reluctant behaviors to share knowledge due to personal insecurity, such as fear of being seen as ignorant and therefore unsuitable for advancement at work or new career opportunities. This is sometimes expressed as "knowledge is power" (Hendriks, 1999). At the same time, employees may fear that after sharing their personal knowledge, they will lose their knowledge and have less of an edge (Bartol and Srivastava, 2002). In fact, in an environment where there is gain or loss, that is, in an environment where there is competition, storing knowledge instead of sharing it may not be natural with the philosophy of "knowledge is power", but it does exist in reality (Yang, 2008). However, people need to know that sharing knowledge is in favor of their own self-interest. Because the paradigm of "knowledge is power" in the past has changed to " knowledge sharing is a power" today. If people understand that sharing what they know helps them

do their jobs more effectively, they will be able to make it easier for them to continue their jobs and accelerate their personal development and career development, and thus knowledge sharing will take place (Gurteen 1999).

3. METHODOLOGY

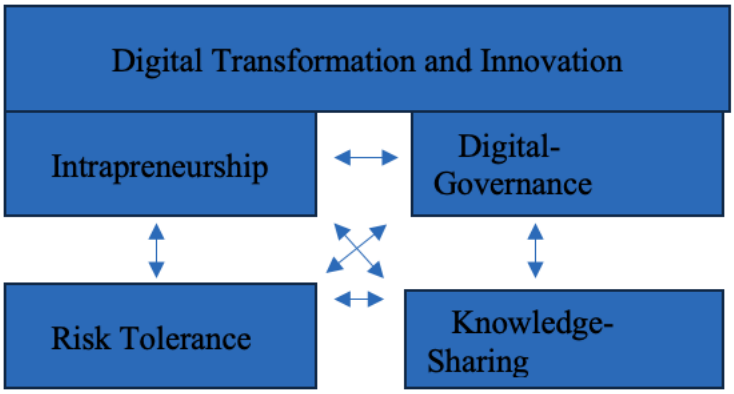
This part explains the research model, the research population and sample, the data collecting technologies utilized in the research and their application as well as the statistical methodologies and techniques used in the data analysis.

The purpose of this research was to better understand the implications of knowledge sharing, intrapreneurship, digital governance, risk tolerance, and risk tolerance in digital transformation and innovation. A survey was conducted with over 140 participants. Before conducting a widespread survey, a preliminary survey was conducted with 5 people as a test group from different occupations, ages and genders, and their feedback was received. With this feedback, the final version of the survey was developed. Afterwards, 143 people from different sectors and experiences were surveyed. The survey was conducted using the Google Forms survey service, and it was completed in April 2022.. The results were analyzed using SPSS.

3.1 Research Model

This research was designed in relational screening model. Relational model is a model in which the relationship between one or more variables is determined (Fraenkel and Wallen, 2005). The link between digital transformation and innovation, intrapreneurship, digital governance, risk tolerance, and knowledge sharing was examined in this study.

Figure 1 Relationship Between Digital Transformation And Innovation



3.2. Research Hypotheses

As mentioned in the literature review, there are 8 basic principles of good governance which are transparency, accountability, participation, responsiveness, rule of law, effectiveness, equality and strategic vision. This study suggests that when these principles are applied, digital transformation processes will be more successful, and that there is a positive relationship among them.

The phenomenon of knowledge sharing has been defined by Yang (2007) as a result of an individual's desire to learn something new from others to enhance their skills. As a result, it is believed that knowledge-sharing improves digital transformation processes. Although risk can be handled very differently, it is argued that risk tolerance is also a factor that positively affects digital transformation and innovation.

In this study, it is considered that these variables are positively related to each other.

Therefore the following hypotheses have been developed based on the literature review:

Hypothesis 1, suggests that the levels of internal entrepreneurship and knowledge sharing among participants positively predict the levels of digital transformation and innovation, and this is supported by a growing body of research. Studies have consistently shown that companies with strong intrapreneurial cultures are more likely to innovate and adapt to changing market conditions. Intrapreneurship refers to the ability of employees to think and act like entrepreneurs within the context of their jobs, pursuing new ideas and projects with a high degree of autonomy and creativity.

Similarly, knowledge sharing has been shown to be a crucial factor in fostering innovation and driving digital transformation. When employees have access to a broad range of knowledge and expertise, they are better equipped to identify and capitalize on emerging trends and opportunities. This can be facilitated through a variety of mechanisms, including internal training programs, social networks, and collaboration tools.

Overall, the evidence suggests that companies that prioritize intrapreneurship and knowledge sharing are more likely to succeed in their digital transformation and innovation efforts. By empowering their employees to think and act entrepreneurially and promoting knowledge sharing across the organization, companies can create a culture of innovation that is capable of driving sustainable growth and success.

Hypothesis 2, based on this idea, suggests that intrapreneurship and knowledge sharing are not only important predictors of digital transformation and innovation, but that they

are also mutually reinforcing. In other words, companies that excel at one of these factors are likely to excel at the other as well.

This is because intrapreneurship and knowledge sharing share many of the same characteristics and values. Both require a willingness to take risks and experiment with new ideas, as well as a culture of openness and transparency that encourages collaboration and sharing. Companies that excel at these practices are likely to be more innovative and agile, capable of responding quickly to changes in the market and staying ahead of the competition.

