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The Mediating Role of Strategic Management and Transformational Leadership in the Impact of Digital Transformation on Organizational Innovation

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Abstract: Digital transformation, strategic management, transformational leadership, and organizational innovation are critical elements for the success of organizations in the complex and rapidly changing business environment of the 21st century. Understanding the relationships between these concepts offers some opportunities for organizations to sustain their competitiveness and become pioneers in their markets. The primary purpose of this study is to investigate the impact of digital transformation on organizational innovation and to examine how this impact is realized through strategic management and transformative leadership. In this direction, data were obtained through questionnaires applied to white-collar employees and managers of companies operating in Istanbul and analyzed with structural equation modeling. Within the scope of the study, a positive and significant relationship is observed between digital transformation and strategic management, transformational leadership and organizational innovation. In addition, a positive and significant relationship was determined between strategic management and transformational leadership and organizational innovation scale. On the other hand, a similarly positive and significant relationship was found between transformational leadership scale and organizational innovation. The study determined that strategic management mediates between digital transformation and organizational innovation, and transformational leadership mediates between digital transformation and organizational innovation. However, the results revealed that the effect of digital transformation on organizational innovation is partially mediated by transformational leadership. These results show significant relationships between digital transformation, strategic management, transformational leadership, and organizational innovation.

Keyword: Digital transformation, Strategic management, Transformational leadership, Organizational innovation

JEL Classification: L94

1. Introduction

Digital transformation, strategic management, transformational leadership, and organizational innovation are critical elements for the success of organizations in the complex and rapidly changing business environment of the 21st century. Understanding the relationships between these concepts offers opportunities for organizations to stay competitive and pioneer in their markets. Digital transformation can be expressed as the integration of technology into business processes, culture and customer experiences. Therefore, business processes can be made more efficient, flexible, and scalable by using digital transformation, data analytics, cloud computing, artificial intelligence, and other advanced technologies. However, it can be thought that the success of digital transformation is closely related to the strategic management of the organization.

Strategic management determines the long-term goals of the organization and determines the resources needed to achieve these goals. Strategic management plays an important role in determining digital transformation goals and roadmap. In addition, transformational leadership is critical to the success of digital transformation. Transformational leaders encourage their followers to embrace the organization's vision and goals, guiding them to make the necessary changes to achieve those goals. These leaders can increase employee motivation and commitment during the digital transformation process, thereby increasing the likelihood of organizational innovation.

Organizational innovation refers to an organization's ability to develop new products, services, or business processes. It is a process that is encouraged by organizational innovation, strategic management and transformational leadership and accelerated in the digital transformation process. Organizational innovation can enhance the organization's competitiveness in the market and drive sustainable growth and success.

In the rapidly evolving business world of the 21st century, innovation and digital transformation have become crucial strategic tools. In this context, understanding the role of strategic management and transformational leadership in the digital transformation process is an important step for organizations to increase organizational innovation and improve business performance. The aim of this research is to examine the relationship between digital transformation and organizational innovation and to determine the mediating role of strategic management and transformative leadership in this relationship.

Digital transformation and its three sub-attitudes (cognitive, emotional and behavioral), strategic management and its two sub-dimensions (source and environment), transformational leadership and its four sub-dimensions (mental stimulation, individual interest, ideal influence, inspirational

motivation) and innovation are in a dynamic relationship with each other. The study examines the impact of digital transformation on organizational innovation and how strategic management and transformative leadership mediate this impact. Considering these concepts together emphasizes the importance of strategic management and leadership strategies in managing digital transformation.

Although there are many studies linking digital transformation and innovation, the lack of studies examining the mediating role of strategic management and transformational leadership is remarkable. This study aims to contribute to the literature in this field and to help better understand the subject. Our research will try to determine how strategic management and leadership approaches can be used to increase innovation in the digital transformation process and the impact of these approaches on organizational innovation.

The unique aspect of this study is the examination of the relationship between the examined variables and their effects on each other. Therefore, this study can make a scientific contribution in this field and add value to the business literature. The results of the research can serve as a guide for professionals operating in the technology sector.

The study suggests that innovation and digital transformation have an important relationship and that this relationship can be driven by strategic management and transformational leadership. The results of the research help to better understand the relationships between these concepts, offering new strategies and approaches on how organizations can increase innovation in the digital transformation process.

2. Conceptual Infrastructure

2.1. Digital Transformation

Digital transformation is expressed as the process of using digital technological elements to create up-to-date business processes, customer and cultural experiences or to change the existing situation in order to meet the changing market and business requirements. Digital transformation can be defined more broadly as the integration of digital technologies into the entire process of a business. Basically, digital transformation offers value to the customer by changing the way we work. It can also be considered as a permanent challenge to the status quo process of institutions. Thus, it can be expressed as a cultural change process that enables organizations to experiment and cope with their failures (Matt et al., 2015: 341).

Although modern technology companies were the first companies to realize digital transformation, industries such as healthcare, electronics, machinery, energy and automotive are following the path of digital transformation. Transformation can create new opportunities such as data collection and use with the connectivity of products, customers, companies and systems that can make independent decisions (Remane et al., 2017: 42).

Digital transformation may differ for each company. For this reason, it is difficult to determine a definition that is valid for everyone. In addition, digital transformation is generally defined as the integration of technological products into all processes of an organization. As a matter of fact, this situation causes fundamental changes in the way organizations work and provide value to their customers (Baker, 2015: 183).

Digital transformation is a concept related to the need to use new technologies to increase the competitiveness of companies in the environment called the internet age, where services and products are offered both online and offline. The online delivery of service transformation is presented as a form of standardization, personalization and automation development. In this context, digital transformation refers to the process of restructuring business models through the use of new technologies to better meet the needs of customers. There are three basic elements of digital transformation. These; to use technology to transform service delivery, to use technology to transform corporate culture and relations with citizens, and to create value as a result of transformation (Berman, 2012: 17).

While the digital transformation process is being implemented, this process is operated by using some tools. The most important technologies of the digital transformation process can be expressed as the internet of things (Lee et al., 2017), cloud computing (Lu, 2017), big data (Chen et al., 2017: 177), artificial intelligence (Barr and Feigenbaum, 1979), cyber–physical systems Lee et al. (2015), 5G networks (Gupta and Jha, 2015), blockchain and big data analytics (Russom, 2011).

Manufacturing companies are affected by ongoing global changes that lead to an increasingly connected society and the creation of networks (Bauer et al., 2015). Therefore, it has become inevitable to deal with the issue of digital transformation. At the same time, digital transformation is seen as a solution to solve different challenges, such as a declining population and a decreasing number of available workforces due to an aging society (Götz and Jankowska, 2017: 1634). In order for manufacturing companies to remain competitive, there is a need to reduce the enhanced innovation capacity, productivity and time to market that can be achieved through digital transformation (Hortoványi, 2016: 625; Bauer et al., 2015: 421).

2.2. Strategic Management

The new and qualified management approach, called strategic management, refers to a management approach that is included in the future-oriented planning of institutions. Accordingly, strategic management is a preferred management approach in order to correctly evaluate the current situation of organizations and to determine the road map of the next process step by step. Especially in strategic management, where the understanding of improving conditions based on determinations is adopted, it is seen that there is a management and guidance process that includes estimation based on the concept of performance. Strategic management is a set of practices that should be handled in a multifaceted manner in terms of organizations and that different road maps should be adopted for each of them when necessary by participating in all units of the organization (Mert, 2020: 43). On the other hand, with a competitive perception, businesses continue to strive to be an important part of the competition in the process. This situation has paved the way for strategic management-oriented activities to be given much more importance (Mert et al., 2013: 196-197).

Strategic management is defined as "the process of making and implementing strategic decisions" (Al-Sayed, 1993: 18). The term 'strategic decision' describes decisions that result in a significant change in the firm's operational process. These are not strategic decisions. Because they significantly change the strategic position of the organization. Strategic management is also defined as "the procedure required to develop, improve, and implement certain actions necessary to achieve desired outcomes." Strategic management can be defined as "the science and art of shaping, implementing, and evaluating overlapping functional decisions that enable the organization to achieve its goals." Although strategy is characterized as the sum of decisions and activities that affect strategic results, the strategic management process is a tool for deciding on general goals and objectives and deciding on strategies (Al-Sayed, 1993: 18).

The main goal in strategic management is to evaluate the institution correctly and determine its needs, and accordingly, to make breakthroughs for the important points for the future. For this reason, the important point in strategic management is to examine successful strategic management practices in the sectoral sense or in any field in general as much as possible and to put those that can be applied into practice. At this point, it is also possible to enter into a comparison process and with this comparison, the deficiencies that can be brought to the fore within strategic management are also seen (Doğan and Demiral, 2008: 14-15).

In addition to the many benefits of strategic management, some benefits have come to the fore. These include identification, prioritization and search for opportunities. New products, new markets and new initiatives in business areas can only be possible if companies are included in strategic planning processes. Strategic management in the following processes enables

companies to present an objective view of the areas put forward by them and to make a benefit–cost–benefit for the company's profitability (Dess, 2008: 141).

2.3. Transformational Leadership

"Transformational leadership" was first introduced by Burns (1978). The most important benefit of this type of leadership is that employee values are shaped in line with the goals of the organization and the expected benefit is achieved (Bass and Riggio, 2005: 37). Bass and Avolio (1990) expressed the concept of transformational leadership as providing motivation above expectations and achieving extra performance in order to increase the performance of individuals, teams and organizations. According to Garcia–Morales et al. (2008: 305), transformational leadership derives its power from making its employees feel valued. Bass (1985), Antonakis et al. (2003) and Ilies et al. (2005) stated that the leader first derives his power from his charisma. Northouse (2021: 142) expressed the concept of charisma as a special ability given to individuals in order to fulfill high–level tasks.

Howell and Higgins (1990: 322) define the transformational leader as a role–model that supports openness to versatility by exhibiting sudden behaviors and encourages cognitive thought difference. Thus, this type of leadership, which collectively approves a diversified workforce structure and focuses on the benefits of differences, creates an employee ecosystem in which ideas from different perspectives are accepted and even invited (Kearney and Gebert, 2009: 77). As a matter of fact, a free environment is created by preventing individuals from acting in the idea of obedience (Zhang and Bartol, 2010: 121). However, according to Appelbaum et al. (1998: 295), transformational leaders act with a focus on technology and human relations. Thus, they also support the personal development of individuals within the scope of this subject (Arnold and Loughlin, 2010: 681).

Within the scope of transformational leadership, a four–dimensional structure is generally accepted. However, this leadership structure has also been examined under one dimension in most empirical studies (Follesdal and Hagtvet, 2013: 751). The main reason for this situation is the existence of relations between sub–dimensions and the separation of concepts (Yukl, 1989). However, Antonakis and House (2014: 747) stated that it is a more accurate approach to decompose transformational leadership into its sub–dimensions.

Various transformational leadership theories have been put forward. Burns (1978) argued in his theory that transformational leaders and their subordinates have relatively high motivations and ethical values for joint interaction. Bass (2000) stated that the most notable aspect in transformational leadership is "charisma", but charisma alone is insufficient for change. According to Bass (2000), transformational leaders influence individuals by activating their strong emotions

by counseling them and making them identify with the leader. Kouzes and Posner (1989) stated that leadership is "leading, motivating change and taking responsibility" and that characteristics such as learning lessons, listening, communicating effectively, encouraging people to risk, maintaining determination and supporting people to eliminate uncertainties are among the cornerstones of effective leadership (Öz et al., 2019)

Firstly, it is important for the leader to learn from past mistakes and use these experiences to shape future decisions. Additionally, effective leaders listen to their team members and care about their opinions. This contributes to fostering an environment of collaboration and trust.

Transformational leaders have a number of common characteristics. These features can be listed under four headings as follows (Aksaraylı, 2015: 112);.

a. It has specific goals. It progresses in line with these goals.
b. It allows group members to emulate themselves as a leader.
c. Attaches importance to collective structure. It encourages this community to reach the goal of the organization.
d. Attaches importance to the personal values of the group members and exhibits relevant attitudes. Group members working with a transformative leader are not in that organization or company just because of their financial gains (Öz et al., 2019).

2.4. Organizational Innovation

The concept of organizational innovation is expressed in the OECD (2005) report as changes made in the structure and processes of the organization by developing new management and working styles. Crossan and Apaydın (2010) defined organizational innovation as the development of innovative business strategies within a business or organization that are associated with firm, group and individual analysis systems environmental, contextual, structural and managerial factors.

According to Siegel and Kaemmerer (1979), organizational innovation is to support and encourage individuals to work creatively. A traditional organization has a structure that does not encourage individuals to be innovative. Organizations need to encourage their individuals to get rid of this traditional structure and bring them to a more creative position.

According to Damanpour and Evan (1984: 393–395), organizational innovation is self–improvement according to environmental changes. This means changing not only individually but also organizationally. Businesses make organizational changes in order to adapt to the changes they see in their environment. In addition, the main purpose of organizational innovation is not to

adapt to these changes, but to provide these changes. In other words, it is to be in the position of those who reveal these changes rather than adapting to existing changes.

Regardless of the method and type of innovation, as long as the possibility of businesses or organizations encountering problems is not eliminated, there will definitely be solutions to these problems (Gorman, 2007: 8). On the other hand, it is a necessity to provide solutions to customer needs, whether determined or undetermined, and this obligation will reveal innovations in the process. Innovation can be divided into three key stages: idea generation, idea realization, and commercialization of ideas. These stages are often complex and occur over long periods of time. There is a common consensus among researchers that these stages are key to innovation. The idea generation stage is the stage where new ideas are created. This can happen through brainstorming, research, or simply observing the world around us. The stage of bringing ideas to life is the stage where ideas are transformed into something concrete. This may involve prototyping, testing, or creating a business plan. The commercialization of ideas stage is the stage where the ideas are introduced to the market. This may include producing, marketing, or selling the product or service (Tidd et al. 2005: 381; Uzkurt, 2008:103).

2.5. Methodology

2.5.1. Purpose and Importance of the Research

In this study, it is aimed to examine the mediating role of strategic management and transformational leadership in the relationship between innovation and digital transformation. Digital transformation and its four sub-dimensions (Customer experience, Improvement of operations, Reinvention of business models, Success in creating digital competence), strategic management and its four sub-dimensions (Environmental Screening, Strategy Formulation, Strategy Implementation, Strategy Evaluation and Observation) transformational leadership and its four sub-dimensions (ideal impact, mental stimulation, inspirational motivation and individual interest) and organizational innovation are interrelated. The main objective of this thesis is to investigate the impact of digital transformation on organizational innovation and to examine how this impact is realized through strategic management and transformative leadership. In this regard, the thesis emphasizes the importance of strategic management and leadership strategies in managing the digital transformation of organizations. Within the scope of the study, it was tried to determine which strategic management and leadership approaches can be used to increase innovation in the digital transformation process of organizations and the impact of these approaches on organizational innovation.

2.5.2. Scope and Constraints of the Research

The research data were collected from the employees of technology companies operating in Istanbul. Since the convenience survey method is preferred, a complete heterogeneity may not be achieved in the distribution of titles of the respondents. This research examines the mediating role of strategic management and transformational leadership in the relationship between innovation and digital transformation and the context of innovation and digital transformation impact. In this context, some limitations may arise depending on factors such as data collection process, sampling method, data collection tools and techniques. For example, situations such as insufficient sample size and the fact that selected participants do not reflect the general structure of organizations may limit the generalization of the results obtained. This study is based on the subjective judgments of the participants while trying to evaluate the impact of strategic management and leadership approaches on organizational innovation in the digital transformation process of organizations. Therefore, the opinions and experiences of the participants can influence the degree of objectivity and accuracy of the results. In addition, in this study, it is assumed that there is a causal relationship between the effect of strategic management and leadership approaches on organizational innovation. However, the exact determination of this relationship may be under the influence of different factors. For this reason, the issue to be examined may not be examined alone.

2.5.3. Preliminary Assumptions of the Research

The research was carried out with some presuppositions that were not in the hands of the researcher to change.

- The first assumption is that the different education levels of the participants will not significantly affect the variables in the research model. Survey forms will be delivered to the participants through the human resources departments of the relevant company or via the internet after the necessary permissions are obtained. The researcher will not be present with the participants while the questionnaires are being filled.
- The second presupposition is the assumption that the respondents carefully evaluated the statements of the respondents in accordance with the conditions specified in the directive.

2.5.4. Hypotheses of the Research

The literature of the research was reviewed and hypotheses were tried to be determined in line with the theoretical background. In this direction , it is seen that technology and organizational innovation management studies have obtained results that the digital age and innovation are significantly related to each other (Bayhan, 2004; Kalay, et al., 2015; Akman and Yılmaz, 2008; Karaman, 2019). In this context, the first hypothesis created in the study:

"H1: Digital transformation affects organizational innovation."

Digital transformation and strategic management are closely related concepts as digital technologies are increasingly integrated into strategic planning processes to achieve the goals of organizations (Matt et al., 2015: 340). In addition, despite the competition in the market, businesses should exhibit different collaborations and collective behaviors. Businesses should change their business models according to the competition in the market and restructure them with innovations. It has been supported by research that transformational leaders develop innovation and organizational innovation tendency within the organization (Gumusluoglu & İlsev, 2009). Overall, digital transformation is essential for organizations to remain competitive in today's digital economy, and strategic management is crucial for ensuring that organizations are making the most of these technologies to achieve their goals and create long-term value (Sebastian et al., 2017: 205; Öz, 2020). The hypothesis formed within the scope of this idea:

"H2: Digital Transformation affects strategic management".