Finally, Hypothesis 3 suggests that the digital governance of participants and the level of knowledge sharing also play a key role in driving digital transformation and innovation. Digital governance refers to the policies and procedures that companies put in place to manage their digital assets and data, while knowledge sharing refers to the ability of employees to access and use this knowledge effectively.

Research has shown that companies with strong digital governance and knowledge sharing capabilities are more likely to leverage their data and digital assets to drive innovation and create value. This requires a focus on data management and quality control, as well as the ability to share knowledge effectively across the organization.

Overall, these three hypotheses highlight the fundamental importance of intrapreneurship, knowledge sharing, digital governance, and information sharing in driving digital transformation and innovation. By focusing on these areas, companies can create a culture of innovation that is capable of driving sustainable growth and success.

H1: Participants' levels of intrapreneurship and knowledge sharing positively predict their Digital Transformation and Innovation levels.

H2: Participants' levels of intrapreneurship and knowledge sharing positively predict their Digital Transformation and Innovation levels.

H3: The Digital Governance of the participants and the level of knowledge sharing positively predict their Digital Transformation and Innovation levels.”

3.3. Universe and Sample

The sample for this study was made up of 143 people who were chosen at random. Personal information of 143 participants participating in the study is presented in Table 1.

Table 1 Distribution of Personal Characteristics N=143

	Personal Characteristics	f	%
Gender	Male	108	75,5
	Female	35	24,5
Age	18-25	23	16,1
	25-30	20	14,0
	30-35	40	28,0
	36-40	37	25,9
	41+	23	16,1
Marital Status	Single	54	37,8
	Married	89	62,2
Education Status	Associate degree	8	5,6
	Bachelor's degree	92	64,3
	Post Graduate	43	30,1

Table 1 shows that around 72.5% of the individuals participating in the research are male, 24.5% are female, 25.9% are between the ages of 36-40, 28.0% are between the ages of 30-35, %16,1% of the participants are between the ages of 18-25, 16.1% are 41 years old and over, 64.3% are undergraduate and 30.1% are graduates.

Table 2 Distribution of participants by Unit Worked N=143

Unit of work	Infrastructure	33	23,1
	NOC	1	,7
	R&D	1	,7
	Information Security	13	9,1
	Operation	1	,7
	Data Center Network	1	,7
	Database	2	1,4
	Regulations	1	,7
	Others	13	9,1
	E-Commerce	1	,7
	Business Development	2	1,4
	Network	2	1,4
	Network Operasyon	1	,7
	Network Services	1	,7
	Automation	11	7,7
	Project Management	10	7,0
	Sales	9	6,3
	System	1	,7
	System Management	1	,7
	Data	19	13,3
	Data Center	1	,7
	Data Center Operations	2	1,4
	Software	16	11,2

According to Table 2, 23.1% of the participants work in the infrastructure unit, 13.3% in the data warehouse/data analysis unit, 11.2% in the software unit and 9.1% in the information security unit.

Table 3 Distribution of Participants by position N=143

	Personal Characteristics	f	%
Position	Manager	40	28,0
	Technician	9	6,3
	Engineer	68	47,6
	Others	26	18,2

According to Table 3, 47.6% of the participants are engineers, 28.0% are managers and 18.2% worki in other positions.

Table 4 Distribution of Participants by their length of employmentN=143

	Personal Characteristics	f	%
Experience	1-3	71	49,7
	4-6	29	20,3
	7-9	13	9,1
	10-12	15	10,5
	13+	15	10,5

As seen in Table 4, 49.7% of the participants are employed 1-3 years, 20.3% are 4-6 years, 10.5% are 10-12 years, 10.5% are 13 years and over. It has been determined that the firm has a length of employment.

3.4. Data Analyses and Survey Result

In the research, the Digital Transformation and Innovation Scale of the participants was used in the data collection process.

3.4.1 Analysis Of Data Related To The Pilot Study

Exploratory factor analysis and reliability analyzes were performed with the data obtained from the pilot sample study.

Based on the analysis of the obtained data, some items that were not understood by the participants, items that decreased the scale reliability coefficient, and items that were

not loaded in any factor were determined as a result of the explanatory factor analysis. The opinions of expert academicians were also obtained based on the analysis. After making adjustments, 3 items out of 30 (Q: 24. There are too many routine tasks that make it feel like the same thing is being done every day, Q: 25. Respect for authority is extremely important and Q: 27. It is quick to take advantage of opportunities) were removed from the scale and the total was reduced to 27 items.

3.4.2 Exploratory Factor Analysis

The number of samples selected for factor analysis should be 5-10 times the number of items in the scale. It was determined that 143 people were sufficient for factor analysis.

"Exploratory factor analysis may not be suitable for all data structures. The suitability of the data for factor analysis can be examined with the Kaiser-Meyer-Olkin (KMO) coefficient and the Barlett Sphericity test. The KMO value is used to determine whether the sample correlation is large enough to ensure its reliability, and values close to 1 indicate the appropriateness of the sample correlation, and values below 0.5 indicate unacceptable. The significance value of the Barlett Sphericity test should be less than 0.05." (Cakir, 1434) .