Strategic management and organizational innovation are mutually reinforcing concepts. An effective strategic management process can provide the necessary resources to support innovation efforts by identifying areas of the organization that will benefit from innovation. Innovation then improves operational efficiency by developing new products and services, and helps an organization achieve its strategic goals by creating new business models (Razavi and Attarnezhad, 2013: 229). The relationship between strategic management and organizational innovation has been discussed in many studies (Ansoff, 2007; Dodgson, 2017; Razavi and Attarnezhad, 2013; Abdi and Senin, 2014) have been put forward empirically. Abdi and Senin (2014) empirically discussed the relationship between organizational innovation and organizational strategic management. The authors found that strategic management practices such as long-term planning and performance measurement were significantly associated with innovation in companies. They also found that companies that implemented a more strategic approach to innovation had higher innovation performance than those that did not. The hypothesis formed in this direction:

"H3: Strategic Management affects Organizational Innovation".

The relationship between digital transformation and organizational innovation can be demonstrated by digital technologies that offer new opportunities for innovation. However, there is no comprehensive content in the literature on the role of strategic management in this relationship. In some studies, the mediating role of strategic management has been examined (Öz

& Kalkan, 2023). In the study conducted by Duan et al. (2021), they revealed that strategic management practices such as long-term planning and resource allocation mediate the relationship between performance and organizational innovation in firms. In the study, it was stated that companies that implement digital transformation strategies and have strong strategic management practices have a higher level of innovation performance than those that do not. A study by Han et al. (2020) stated that performance measurement and resource allocation, which are strategic management practices, play a mediating role between digital transformation and organizational innovation in companies.
In this study, a hypothesis has been put forward that strategic management plays a critical mediating role in the relationship between digital transformation and organizational innovation and that organizations can identify innovation opportunities by applying strategic management practices. This hypothesis is presented below.

"H4: Strategic management mediates the relationship between digital transformation and organizational innovation. "

There are empirical studies on the relationship between transformational leadership and digital transformation. A study by Philip (2021) found that transformational leadership is positively associated with digital transformation. The study stated that transformational leaders can inspire employees to embrace new technologies and embrace change that can lead to a successful digital transformation. AlNuaimi et al. (2022) revealed that transformational leadership is positively associated with digital transformation. The study suggests that transformational leaders can create a culture of innovation and experimentation that can support digital transformation efforts.
In this direction, the hypothesis created for the relationship between digital transformation and transformational leadership is as follows.

"H5: Digital transformation impacts transformational leadership"

Transformational leadership and organizational innovation are theoretically related concepts. Research in this direction has shown that transformational leadership is positively related to organizational innovation. García-Morales et al. (2008) revealed that there is a positive relationship between transformational leadership and innovation in organizations. The study suggests that transformational leaders can create a culture of innovation and experimentation, where employees are encouraged to generate and implement new ideas. Mokhber et al. (2015) revealed that transformational leadership is positively related to innovation. In the study, they stated that transformational leaders can inspire employees to take risks, challenge the status quo, and generate new ideas. In this direction, the hypothesis created for the relationship between digital transformation and transformational leadership is as follows.

"H6: Transformational leadership influences organizational innovation."

The mediating role of transformational leadership in the relationship between digital transformation and organizational innovation is an important issue. By embracing a transformational leadership style, leaders can create a culture of innovation and experimentation. They can also inspire and empower employees to embrace new technologies and change, providing resources and support for innovation efforts that can mediate the relationship between digital transformation and innovation outcomes. In this context, effective studies in the literature have been carried out in different fields. In this context, the mediation of the relationship between transformational leadership digital transformation and organizational innovation is discussed in this study. In this direction, the hypothesis created for the mediation of the relationship between transformational leadership digital transformation and organizational innovation is as follows.

"H7: Transformational leadership mediates the relationship between digital transformation and organizational innovation."

2.5.5. Method of the Research

The method of this research is the process of collecting data with questionnaires and finding answers to research questions by using statistical methods for the analysis of data. The final sample was created with 507 participant data from 700 questionnaires distributed to white-collar and managers of companies operating in Istanbul. For the scale items, he used the 5-point Likert type scale "Strongly Disagree (1) – Strongly Agree (5)".

This research was carried out by interpreting the survey study to be conducted on the managers and employees of the companies operating in the textile sector. After the survey, on the collected data;

- Frequency distribution and descriptive statistics
- Explanatory Factor Analysis
- Confirmatory Factor Analysis
- Reliability Analysis
- Structural Equation Model

and the results were interpreted and the research questions were answered.

2.5.6. Design of the Research

The design of the research in line with the hypotheses put forward in the study is shown in Figure 1.

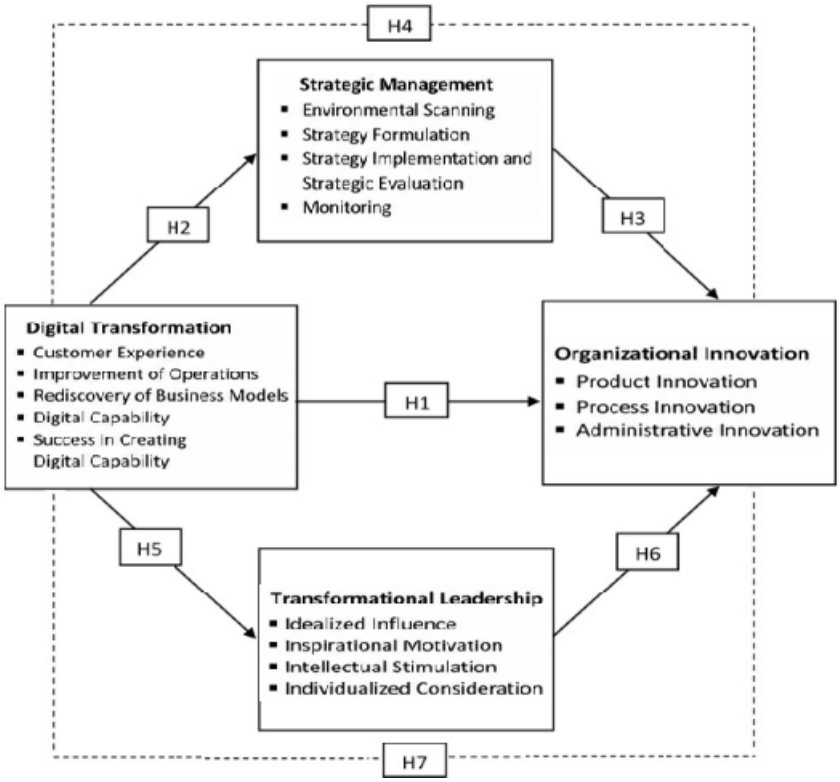

Figure 1. Research Design

In the study, innovation was accepted as the dependent variable and digital transformation was accepted as the independent variable. In addition, strategic management and transformational leadership variables were used as intermediary variables.

2.5.7 Main Population and Sample of the Research

It is very important to represent the sampled universe in determining the sample size. Determining the sample that does not have sufficient size constitutes sampling error (Balcı, 2005). Sample data will be collected from white-collar and managers of companies with more than 250 employees located within the borders of Istanbul. The number of employees of the companies that will be the subject of the sample consists of approximately 4900 people.

In determining the sample size (Özdamar, 2003);

$$n = \frac{N.\sigma^2.Z\alpha}{(N-1).d^2}$$

formulation is used. Here;

n: Sample size

N: Number of universes

Z_α : Importance Level (1–Confidence level)
d= Sampling error
σ = Indicates the standard deviation of the universe.

In the study, the number of samples was determined as 357 according to the 95% confidence level. A questionnaire form was sent to 700 people in order to reach the desired number. 520 feedbacks were received from them. 13 of the returned forms were excluded from the analysis because they were filled in incompletely, and finally the analyzes were carried out with 507 participant questionnaires.

2.5.7. Measurement Tools of Research

In the research, there are four scales for four conceptual variables and additional personal information questions. A 5–point Likert scale was used in all scales and evaluated in accordance with this scale. (1= Disagree at all, 2= Partially disagree, 3= I'm in the middle, 4= Partially agree, 5= Strongly agree). The validity of the scales was determined over the main sample and by confirmatory factor analysis. The relevant results are presented in detail in the following sections.

I. Digital Transformation Scale

The digital transformation scale is adapted from the book "Leading Digital" by Westerman et al. (2014). The scale, which consists of 20 items, consists of four sub–dimensions: customer experience, improvement of operations, reinvention of business models and success in creating digital competence.