Factor analysis was performed by applying the Principal Components method and Promax factor rotation to test whether the variables belonging to the factors of the Digital Transformation and Innovation Scale were loaded on these factors. In each analysis, Kaiser-Meyer-Oklin test results were greater than 0.6 and Barlet sphericity test was significant.

In the EFA analysis, the data from the questions on the Digital Transformation and Innovation Scale were used. It should be taken into account that the factors with an eigenvalue above 1.00 and the factor loads of the items belonging to these factors -the factor load value should be 0.45 or higher, however, this value can go down to 0.30. (Büyüköztürk, 1430)- Items having a value greater than 0.30 and the difference between the factor loads loaded by an item on more than one sub-factor were included in the study. In this study, no item had a common variance load of less than 0.30. The difference between the factor loadings of an item on more than one sub-factor is less than 0.1 (10. When I ask my colleagues about any subject, they share what they know about it with me, 14. The institution I work for is open to requests other than existing products and services.18. We are not afraid to voice our opinions on shared assumptions

about the way we do our work 22. Original ideas are highly valued in our organization 26. Open discussion about conflicts and disagreements is allowed 30. Employees feel they can act boldly even in situations of uncertainty 31. 32. Top management tends to implement risky projects with a high chance of return.) items were excluded from the analysis. The remaining 19 items were grouped under four dimensions and accounted for 61.95% of the total variance. Considering the previous studies on the subject, the sub-dimensions of the scale were named as "Institutional Entrepreneurship", "Digital Governance","Risk Tolerance" and "Knowledge-Sharing".

The main components analysis was conducted to the data resulting from the answers given to the questions in the questionnaire. The sample size for the "Digital Transformation and Innovation Scale" was found to be sufficient (KMO = 0.881), and the Barlett Sphericity test was also significant (Digital Transformation and Innovation = 1325,627; p<0.001). (Çakır, 1434:5). According to these findings, the results of the "EFA" applied to the scale are presented in Table 5.

Table 5 Exploratory Factor Analysis

Items	**Factor Load**	**Self Value**	**Factors**
DG06. All possible solutions are taken into account in digital transformation processes.	,935	7,323	Digital Govenance Variance %38,067
DG07. The stages of digital transformation are prepared in detail.	,833		
DG03. Our organization strives to understand its digital transformation capacity.	,757		
DG02. Our organization clearly expresses its vision and goals in implementing digital transformation.	,722		
DG04. Our organization focuses on employee and customer experience rather than technology in digital transformation.	,485		
DG01. In our institution, failures in the new venture are seen as learning experiences.	,392		
I02. We frequently improve our existing products and services in our institution.	,828	2,836	Intrapreneurship Variance

I01. Social communication tools that support learning and information sharing among employees are used in our institution.	,797		%12,560
I05. We constantly increase the quality of service we provide to our customers.	,744		
I06. Emphasizing continuous innovation is part of our corporate culture.	,607		
I04. We try to offer our existing products and services to our customers more efficiently.	,539		
I07. We try to offer our existing products and services to our customers more efficiently.	,517		
I03. We offer products and services that are completely new to our institution.	,428		
I08. Employees are encouraged to venture into unexplored areas.	,341		
KS01. When I learn something new, I make sure that the people I work with learn it too.	,726	1,119	Knowledge-Sharing Variance %5,891
KS03. I am ready to help other members of the team in my spare time.	,637		
KS02. I inform my colleagues about my skills and abilities.	,618		
RT02. Managers encourage employees to think creatively.	,941	1,033	Risk Tolerance Variance %5,437
RT01. Our organization places a high value on open-mindedness.	,550		
Total variance: 61.95%; KMO: .881; Digital Transformation and Innovation :1325.627 p.d:171, p<.001			

3.5. Findings Related to Reliability Analysis

In this part, an internal consistency study was conducted for the scale recommended as the data collection method. The following are the requirements for Cronbach's Alpha values:

α value,

If $0.00 \leq \alpha < 0.40$ Not reliable

If $0.40 \leq \alpha < 0.60$ Low reliability

If $0.60 \leq \alpha < 0.80$ Moderate reliability

If $0.80 \leq \alpha \leq 1.00$ High reliability. (Özdamar, 1999) .

Table 6 Reliability Analysis Findings

Scales	Cronbach's Alpha	Items
Digital Transformation and Innovation	.901	19
Intrapreneurship	.841	6
Digital Governance	.844	8
Knowledge-Sharing	.749	3
Risk Tolerance	.799	2

The Cronbach's Alpha value of the Digital Transformation and Innovation scale used in the research is 0.901. Intrapreneurship Cronbach's Alpha value is 0.841, Digital Governance Cronbach's Alpha value is 0.841, Risk Tolerance Cronbach's Alpha value is 0.749 and Knowledge Sharing Cronbach's Alpha value is 0.799. These values show that the scales are reliable and there is no obstacle to use them in the analysis. (Table 6)

The Cronbach's alpha value for the 19-item scale was calculated as 0.901. In addition, it was determined that the item-total correlation for each item was over 0.30 (Table 7)

Table 7 Item-Total Correlation of Scale Items

Scale Items	Cronbachs Alpha if Item Deleted	Correlated Item-Total Correlation
KS01	,901	,396
KS02	,897	,488
KS03	,896	,515
I01	,895	,569
I02	,899	,436
I03	,894	,592
I04	,893	,648

I05	,893	,671
I06	,892	,699
I07	,899	,426
I08	,896	,529
RT01	,895	,570
RT02	,891	,686
DG01	,896	,514
DG02	,894	,575
DG03	,895	,572
DG04	,906	,344
DG06	,892	,668
DG07	,891	,667

3.6. Confirmatory factor analysis (CFA)

CFA tests whether there is a sufficient level of relationship between the factors determined by exploratory factor analysis, which variables are related to which factors, whether the factors are independent from each other, and whether the factors are sufficient to explain the model" (Özdamar, 2004).
Modifications were made to the model to improve the fit indices calculated by CFA.