II. Strategic Management Scale

The strategic management scale used in this study was developed by Aboramadan and Borgonovi (2016) in 2016 and translated into Turkish by Njie (2021). Scale with 30 items; It consists of four sub–dimensions: environmental screening, strategy formulation, strategy implementation and strategy evaluation and observation.

III. Transformational Leadership Scale

The transformational leadership scale was developed by Bass in 1985. There are many studies on scale in the literature. the reduced form of the scale was used by Çeri Booms in 2009. In this study, transformational leadership will be measured from 20 items and four sub–dimensions: ideal impact, mental stimulation, inspirational motivation and individual interest. In the studies, one of

the Cronbach's Alpha reliability coefficients of the scale was found to be 0.93 (Çeri-Booms, 2009; Arafat, 2017).

IV. Organizational Innovation Scale

Organizational innovation, developed by Nasution et al. (2010), a 15-item scale consisting of product, process and administrative innovation sub-dimensions was used. The reliability coefficient of the product sub-length was found to be 0.870, the reliability coefficient of the process sub-length was 0.809, and the reliability coefficient of the administrative innovation sub-length was found to be 0.875. The reliability coefficients of each dimension of the scale were found to be sufficient in line with the reliability level accepted in the field of social sciences (α=0.70).

2.6. Results

The questionnaires conducted within the scope of the study were analyzed in this section. No losses or outliers were found in the surveys. Descriptive statistics are presented within the scope of the study. In addition, explanatory and confirmatory factor analyses and structural equation model were applied.

In the study, the validity of the scales was determined by factor analysis. In this context, explanatory and confirmatory factor analyses and correlation analyses were performed.

2.6.1. Demographic Characteristics of Participants

The demographic values obtained from the questionnaires applied within the scope of the sample determined in the study are presented in Table 5.1. The demographic data of a total of 507 participants evaluated in the study were examined. Accordingly, 55.2% of all participants were male and 44.8% were female. It is seen that most of the participants are between the ages of 30-59. 6.3% of all participants were in the 20-29 age range, 29.6% were in the 30-39 age range, 41.2% were in the 40-49 age group, 19.9% were in the 50-59 age group and 3% were in the 60 and over age group. It is seen that approximately 80% of the study participants are higher education graduates. It can be thought that this situation will positively affect the reliability of the study results.

The study was carried out with the participation of company employees operating in Istanbul. Accordingly, the distribution of the number of employees of these companies was also determined within the scope of the survey. About half of the respondents declared that they work for companies with 1-249 employees. 21.3% of the participants declared that they worked in companies with 250-750 employees, 7.1% between 751-1250, 3.2% between 1251-1750 and 20.3% with more than 1751 employees. 12.8% of the participants working in these companies are

white-collar employees, 11.2% are specialists, 5.7% are junior managers, 21.5% are mid-level managers, 21.3% are senior managers and 27.4% are business owners/partners. When the working hours of the participants in the same workplace are examined, the employees between 0-2 years 6.5%, 8.5% for those working for 3-5 years, 14.8% for those working between 6-10 years, 23.5% for those working for 11-15 years and 46.7% for those working for more than 16 years.

Table 1. *Demographic Statistics*

		N	%
Age	20-29	32	6,3%
	30-39	150	29,6%
	40-49	209	41,2%
	50-59	101	19,9%
	60+	15	3,0%
Gender	Male	280	55,2%
	Women	227	44,8%
Education Level	Primary Education	2	0,4%
	High School	103	20,3%
	Associate Degree	52	10,3%
	Undergraduate	155	30,6%
	Master's Degree	138	27,2%
	Ph.D.	57	11,2%
Number of Employees	1-249	244	48,1%
	250-750	108	21,3%
	751-1250	36	7,1%
	1251-1750	16	3,2%
	1751+	103	20,3%
Position	White Collar Employee	65	12,8%
	Expert	57	11,2%
	Junior Executive	29	5,7%
	Middle manager	109	21,5%
	Senior manager	108	21,3%
	Business owner/partner	139	27,4%
Uptime	0-2 years	33	6,5%
	3-5 years	43	8,5%
	6-10 years	75	14,8%
	11-15 years	119	23,5%
	16+	237	46,7%
Total Work Experience	0-2 years	7	1,4%
	3-5 years	7	1,4%
	6-10 years	41	8,1%
	11-15 years	114	22,5%
	16+	338	66,7%
Total		507	100,0%

The fact that the majority of the participants are higher education graduates and work in middle-senior management positions reveals that the participants generally consist of individuals with a high level of knowledge and a broad perspective in business life. At the same time, the majority of respondents have long-term working experience (especially noteworthy for those working for more than 16 years), ensuring that the data to be obtained is rich in depth and experience. However, it can be thought that working in companies of various sizes enables participants to gain

experience in various business structures and organizational dynamics. The diversity thus provided results in an expansion in the scope of the study, thereby increasing the overall validity of the results. All these factors are very important factors in order to increase the reliability and validity of the survey. It has the potential. However, the exact reliability of the results depends on the design of the survey, the quality of the questions, and the processes of collecting and analyzing the responses.

2.6.2. Explanatory Factor Analysis

In this study, the factor structure of the data set was examined by using Kaiser–Meyer–Olkin (KMO), Barlett Test, Principal Component Analysis (PCA) and Varimax transformation, which are factor analysis methods, and the fixed factor method in which the number of factors was predetermined was preferred. The KMO criterion is a measure used to evaluate the suitability of the data set for factor analysis (Kaiser, 1974). The Barlett Test is a test used to check the significance of the relationship between variables (Barlett, 1954). PCA is a widely used method to summarize variables with a smaller number of factors and to understand the structure in the data set (Jolliffe, 2002). Varimax transformation is a preferred method to optimize the relationship between factors and to obtain a more understandable factor structure (Kaiser, 1958). These factor analysis methods play an important role in realizing the main purpose of the study, presenting the data set in a more understandable and summarizing way, and understanding the relationships between variables.

In this section, the aim of the research is to use a Digital Transformation Scale that aims to measure digital transformation among the employees of technology companies operating in Istanbul. In this context, Kaiser–Meyer–Olkin (KMO) fitness measurement and Bartlett's test were used to evaluate the structural validity of the scale. As a result of the KMO suitability measurement, the value obtained was found to be 0.958, which indicates that the sample is suitable for factor analysis. According to the results of Bartlett's test, it was determined that there was a significant relationship between the factors and the factor structure of the scale was statistically significant (Bartlett's test: $\chi^2(190) = 11903.821$, $p < 0.001$).

Table 2. KMO and Barlett's Test Result of Digital Transformation Scale1

Kaiser-Meyer-Olkin Sampling Suitability Measurement		,958
Bartlett's Test	Mean Chi-Square	11903,821
	Degrees of Freedom	190
	Significance	,000

The explanatory factor structure of the Digital Transformation Scale consists of four factors, and the variance ratios explained by each factor are as follows: The success factor in creating digital competence is 25.20%, the customer experience factor is 23.05%, the operational improvement factor is 19.35%, and the reinvention of business models factor is 14.26%. In total, these four factors explain 81.87% of the total variance. These results show that the Digital Transformation Scale is a valid and reliable tool to measure digital transformation among the employees of technology companies in Istanbul.

Table 3. Explanatory Factor Structure of the Digital Transformation Scale

Factor Name	Scale Items	Factor Load	Explanatory Factor (%)
Success in creating digital competence	FDIB19	,830	25,20
	FDIB18	,770	
	FDIB20	,731	
	FDIB17	,692	
	FDIB16	,663	
	FDYB15	,592	
	FDIB14	,446	
	FDIB12	,388	
	FDIB13	,345	
	FDYB11	,330	
Customer experience	MD4	,767	23,05
	MD3	,350	
	MD2	,360	
	MD1	,305	
Improving operations	OI6	,501	19,35
	OI8	,477	
	OI7	,457	
	OI5	,329	
Reinvention of business models	IMYK10	676	14,26
	IMYK9	,570	
	Total Variance		81,87

Table 4 presents the Kaiser–Meyer–Olkin (KMO) suitability measurement of the Strategic Management Scale and Bartlett's test results. The KMO value has reached .966, which is a high value considered as a measure of compliance. The chi-square value obtained as a result of Bartlett's test was calculated as 20960.26 on average and the degrees of freedom as 435. These

results indicate that the scale has a suitable data set for factor analysis and that factor structure can be analyzed (Bartlett's test: $\chi^2(435) = 20960.26$, $p < 0.001$).