The calculated fit indices before and after modification are shown in Table 8. When the fit indices were examined, after the modifications, RMSEA, NNFI, CFI, NFI, IFI and CMIN/DF values were found to be within perfect limits, and GFI and AGFI values were within acceptable limits. In line with these findings, the factor structure obtained by EFA was confirmed by CFA and it was supported that the scale consisted of three factors with 30 items. In addition, according to the Hoelter Model, the required population number for CFA was found to be 120 at the significance level of 0.05 and 129 at the significance level of 0.01, which supports the adequacy of the sample size.

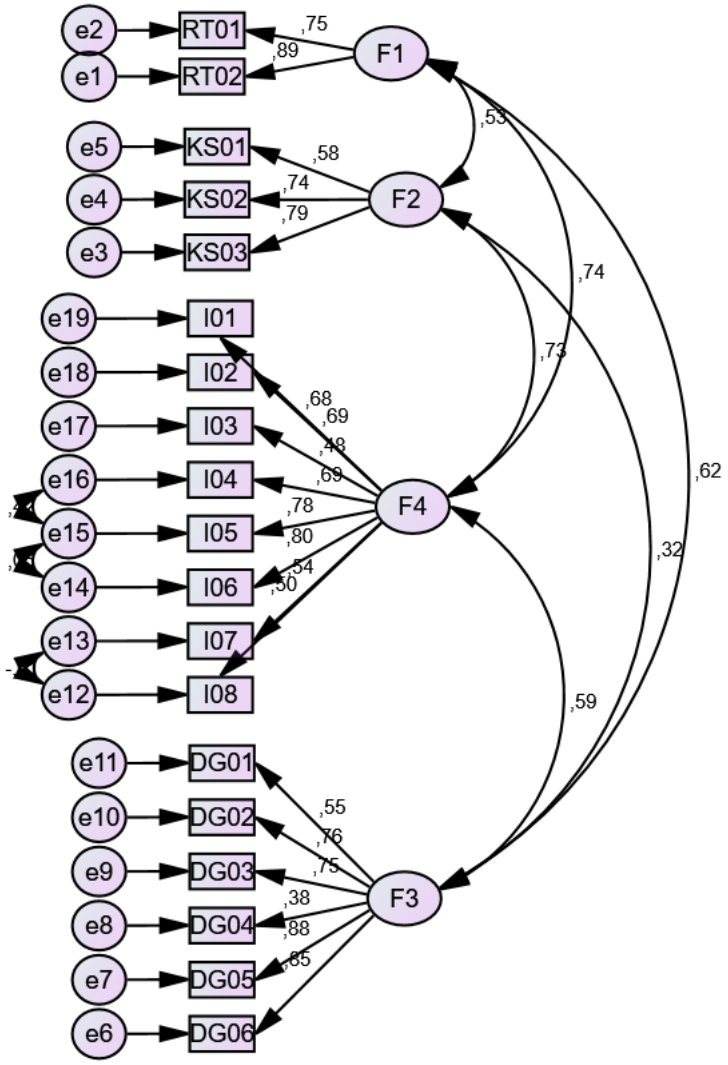


Figure 2 Path Diagram for the Scale

F1=Knowledge Sharing, F2= Risk Tolerance, F3= Intrapreneurship F4= Digital Governance

3.6. Analysis of Data

All statistical analyses were performed using the IBM SPSS 25.0 software.

Descriptive statistics such as mean and standard deviation of the variables were used in the study.

First, the skewness and kurtosis coefficients were used to assess if the Digital Transformation and Innovation Scale adheres to the normal distribution hypothesis, and parametric test techniques were applied (Table 8).

The "independent sample t test" was used in comparisons of variables that provided the normal distribution assumption, and "ANOVA" was used in comparisons of three or more groups when examining the differentiation status of the group scores of the variables based on their personal information. The Post Hoc test for group difference was done using parametric testing, and group averages were assessed using the Bonferroni technique, which is a parametric multiple comparison test.

In addition, while examining the relationship between the Digital Transformation and Innovation Scale and its sub-dimensions, “Pearson Correlation” analysis, one of the parametric test methods, was preferred. Regression analysis was applied to evaluate the predictive status of the participants' Digital Transformation and Innovation Scale and its components. Statistical significance was evaluated at the $p<0.05$ level in all the results obtained.

The kurtosis/skewness coefficients were examined to determine whether the data showed a normal distribution or not. Table 8 gives the values for the kurtosis and skewness coefficients of the data.