Table 4. KMO and Barlett's Test Result of Strategic Management Scale

Kaiser-Meyer-Olkin Sampling Suitability Measurement		,966
Bartlett's Test	Mean Chi-Square	20960,26
	Degrees of Freedom	435
	Significance	,000

As a result of the factor analysis of the Strategic Management Scale, four basic factors were determined. The variance ratios explained by these factors are as follows: Strategy Evaluation and Observation factor 23.24%, Environmental Screening factor 22.25%, Strategy Implementation factor 18.97% and Strategy Formulation factor 16.60%. These findings indicate that the scale is based on four key factors that can be used to evaluate various aspects of the participants' strategic management process. The Strategy Evaluation and Observation factor reflects the participants' ability to evaluate and observe strategic goals. Environmental Scanning factor refers to the analysis and monitoring of the external environment. The Strategy Implementation factor represents the effective execution of strategies, while the Strategy Formulation factor reflects the creation and development of strategic plans. The fact that these factors explain 81.06% of the total variance shows that the Strategic Management Scale is a reliable measurement tool that can be used to effectively evaluate the basic dimensions of the strategic management process. These findings can make a significant contribution to research in the field of strategic management and the development of strategic decisions

Table 5. Explanatory Factor Structure of the Strategic Management Scale

Factor Name	**Scale Items**	**Factor Load**	**Explanatory Factor (%)**
Strategy Evaluation and Observation	SDG25	,681	23,24
	SDG22	,655	
	SDG21	,655	
	SDG23	,651	
	SDG24	,638	
	SDG29	,372	
	SDG27	,454	
	SDG26	,547	
	SDG28	,481	
	SDG30	,431	
Environmental Scanning	CT3	,785	22,25
	CT1	,768	
	CT2	,767	
	CT4	,696	

Factor Name	Scale Items	Factor Load	Explanatory Factor (%)
	CT7	,617	
	CT5	,541	
	CT6	,592	
Strategy Implementation	SU19	,702	18,97
	SU20	,686	
	SU15	,608	
	SU18	,595	
	SU17	,563	
	SU14	,346	
	SU16	,317	
Strategy Formulation	SF10	,548	16,60
	SF12	,534	
	SF13	533	
	SF11	,410	
	SF9	,404	
	SF8	,419	
	Total Variance		81,06

Table 6 presents the Kaiser–Meyer–Olkin (KMO) fit measure of the Transformational Leadership Scale and Bartlett's test results. The KMO value reached the level of .955, which shows that the suitability measure of the sample is high. The mean chi–square value obtained as a result of Bartlett's test is 12234.60 and the degrees of freedom are determined as 190. These results indicate that the scale has a suitable data set for factor analysis and that factor structure can be analyzed (Bartlett's test: $\chi^2(190) = 12234.60$, $p < 0.001$).

Table 6. KMO and Barlett's Test Result of the Transformational Leadership Scale

Kaiser-Meyer-Olkin Sampling Suitability Measurement		,955
Bartlett's Test	Mean Chi-Square	12234,60
	Degrees of Freedom	190
	Significance	,000

As a result of the factor analysis of the Transformational Leadership Scale, four basic factors were determined. The variance ratios explained by these factors are as follows: Ideal Impact factor is 22.34%, Individual Interest factor is 21.61%, Mental Incentive factor is 21.54%, and Inspirational Motivation factor is 16.96%. These findings suggest that the scale is based on four key factors used to assess transformational leadership. The Ideal Impact factor reflects the leader's impressive and exemplary behavior. The Individual Interest factor is related to the leader's interest in and support of individual employees. The Mental Incentive factor refers to the leader's ability to

encourage employees and contribute to their mental development. The Inspirational Motivation factor represents the leader's ability to inspire employees and increase their motivation. The fact that these factors explain 82.45% of the total variance shows that the Transformational Leadership Scale is a reliable tool for evaluating transformational leadership behaviors. These findings can play a crucial role in the design of leadership research and leadership development programs

Table 7. Explanatory Factor Structure of the Transformational Leadership Scale

Factor Name	**Scale Items**	**Factor Load**	**Explanatory Factor (%)**
Ideal Effect	IE6	,802	22,34
	IE7	,711	
	IE4	,710	
	IE5	,679	
	IE8	,549	
	IE1	,443	
	IE2	,419	
	IE3	,387	
Individual Attention	BI19	,710	21,61
	BI17	,705	
	B20	,675	
	BI18	,521	
Mental Encouragement	ZT9	,666	21,54
	ZT10	,631	
	ZT11	,624	
	ZT12	,575	
Inspirational Motivation	IVM13	,671	16,96
	IVM15	,624	
	IVM14	,517	
	IVM16	,503	
	Total Variance		82,45

Table 8 presents the Kaiser–Meyer–Olkin (KMO) fit measurement of the Organizational Innovation Scale and Bartlett's test results. The KMO value reached the level of .958, which shows that the suitability measure of the sample is high. The mean chi-square value obtained as a result of Bartlett's test is 8564.68 and the degree of freedom is determined as 105. These results indicate that the scale has a suitable data set for factor analysis and that factor structure can be analyzed (Bartlett's test: $\chi^2(105) = 8564.68$, $p < 0.001$).

Table 8. KMO and Barlett's Test Result of the Organizational Innovation Scale

Kaiser-Meyer-Olkin Sampling Suitability Measurement		,958
Bartlett's Test	Mean Chi-Square	8564,68
	Degrees of Freedom	105
	Significance	,000

As a result of the factor analysis of the Organizational Innovation Scale, three basic factors were determined. The variance ratios explained by these factors are as follows: Process Innovation factor is 32.82%, Administrative Innovation factor is 28.15%, Product Innovation factor is 21.08%. These findings show that the scale is based on three key factors used to evaluate innovation processes in organizations. The Process Innovation factor is related to the organization's innovative design and development of business processes. The Administrative Innovation factor refers to the ability to innovate and change in the management and administrative practices of the organization. The Product Innovation factor represents the innovation and creativity in the products and services of the organization. The fact that these factors explain 82.05% of the total variance shows that the Organizational Innovation Scale is a reliable tool for evaluating the innovation processes of organizations. Innovation is recognized as an important element of providing organizational competitive advantage, and this scale can be a valuable tool for understanding and improving the innovation capacities of organizations

Table 9. Explanatory Factor Structure of the Organizational Innovation Scale

Factor Name	**Scale Items**	**Factor Load**	**Explanatory Factor (%)**
Process innovation	SI8	,791	32,82
	SI9	,781	
	SI10	,742	
	SI7	,735	
	SI6	,693	
Administrative innovation	II11	,855	28,15
	II12	,805	
	II15	,791	
	II13	,693	
	II14	,676	
Product Innovation	UI1	, 745	21,08
	UI2	,710	
	UI3	,705	

	UI5	,580	
	UI4	,510	
	Total Variance		82,05

2.6.3. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a statistical analysis method used to verify and confirm the factor structure determined in the previous step. This analysis method evaluates the model's fit by comparing the predetermined factor structure with the observational data. The most widely used assessment tool of CFA is the goodness-of-fit indexes. Goodness-of-fit indices are statistical measures used to measure the fit of the model with the data. These indices assess how well the observed data fits the predicted model.

The well-being of fit indices developed by Hu and Bentler (1999) and frequently used are as follows:

- χ2/df (Khi-squared/values degrees of freedom): This value is an index used to assess the fit of the model. A lower value of χ2/df indicates that the model fits the data better. A value close to or lower than 2 is generally desirable.
- RMSEA (Root Mean Square Error of Approximation): This index is another metric used to measure the fit of the model. RMSEA shows how good the difference of the observed data and the predicted model is. Lower RMSEA values indicate that the model fits the data better. Generally, a value of 0.05 or lower is desirable.
- GFI (Goodness-of-Fit Index): This index is another statistical measure used to assess the fit of the model. GFI indicates how well the predicted model fits the observed data. Its values range from 0 to 1, and the closer it is to 1, the better the model's fit to the data. Generally, a value of 0.90 or higher is desirable.
- CFI (Comparative Fit Index): This index is another measure used to assess the fit of the model. CFI indicates how well the predicted model matches the observed data. Its values range from 0 to 1, and the closer it is to 1, the better the model's fit to the data. Generally, a value of 0.90 or higher is desirable.
- NFI (Normed Fit Index): This index is another measure used to assess the fit of the model. The NFI indicates how well the predicted model fits the observed data. Its values range from 0 to 1, and the closer it is to 1, the better the model's fit to the data. Generally, a value of 0.90 or higher is desirable.

These goodness-of-fit indices are important tools used in confirmatory factor analysis to assess the fit of the obtained model with the dataset. Each index evaluates the fit of the model in different aspects, and lower χ2/df value, lower RMSEA value, and higher GFI, CFI, and NFI values are generally desirable.