Table 8 Skewness and Kurtosis Values of the Scales

Scale	**N**	**Skewness**	**Kurtosis**
Digital Transformation and Innovation	143	-,619	,404
Knowledge-Sharing	143	-,964	1,451
Intrapreneurship	143	-,902	1,076
Risk Tolerance	143	-,549	-,436
Digital Governance	143	-,836	1,069

Seçer (1435) assumes a normal distribution and determines that evaluating the skewness and kurtosis values is a more accurate method. Tabachnick and Fidell (1433) agree that the normal distribution is obtained when the skewness and kurtosis values are between +1.5 and -1.5. The variables were found to have a normal distribution as a result of the analyses performed.

4. FINDINGS AND INTERPRETATION

In this section, the results of the analysis made within the framework of the research questions are presented, and the findings are interpreted.

4.1. Descriptive Analysis Results for Variables

The research variables include the Digital Transformation and Innovation Scale and its sub-dimensions. Table 9 presents descriptive data on the variables in this section of the research.

Table 9 Descriptive Analysis Results for Variables

Scale	N	Mean	SS
Digital Transformation and Innovation	143	5,92	,73
Knowledge-Sharing	143	5,81	1,15
Intrapreneurship	143	5,69	1,00
Risk Tolerance	143	6,32	,80
Digital Governance	143	5,84	,81

The cumulative average responses of the study's participants to the Digital Transformation and Innovation statements was found to be ($\bar{X}$=5.92), the total average of responses to corporate entrepreneurship was ($\bar{X}$=5.96), the total average of responses to the digital governance was ($\bar{X}$=5.84), the total average of responses to Knowledge Sharing was ($\bar{X}$=5.81), and the total average of responses to risk tolerance was ($\bar{X}$=6.32)

4.2. Findings on Digital Transformation and Innovation Scale

This section of the study will discuss the differences in the participants' average scores on the Digital Transformation and Innovation scale and sub-dimensions based on their gender, age, marital status, level of education, company seniority, and distribution of working years at their companies.

4.2.1 Findings Related to Examining Digital Transformation and Innovation in Terms of Gender Variable

Table 10 shows the independent sample group t-test results showing the differentiation of the Digital Transformation and Innovation general average and sub-dimensions according to gender.

Table 10 T-Test Results on the Analysis of Digital Transformation and Innovation by Gender

Variable	**Gender**	**N**	**X̄**	**Ss**	***t***	***p***
Digital Transformation and Innovation	Male	108	5,86	,81	-1,675	,096
	Female	35	6,10	,34		
Knowledge-Sharing	Male	108	5,72	1,27	-1,716	,088
	Female	35	6,10	,59		
Intrapreneurship	Male	108	5,62	1,06	-1,670	,097
	Female	35	5,94	,72		
Risk Tolerance	Male	108	6,31	,88	-,240	,811
	Female	35	6,35	,48		
Digital Governance	Male	108	5,78	,90	-1,321	,188
	Female	35	5,99	,45		

According to Table 11 above, there is no significant differentiation in the categorical variable of gender for participants' responses to digital transformation and innovation (p>.05), intrapreneurship (p>.05), digital governance (p>.05), risk tolerance (p>.05), and knowledge sharing (p> .05).

4.2.2 Findings Regarding the Analysis of Digital Transformation and Innovation in Terms of Marital Status Variable

Table 11 shows the independent sample group t-test results showing the differentiation of the Digital Transformation and Innovation general average and sub-dimensions according to the marital status variable.

Table 11 T-Test Results of the Examination of Digital Transformation and Innovation by the Marital Status of the Participants

Variable	Marital Status	N	X̄	Ss	*t*	*p*
Digital Transformation and Innovation	Single	54	5,98	,72	,764	,446
	Married	89	5,88	,75		
Knowledge-Sharing	Single	54	5,93	1,16	,926	,356
	Married	89	5,74	1,15		
Intrapreneurship	Single	54	5,70	1,01	,084	,933
	Married	89	5,69	1,00		
Risk Tolerance	Single	54	6,38	,59	,608	,544
	Married	89	6,29	,91		
Digital Governance	Single	54	5,90	,74	,742	,459
	Married	89	5,80	,85		

According to Table 11 given above, there is no significant differentiation in terms of marital status categorical variable for participants' responses to Digital Transformation and Innovation (p>.05), intrapreneurship (p>.05), digital governance (p>.05), risk tolerance (p>.05) and knowledge sharing (p>.05).

4.2.3 Findings Regarding the Analysis of Digital Transformation and Innovation in Terms of Age Variable

Table 12 shows the results of the Anova Test, which shows the differentiation of the general average and sub-dimensions of Digital Transformation and Innovation according to age.

Table 12 ANOVA Test for Examining Digital Transformation and Innovation by Age

Variable	Age	N	X̄	Ss	F	*p*
Digital Transformation and Innovation	18-25	23	6,18	,47	1,042	,388
	25-30	20	5,93	,97		
	30-35	40	5,90	,81		
	36-40	37	5,84	,65		
	41+	23	5,78	,70		

Knowledge-Sharing	18-25(1)	23	6,30	,76	2,403	,050 *1>4
	25-30(2)	20	6,03	1,11		
	30-35(3)	40	5,86	1,24		
	36-40(4)	37	5,45	1,31		
	41+(5)	23	5,63	,94		
Intrapreneurship	18-25	23	5,98	,73	1,553	,190
	25-30	20	5,62	1,10		
	30-35	40	5,87	1,03		
	36-40	37	5,58	,93		
	41+	23	5,37	1,13		
Risk Tolerance	18-25	23	6,42	,48	,711	,585
	25-30	20	6,18	1,27		
	30-35	40	6,20	,97		
	36-40	37	6,45	,52		
	41+	23	6,36	,58		
Digital Governance	18-25	23	6,02	,61	,724	,577
	25-30	20	5,91	,85		
	30-35	40	5,69	,98		
	36-40	37	5,89	,65		
	41+	23	5,76	,88		

*Group difference

According to Table 13 given above, there is a significant difference in Knowledge Sharing (F: 2.403, $p < .05$) among participants based on their age category, while no significant differentiation was found in Digital Transformation and Innovation ($p > .05$), Digital Governance ($p > .05$), Risk Tolerance ($p > .05$), and intrapreneurship ($p>.05$).

It was determined that the average knowledge sharing score of the participants aged 18-25 ($\bar{X}=6.30$) was statistically higher than the average knowledge sharing score of participants aged 26-40 ($\bar{X}=5.45$).

4.2.1 Findings Related to Examining Digital Transformation and Innovation in Terms of Education Variable

Table 13 presents the ANOVA results by showing the differentiation of the general average and sub-dimensions of Digital Transformation and Innovation according to education level.

Table 13 Examining Digital Transformation and Innovation by Education Level (ANOVA- Bonferroni)

Variable	**Education**	**N**	**X̄**	**Ss**	F	**p**
Digital Transformation and Innovation	Associate degree	8	5,92	,56	,278	,757
	Bachelor's Degree	92	5,95	,74		
	Postgraduate	43	5,85	,75		
Knowledge-Sharing	Associate degree	8	5,88	,44	,296	,745
	Bachelor's Degree	92	5,86	1,20		
	Postgraduate	43	5,70	1,16		
Intrapreneurship	Associate degree	8	5,75	,93	,143	,867
	Bachelor's Degree	92	5,66	,98		
	Postgraduate	43	5,76	1,06		
Risk Tolerance	Associate degree	8	6,46	,43	,396	,674
	Bachelor's Degree	92	6,35	,77		
	Postgraduate	43	6,24	,93		
Digital Governance	Associate degree	8	5,58	,72	1,607	,204
	Bachelor's Degree	92	5,92	,75		
	Postgraduate	43	5,69	,94		

According to Table 13 given above, there is no significant differentiation in terms of education level categorical variable for participants' responses to Digital Transformation and Innovation (p > .05), Intrapreneurship (p > .05), Digital Governance (p > .05), Risk Tolerance (p > .05), and Knowledge Sharing (p > .05)..

4.2.5 Findings Concerning the Analysis of Digital Transformation and Innovation in Terms of Position Variable in the Firm

Table 14 presents the results of one-way analysis of variance showing the differentiation of Digital Transformation and Innovation and its sub-dimensions according to the position in the company.

Table 14 Differentiation of Digital Transformation and Innovation by Position Variable in the Firm (ANOVA- Bonferroni)

Variable	**Position**	**N**	**X̄**	**Ss**	***F***	***p***
Digital Transformation and Innovation	Manager (1)	40	5,75	,88	2,905	,037 *2→1,3,4
	Technician (2)	9	6,38	,36		
	Engineer (3)	68	6,02	,54		
	Other (4)	26	5,75	,92		
Knowledge-Sharing	Manager	40	5,60	1,15	2,785	,043 *2→1,4
	Technician	9	6,56	,46		
	Engineer	68	5,96	,98		
	Other	26	5,50	1,56		
Intrapreneurship	Manager	40	5,55	1,15	2,777	,044 *2→1,4
	Technician	9	6,31	,59		
	Engineer	68	5,82	,81		
	Other	26	5,37	1,20		
Risk Tolerance	Manager	40	6,15	1,23	1,172	,323
	Technician	9	6,63	,42		
	Engineer	68	6,38	,50		
	Other	26	6,35	,70		
Digital Governance	Manager	40	5,69	1,03	,870	,458
	Tehnician	9	6,03	,65		
	Engineer	68	5,92	,64		
	Other	26	5,77	,90		

According to Table 14 given above, there is a significant difference in Digital Transformation and Innovation (F: 2.905, $p < .05$), Knowledge Sharing (F: 2.785, $p < .05$), and Internal Corporate Entrepreneurship (F: 2.777, $p < .05$) among participants based on their company position, while no significant differentiation was found in Risk Tolerance ($p > .05$) and Digital Governance ($p > .05$).

It was found that the knowledge sharing average of the participants working in the technician position ($\bar{X}$=6.56), the knowledge sharing average of the participants working in the managerial position ($\bar{X}$=5.60) and the knowledge sharing average of the participants working in other positions ($\bar{X}$=5.50) were statistically higher.

It was found that the intrapreneurship averages of the participants working in the technician position ($\bar{X}$=6.31), the intrapreneurship averages of the participants working in the managerial position ($\bar{X}$=5.55) and the intrapreneurship averages of the participants working in other positions ($\bar{X}$=5.37) were statistically higher.