Table 10 presents the goodness-of-fit indices of the Digital Transformation Scale. As a result of the analyzes made between the first model and the last model, it is observed that there is a certain improvement in the goodness-of-fit indices. When comparing the well-fit ranges and the accepted ranges, instead of the accepted range of $0 < \chi2/df < 3$ for $\chi2/df$, the $\chi2/df$ value, which is 4.975 in the last model, falls outside this range. However, $0 < \chi2/df$ falls within the < 5 range. Therefore, in this case, the value of $\chi2/df$ is at an acceptable level. The RMSEA (Root Mean Square Error of Approximation) value was 0.131 in the first model and 0.081 in the last model. Instead of the good fit range of $0 \leq RMSEA \leq 0.05$, the RMSEA value in the latest model is in the range of $0.05 < RMSEA \leq 0.10$. Although this shows that the model does not fully achieve goodness of fit, it shows that there is an acceptable level of improvement. The GFI (Goodness-of-Fit Index) value was 0.881 in the first model and 0.920 in the last model. Instead of the good fit range of $0.95 \leq GFI \leq 1$, the GFI value in the latest model falls within the range of $0.90 < GFI < 0.95$. In this case, the GFI value is at an acceptable level, explaining the factors that contribute to the model's goodness of fit. The CFI (Comparative Fit Index) value was 0.850 in the first model and 0.953 in the last model. In line with the good fit range of $0.97 \leq CFI \leq 1$, the CFI value in the latest model is within this range. This suggests that the model has better goodness of fit and fits the data better. The NFI (Normed Fit Index) value was 0.860 in the first model and 0.911 in the last model. Instead of the good fit range of $0.95 \leq NFI \leq 1$, the NFI value in the latest model is in the range of $0.90 < NFI < 0.95$. In this case, the NFI value is at an acceptable level and explains the factors that contribute to the model's goodness of fit.

Table 10. Goodness of Fit Indices for Digital Transformation Scale

Harmony Index	First Model	End Model	Good Fit Range	Accepted December	Evaluate dirme
χ2/df	7,051	4,975	$0 < \chi2/df < 3$	$0 < \chi2/df < 5$	Admissions
RMSEA	0,131	0,081	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.10$	Admissions
GFI	0,881	0,920	$0.95 \leq GFI \leq 1$	$0.90 < GFI < 0.95$	Admissions
CFI	0,850	0,953	$0.97 \leq CFI \leq 1$	$0.95 \leq CFI < 0.97$	Admissions
NFI	0,860	0,911	$0.95 \leq NFI \leq 1$	$0.90 < NFI < .95$	Admissions

As a result, as a result of the confirmatory factor analysis, it is seen that the goodness of fit indices of the Digital Transformation Scale are mostly at acceptable levels. However, although the $\chi2/df$ value and RMSEA value are not fully included in the target ranges, other goodness-of-fit indices (GFI, CFI, NFI) support the goodness-of-fit of the model and indicate that the scale fits the data.

These findings suggest that the Digital Transformation Scale can be a reliable tool for evaluating digital transformation processes.

MD: Customer experience, OI: Improving Operations, IMQ: Reinventing Business Models, FDI: Success in Creating Digital Competence

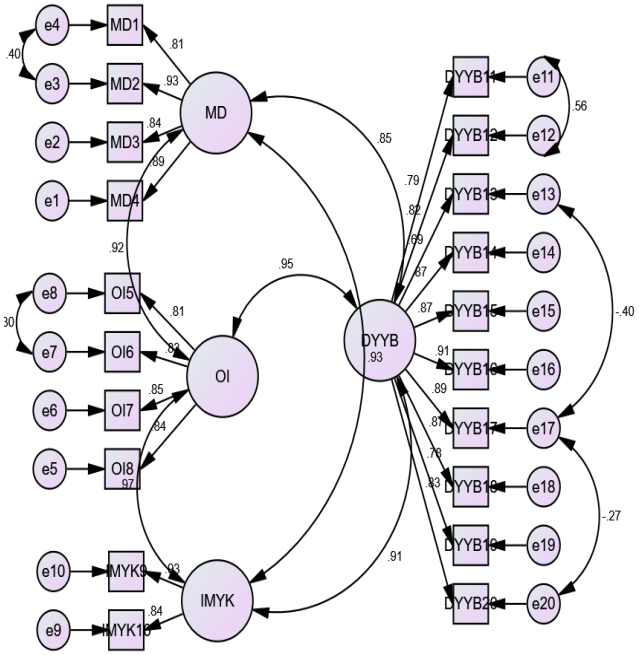

Figure 1. *Road Chart for Digital Transformation Scale*

According to the results of the second confirmatory factor analysis presented in Table 11, it is seen that there is a certain improvement in the goodness of fit indices of the Strategic Management Scale. In the comparison between the first model and the last model, it is observed that there is a positive improvement in the goodness-of-fit indices. The $\chi 2/df$ value was determined as 4.125 in the last model while it was 6.250 in the first model. Instead of the good fit range of $0 < \chi 2/df < 3$, the $\chi 2/df$ value in the latest model falls within the range of $0 < \chi 2/df < 5$. This indicates that the value of $\chi 2/df$ is at an acceptable level. The RMSEA (Root Mean Square Error of Approximation) value was 0.110 in the first model and 0.071 in the last model. Instead of the good fit range of $0 \leq RMSEA \leq 0.05$, the RMSEA value in the latest model is in the range of $0.05 < RMSEA \leq 0.10$. Although this shows that the model does not fully provide goodness of fit, it shows that there is improvement and is at an acceptable level. The GFI (Goodness-of-Fit Index) value was 0.889 in the first model and 0.940 in the last model. Instead of the good fit range of $0.95 \leq GFI \leq 1$, the GFI value in the latest model falls within the range of $0.90 < GFI < 0.95$. In this case, the GFI value is at an acceptable level, explaining the factors that contribute to the model's goodness of fit. The

CFI (Comparative Fit Index) value was 0.855 in the first model and 0.965 in the last model. In line with the good fit range of $0.97 \leq CFI \leq 1$, the CFI value in the latest model is within this range. This suggests that the model has better goodness of fit and fits the data better. The NFI (Normed Fit Index) value was 0.890 in the first model and 0.915 in the latest model. Instead of the good fit range of $0.95 \leq NFI \leq 1$, the NFI value in the latest model is in the range of $0.90 < NFI < 0.95$. In this case, the NFI value is at an acceptable level and explains the factors that contribute to the model's goodness of fit.

Table 11. Goodness of Alignment Indices for Strategic Management Scale

Harmony Index	First Model	End Model	Good Fit Range	Accepted December	Evaluate dirme
$\chi 2$/df	6,250	4,125	$0 < \chi 2 /df < 3$	$0 < \chi 2 /df < 5$	Admissions
RMSEA	0,110	0,071	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.10$	Admissions
GFI	0,889	0,940	$0.95 \leq GFI \leq 1$	$0.90 < GFI < 0.95$	Admissions
CFI	0,855	0,965	$0.97 \leq CFI \leq 1$	$0.95 \leq CFI < 0.97$	Admissions
NFI	0,890	0,915	$0.95 \leq NFI \leq 1$	$0.90 < NFI <.95$	Admissions

In conclusion, the results of the second confirmatory factor analysis show that the goodness of compliance of the Strategic Management Scale is generally acceptable. This scale shows that it can be used as a valid and reliable tool for evaluating strategic management processes.

CT: Environmental Screening, SF: Strategy Formulation, SU: Strategy Implementation, SDG: Strategy Evaluation and Observation

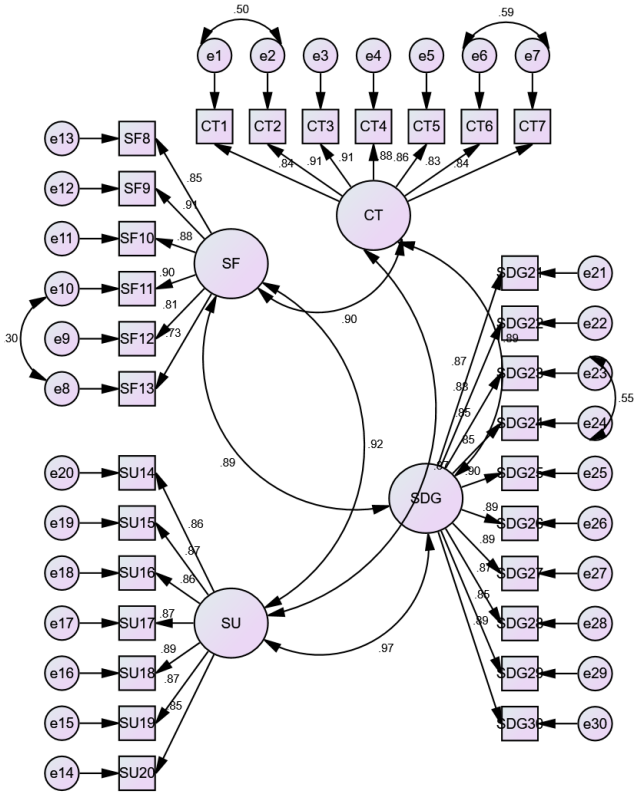

Figure 2. Roadmap to Strategic Management Scale

The goodness-of-alignment indices for the Transformational Leadership Scale presented in Table 12 show that the scale, which was developed to measure the concept of transformational leadership, fits well with the data set. The χ2/df value of the model was reduced to 5.187, which is acceptable for good-of-fits. The RMSEA value was calculated as 0.109 and the CFI value as 0.945. In addition, the GFI value was found to be 0.930 and the NFI value was 0.925.