4.3. Findings Regarding the Relationship Between Digital Transformation and Innovation and Its Sub-Components

In this part of the study, the relationship between Digital Transformation and Innovation, intrapreneurship, digital governance, risk tolerance and Knowledge-Sharing was examined with the "Pearson Correlation Analysis", one of the parametric test methods, and statistical significance was found to be $p<0.05$ level. The evaluation criteria of the correlation coefficient are as follows;

"If 0.00 = rp, there is no relationship."

"If 0.00 < rp < 0.29, there is a low level of correlation."

"If 0.30 < rp < 0.69, there is a moderate level of correlation."

"If 0.70 < rp < 0.99, there is a high level of correlation."

"If 1.00 = rp, there is a perfect relationship" (Köklü and Bökeoğlu, 2006).

Table 15 The Relationship Between Digital Transformation and Innovation and Its Sub-Components (Pearson Product Moments Correlation Analysis) (N:143)

Variable		1.	2.	3.	4.	5.
Digital Transformation and Innovation	r_p	1	,848	,744	,662	,841
	P		,000	,000	,000	,000
Knowledge Sharing	r_p		1	,516	,409	,605
	P			,000	,000	,000
Intrapreneurship	r_p			1	,216	,513
	P				,009	,000
Risk Tolerance	r_p				1	,557
	P					,000
Digital Governance	r_p					1
	P					

Looking at the results of the Pearson Correlation test in Table 16;

• There is a statistically significant, positive, and high-level correlation between participants' levels of Digital Transformation and Innovation and Knowledge Sharing (r: 0.848, $p < .01$), Intrapreneurship (r: 0.744, $p < .01$), and Digital Governance (r: 0.841, $p < .01$). The correlation between their levels of Digital Transformation and Innovation and Risk Tolerance (r: 0.662, $p < .01$) is also statistically significant, positive, and at a moderate level.

• As the participants' levels of Intrapreneurship, Digital governance, risk tolerance and knowledge-sharing increase, their Digital Transformation and Innovation levels also increase.

• There is a statistically significant, positive, but low-level correlation between participants' levels of Digital Governance and Risk Tolerance (r: 0.216, $p < .01$).

• As the digital governance and risk tolerance levels of the participants increase, the level of intrapreneurship also increases.

• While the relationship between the participants' levels of intrapreneurship and digital governance (r:0.513 , $p<.01$) was statistically significant, positive and moderate; the relationship between risk tolerance (r:0.216, $p<.01$) levels was statistically significant, positive and low.

• As the digital governance and risk tolerance levels of the participants increase, the level of intrapreneurship also increases.

• Knowledge sharing of the participants (r:0,848, p<.01), intrapreneurship (r:0.516, p<.01) and digital governance (r:0.409, p<.01), risk tolerance (r:0.605, p). <.01) levels are statistically significant, positive and moderate.

• As the participants' intrapreneurship, digital governance and risk tolerance levels increase, their level of knowledge sharing also increases.

4.4. Findings on Intrapreneurship, Digital Transformation Stages, Risk Tolerance and Information Sharing Predict Digital Transformation and Innovation

• An evaluation of "Intrapreneurship, Digital Governance, Risk Tolerance, and Digital Transformation and Innovation Prediction Status of Knowledge Sharing" was done in this section of the study using linear regression analysis. “If a known normally distributed numerical variable is used to estimate an additional normally distributed numerical variable that is unknown but has a link to it, then technique is known as simple linear regression analysis. (Kılıç, 1433).

Before conducting regression analysis, the assumptions of linearity, normality, and homogeneity were checked for the data set. The data set was evaluated to see whether there were any outliers, and it was found that there were none (Genceli, 1973) .

Table 16 shows the results of participants' intrapreneurship, digital governance, risk tolerance and knowledge sharing by predicting their digital transformation and innovation levels.

Table 16 Digital Governance, Results for Risk Tolerance to Predict Digital Transformation and Innovation Levels

	Unstandardized coefficients		**standardized coefficients**			**F**	**R^2**
	B	**Std. devision**	**β**	**t**	**p**		
Constant	1,830	,153		11,997	,000		
Knowledge-Sharing	,402	,025	,632	16,363	,000	386,962*	,847
Intrapreneurship	,307	,028	,418	10,824	,000		

Dependent Variable: Digital Transformation and Innovation

*p<0,05

This model is statistically significant, and intrapreneurship and knowledge sharing may account for 84.7% of the variation in digital transformation and innovation, according to the regression analysis results in Table 17 (R^2=,847; F(2,140)=386,962, p<0.005).

According to the results found; the knowledge sharing levels of the participants predicted the Digital Transformation and Innovation levels statistically significantly and positively (β=0.632, t=16.363, p<0.001) and the levels of Intrapreneurshippredicted the Digital Transformation and Innovation levels statistically significantly and positively (β=0.418, t=10.824, p<0.001).In other words, the levels of intrapreneurship and knowledge sharing of the participants included in the research positively predict their Digital Transformation and Innovation levels.

"H1: Participants' levels of intrapreneurship and knowledge sharing positively predict their Digital Transformation and Innovation levels." Hypothesis accepted.