Table 12. Goodness of Fit Indices for the Transformational Leadership Scale

Harmony Index	First Model	End Model	Good Fit Range	Accepted December	Evaluate dirme
χ2/df	5,187	3,250	$0 < \chi2 /df < 3$	$0 < \chi2 /df < 5$	Good Fit
RMSEA	0,109	0,009	$0 \leq$ RMSEA $\leq$ 0.05	0.05 < RMSEA $\leq$ 0.10	Good Fit
GFI	0,930	0,970	$0.95 \leq$ GFI ≤ 1	0.90 < GFI< 0.95	Good Fit
CFI	0,945	0,975	$0.97 \leq$ CFI ≤ 1	$0.95 \leq$ CFI < 0.97	Good Fit
NFI	0,925	0,952	$0.95 \leq$ NFI ≤ 1	0.90 < NFI <.95	Good Fit

These values indicate that the model's alignment is within acceptable ranges, and the transformational leadership scale effectively reflects the factors measured. These results support that this scale, which is used to examine and measure the concept of transformational leadership, is reliable and valid.

IE: Ideal Effect, ZT: Mental Stimulation, IVM: Inspirational Motivation, BI: Individual Interest

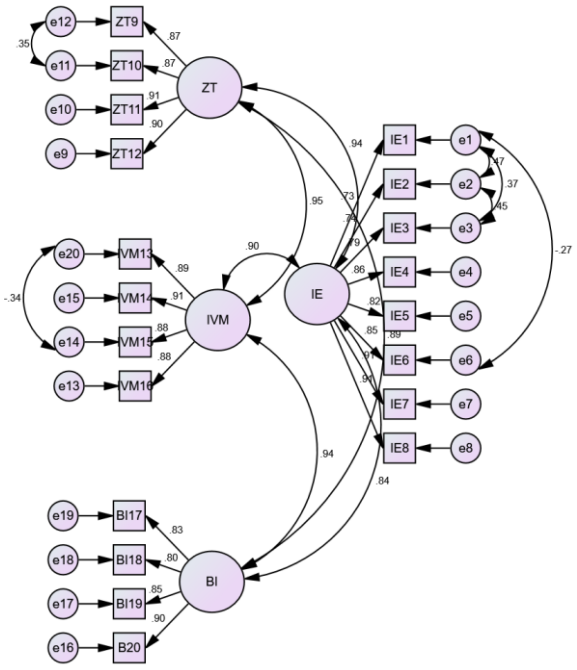

Figure 3. *Road Chart for the Transformational Leadership Scale*

The goodness-of-fit indices for the Organizational Innovation Scale in Table 13 show that the scale developed to measure innovation within the organization is compatible with the data set. The χ2/df value of the model has been reduced from 5,568 to 4,120, and an acceptable level of fit has been achieved. The RMSEA value was calculated as 0.140 and the CFI value as 0.840. In addition, the GFI value was found to be 0.886 and the NFI value was 0.830. These values indicate that the model's alignment is within acceptable ranges, and that the organizational innovation scale effectively reflects the factors measured

Table 13. *Goodness of Fit Indices for Organizational Innovation Scale*

Harmony Index	**First Model**	**End Model**	**Good Fit Range**	**Accepted December**	**Evaluate dirme**
χ2/df	5,568	4,120	0 < χ2 /df < 3	0 < χ2 /df < 5	Admissions

Harmony Index	First Model	End Model	Good Fit Range	Accepted December	Evaluate dirme
RMSEA	0,140	0,100	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.10$	Admissions
GFI	0,886	0,901	$0.95 \leq GFI \leq 1$	$0.90 < GFI < 0.95$	Admissions
CFI	0,840	0,951	$0.97 \leq CFI \leq 1$	$0.95 \leq CFI < 0.97$	Admissions
NFI	0,830	0,901	$0.95 \leq NFI \leq 1$	$0.90 < NFI < .95$	Admissions

These results support that this scale, which is used to evaluate and measure innovation within the organization, is satisfactory in terms of reliability and validity.

SI: Process Innovation, II: Administrative Innovation, UI: Product Innovation

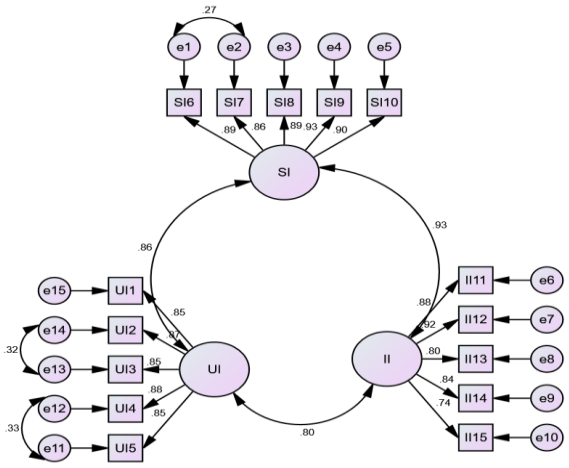

Figure 4. Road Chart for the Transformational Leadership Scale

2.6.4. Reliability Study of Scales

In the reliability analysis section of this study, Cronbach's Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) values were used to evaluate the internal consistency of the scales.

– Cronbach's Alpha is a common statistical measure that measures the internal consistency of a scale (Cronbach, 1951). The alpha value ranges from 0 to 1, with higher values indicating a higher internal consistency of the scale. Generally, a Cronbach's Alpha value of 0.70 or higher indicates an acceptable level of internal consistency (Nunnally, 1978).

– Composite Reliability (CR) is another statistical measure that measures the reliability of a scale (Fornell and Larcker, 1981). The CR value ranges from 0 to 1, with higher values indicating higher reliability of the scale. Generally, a CR value of 0.70 or higher indicates an acceptable level of reliability.

– Average Variance Extracted (AVE) is a measure used to assess the construct validity of a scale (Fornell and Larcker, 1981). The AVE value ranges from 0 to 1, with higher values indicating higher construct validity of the scale. Typically, an AVE value of 0.50 or higher indicates an acceptable level of construct validity.

These reliability analysis methods provide crucial insights into the internal consistency, reliability, and construct validity of the scales. Cronbach's Alpha, CR, and AVE values are statistical tools that are widely used to evaluate the reliability and validity of scales and are important for ensuring the reliability of research.

When the descriptive information of the Digital Transformation Scale in Table 5.14 is examined, the reliability analysis results regarding the sub-dimensions of the scale and the general scale are seen. The Cronbach's Alpha value of the scale, which includes 4 items in the customer experience sub-dimension, was calculated as 0.920, CR value was calculated as 0.910 and AVE value was calculated as 0.755. There are 4 items in the sub-dimension of improving operations and the Cronbach's Alpha value of the scale was found to be 0.910, CR value 0.905 and AVE value 0.760. The sub-dimension of reinvention of business models consists of 2 items, Cronbach's Alpha value is calculated as 0.870, CR value is 0.860 and AVE value is 0.715. The sub-dimension of success in creating digital competence consists of 10 items and Cronbach's Alpha value is calculated as 0.960, CR value 0.940 and AVE value 0.770. Overall, the Digital Transformation Scale has a total of 20 items, with a Cronbach's Alpha value of 0.890, a CR of 0.825, and an AVE of 0.775. These results indicate that the scale is generally reliable and effectively reflects the factors measured

Table 14. Descriptive Information of the Digital Transformation Scale

Sub-Dimensions	Number of Articles	Cronbach Alpha	CR	AVE
Customer experience	4	0,920	0,910	0,755
Improving Operations	4	0,910	0,905	0,760
Reinventing Business Models	2	0,870	0,860	0,715
Success in Creating Digital Competence	10	0,960	0,940	0,770
Digital Transformation Scale	20	0,890	0,825	0,775

The descriptive information of the Strategic Management Scale in Table 5.15 includes the sub-dimensions of the scale and the results of the reliability analysis for the general scale. While there were 7 items in the environmental screening sub-dimension, Cronbach's Alpha value was calculated as 0.960, CR value was calculated as 0.910 and AVE value was calculated as 0.720. In the strategy formulation sub-dimension, there were 6 items, Cronbach's Alpha value was found to be 0.940, CR value was 0.911 and AVE value was 0.735. There are 7 items in the strategy implementation sub-dimension and the Cronbach's Alpha value of the scale is calculated as 0.950, CR value 0.912 and AVE value 0.735. In the strategy evaluation and observation sub-dimension, there were 10 items, Cronbach's Alpha value was found to be 0.970, CR value was 0.915 and AVE value was 0.735. In general, it is seen that the Strategic Management Scale has a total of 30 items and the Cronbach's Alpha value is 0.925, the CR value is 0.910 and the AVE value is 0.732. These results show that the scale is satisfactory in terms of reliability and validity and is effective in measuring strategic management processes.