Table 17 Digital Governance, Results for Risk Tolerance to Predict Digital Transformation and Innovation Levels

	Unstandardized coefficients		**standardized coefficients**			**F**	**R^2**
	B	**Std. hata**	**β**	**t**	**p**		
Constant	,682	,261		2,615	,010		
Risk Tolerance	,256	,045	,280	5,639	,000	224,272*	,762
Digital Governance	,620	,045	,686	13,811	,000		
Dependent Variable: Digital Transformation and Innovation							

According to the results of the regression analysis in Table 17; it is understood that this model is statistically significant and can explain 76.2% of the digital governance, risk tolerance, digital transformation and innovation variance (R^2=,762; F(2,140)=224,272, p<0.001). According to the results found; the digital governance of the participants predicted the Digital Transformation and Innovation levels statistically significant and positively (β=0.686, t=13.811, p<0.001), and the risk tolerance predicted the Digital

Transformation and Innovation levels statistically significant and positively (β=0.280, t =5,639, p<0.001). In other words, the digital governance and risk tolerance levels of the participants included in the research positively predict their Digital Transformation and Innovation levels.

“H2: Participants' levels of digital governance and risk tolerance positively predict the levels of Digital Transformation and Innovation.” The hypothesis has been accepted.

Table 18 Digital Governance, Results of Knowledge Sharing Predicting Levels of Digital Transformation and Innovation

	Unstandardized coefficients		**standardized coefficients**			**F**	**R^2**
	B	**Std. error**	**β**	**t**	**p**		
Constant	1,787	,505		3,540	,001		
Knowledge-Sharing	,281	,075	,324	3,730	,000	34,507*	,330
Digital Governance	,390	,107	,317	3,651	,000		
Dependent Variable: Digital Transformation and Innovation							

Regression analysis findings are shown in Table 18, and it is clear that this model is statistically significant and can account for 33.0% of the variation in digital governance, knowledge sharing, digital transformation, and innovation. (R^2=.330; F(2.140)=34.507, p<0.001). According to the results ; Participants' levels of digital transformation stages and knowledge sharing significantly and positively predict the levels of Digital Transformation and Innovation (β = 0.317, t = 3.651, p < 0.001), and the levels of knowledge sharing predict the levels of Digital Transformation and Innovation (β = 0.324, t = 3.730, p < 0.001).. In other words, the digital governance and the level of information sharing of the participants in the research positively predict the levels of Digital Transformation and Innovation.

“H3: The Digital governance of the participants and the level of knowledge sharing positively predict their Digital Transformation and Innovation levels.” The hypothesis has been accepted.

5. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

In this part of the thesis, a summary of the analyses is presented. According to the results of the analyses, suggestions are presented to IT managers. Some weaknesses of the thesis are also emphasized, and the points that needed to be analysed in more detail are also stated.

As investigated in this thesis, it was confirmed that there is a significant and linear relationship between the dimensions of intrapreneurship, knowledge sharing, digital governance and risk tolerance as confirmed by tested hypotheses.

It has been observed that gender and marital status differences have no effect on innovation and digital transformation within IT teams. For this reason, it can be concluded that IT managers do not to make a gender-based choice when appointing IT team members.

Age difference is significant only in the context of knowledge sharing. It was determined that the knowledge sharing average of the participants aged 18-25 was statistically higher than the knowledge sharing average of other age categories. This result shows that especially the Z generation is more willing to share knowledge. For this reason, IT managers are recommended to have Z generation personnel in their teams, especially in innovation and digital transformation projects.

Regarding the employment positions, the technicians, have overall higher averages in all categorical variables, which might be somewhat of an unexpected finding. On the other hand, this may be due to the fact that because technicians perform the most hands-on applied tasks, they may be more inclined to be involved with a wider range of issues and search for solution alternatives, and therefore more directly exposed to the research variables in question.

In general, demographic and social status differences were found to have little or no significance on the explored dimensions. This unexpected result may be due to the homogeneous nature of the selected sample, in the sense that a more diverse range and higher number of participants could have provided more meaningful and useful findings.

As the participants' levels of corporate intrapreneurship, digital governance, risk tolerance and knowledge sharing increase, their digital transformation and innovation levels also increase, but the correlation for risk tolerance is lower than the other

variables. These results show that it is very important for IT project managers to determine the level of risk tolerance in digital transformation processes. This tolerance varies according to the institution, corporate culture and team. It is also foreseen that when this level is higher than it should be, it will not have a positive effect on digital transformation and innovation and its sub-headings. IT managers are advised to calculate the risk issue well and consider the risk factors in calculating the perceived risk level during these processes.

Digitalization is a crucial issue for the success of contemporary businesses in most sectors. In this thesis, the major components of digitalization processes in the IT sector were investigated based on data gathered from IT teams. The levels of intrapreneurship and knowledge sharing of the participants included in the research positively predict their digital transformation and innovation levels. The findings point to significant facts and managerial implications with respect to the importance of the development of intrapreneurial capabilities of IT team members in digitalization processes. This can be achieved to some extent with an open minded organizational culture in which learning from mistakes is encouraged. This will also enhance the innovative mindset of the individuals.

The encouragement and facilitation of knowledge sharing among IT team members is also evidently crucial in the success of these processes. On the other hand, the investigations were made specifically for IT teams. It is recommended to conduct a similar study to investigate knowledge sharing dynamics in a cross-unit context where the relationships between IT teams and other departmental units are also taken into account to improve knowledge sharing capabilities of IT employees.

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