Table 15. Strategic Management Descriptive Information of the Scale

Sub-Dimensions	Number of Articles	Cronbach Alpha	CR	AVE
Environmental Scanning	7	0,960	0,910	0,720
Strategy Formulation	6	0,940	0,911	0,735
Strategy Implementation	7	0,950	0,912	0,735
Strategy Evaluation and Observation	10	0,970	0,915	0,735
Strategic Management Scale	30	0,925	0,910	0,732

The descriptive information of the Transformational Leadership Scale in Table 5.16 includes the sub-dimensions of the scale and the reliability analysis results for the overall scale. While there were 8 items in the ideal effect sub-dimension, Cronbach's Alpha value was calculated as 0.940, CR value was calculated as 0.881 and AVE value was calculated as 0.785. There are 4 items in the mental stimulation sub-dimension, Cronbach's Alpha value was found to be 0.940, CR value was 0.885 and AVE value was 0.781. There are 4 items in the inspirational motivation sub-dimension and the Cronbach's Alpha value of the scale is calculated as 0.930, CR value 0.884 and AVE value 0.771. There were 4 items in the sub-dimension of individual interest, Cronbach's Alpha value was calculated as 0.910, CR value was calculated as 0.875 and AVE value was calculated as 0.773. Overall, the Transformational Leadership Scale has a total of 20 items, with a Cronbach's Alpha value of 0.925, a CR of 0.825, and an AVE of 0.725. These results indicate that the scale is satisfactory in terms of reliability and validity and is effective in measuring transformational leadership traits.

Table 16. Descriptive Information of the Transformational Leadership Scale

Sub-Dimensions	Number of Articles	Cronbach Alpha	CR	AVE
Ideal Effect	8	0,940	0,881	0,785
Mental Encouragement	4	0,940	0,885	0,781
Inspirational Motivation	4	0,930	0,884	0,771
Individual Attention	4	0,910	0,875	0,773
Transformational Leadership Scale	20	0,925	0,825	0,725

When the descriptive information of the Organizational Innovation Scale in Table 5.17 is examined, the reliability analysis results regarding the sub-dimensions of the scale and the general scale are seen. While there are 5 items in the product innovation sub-dimension, Cronbach's Alpha value is calculated as 0.940, CR value is 0.905 and AVE value is 0.785. In the process innovation sub-dimension, there are 5 items, Cronbach's Alpha value was found to be 0.950, CR value was 0.907 and AVE value was 0.781. There are 5 items in the administrative innovation sub-dimension and the Cronbach's Alpha value of the scale is calculated as 0.920, CR value 0.901 and AVE value 0.765. In general, it is seen that the Organizational Innovation Scale has 15 items in total and the Cronbach Alpha value is 0.935, the CR value is 0.902 and the AVE value is 0.775. These results show that the scale is satisfactory in terms of reliability and validity and is effective in measuring organizational innovation.

Table 17. Descriptive Information of the Organizational Innovation Scale

Sub-Dimensions	Number of Articles	Cronbach Alpha	CR	AVE
Product Innovation	5	0,940	0,905	0,785
Process innovation	5	0,950	0,907	0,781
Administrative innovation	5	0,920	0,901	0,765
Organizational Innovation Scale	15	0,935	0,902	0,775

2.6.4. Correlation Analysis

In this study, the Correlations Between the Total Scale Scores presented in Table 5.22 were examined. Correlation analysis is a statistical method used to evaluate the relationship between variables. The correlation coefficient is a measure that can take a value between -1 and 1. Positive correlation refers to a situation where an increase in one variable increases the other variable, while negative correlation refers to a situation in which an increase in one variable decreases the other

variable. As the correlation coefficient approaches 0, the relationship weakens, and as it approaches 1±, the relationship becomes stronger. In this case, when the Correlations Between the Total Scale Scores in Table 22 are examined, the following results are obtained:

• A positive and significant relationship was observed between the Digital Transformation Scale and the Strategic Management Scale ($r = 0.735$, $p < 0.001$, $n = 507$). This result shows a strong relationship between the digital transformation process and strategic management.

• There is a positive and significant relationship between the Digital Transformation Scale and the Transformational Leadership Scale ($r = 0.602$, $p < 0.001$, $n = 507$). This finding shows that transformational leadership has a significant impact on the digital transformation process.

• A positive and significant relationship was observed between the Digital Transformation Scale and the Organizational Innovation Scale ($r = 0.674$, $p < 0.001$, $n = 507$). This result shows that the digital transformation process encourages organizational innovation and acts together.

• There is a positive and significant relationship between the Strategic Management Scale and the Transformational Leadership Scale ($r = 0.603$, $p < 0.001$, $n = 507$). This finding shows that strategic management approaches are supported by transformational leadership and are related to each other.

• A positive and significant relationship was observed between the Strategic Management Scale and the Organizational Innovation Scale ($r = 0.777$, $p < 0.001$, $n = 507$). This result shows that the strategic management process encourages organizational innovation and that there is a strong relationship between these two concepts.

• There is a positive and significant relationship between the Transformational Leadership Scale and the Organizational Innovation Scale ($r = 0.602$, $p < 0.001$, $n = 507$). This finding suggests that transformational leadership drives organizational innovation and is interrelated.

These correlation results show that digital transformation, strategic management, transformational leadership, and organizational innovation are interrelated and that these factors can contribute to a successful digital transformation process for the organization.

Table 18. Correlation Between Total Scale Scores

		Digital Transformation Scale	Strategic Management Scale	Transformational Leadership Scale	Organizational Innovation Scale
Digital Transformation Scale	r	1			
	p				
	n	0.507			
	r	.735	1		

		Digital Transformation Scale	Strategic Management Scale	Transformational Leadership Scale	Organizational Innovation Scale
Strategic Management Scale	p	.000			
	n	507	507		
Transformational Leadership Scale	r	.602	.603	1	
	p	.000	.000		
	n	507	507	507	
Organizational Innovation Scale	r	.674	.777	.602	1
	p	.000	.000	.000	
	n	507	507	507	507

2.6.5. Mediation Variable Analysis

In this part of our research, the brokerage variable will be reported. A mediation variable is an intermediate variable that arises to explain the effect of an independent variable on the dependent variable. Mediation conditions, developed by Baron and Kenny (1986), are a series of steps used to determine the existence and mechanism of the mediation effect. These conditions are as follows:

1. Relationship between independent variable and mediation variable: The independent variable must have a significant effect on the mediation variable.
2. Relationship between the mediating variable and the dependent variable: The mediation variable must have a significant effect on the dependent variable.
3. Relationship between the independent variable and the dependent variable: When the mediating variable is removed, the effect of the independent variable on the dependent variable should decrease or become statistically insignificant.

Meeting these conditions indicates that the mediation variable plays an explanatory role in the relationship between the two variables. Mediation analysis is carried out by examining these conditions and using appropriate statistical methods.

Table 19. Regression Analysis Results for the Mediating Effect of Strategic Management Between Digital Transformation and Organizational Innovation

Relationships	**Model 1**	**Model 2**	**Model 3**
Digital Transformation → Organizational Innovation	0.635^{**}	-	0.210^{**}

Relationships	**Model 1**	**Model 2**	**Model 3**
Digital Transformation → Strategic Management	-	0.701**	-
Strategic Management → Organizational Innovation	-	-	0.606**
R2	0,454	0,541	0,627
Adjusted R2	0,453	0,540	0,626
F	420,137**	594.46**	423.87**
p<0.05 **p<0.001 Indirect Impact = 0.701*0.606 = 0.425 Direct Impact = 0.210 Total Impact = 0.635 Share of Indirect Effect in Total Effect = (Indirect / Total)*100 = 66.93%			

Mediation analysis is a statistical method used in a research and helps identify the variables that mediate in the relationship between related variables. This analysis includes various coefficients and statistics and is usually derived from the results of regression analysis. According to the table above, the results of the regression analysis on the "Mediating Effect of Strategic Management" between "Digital Transformation" and "Organizational Innovation" are presented.
Three different models were examined as Model 1, Model 2 and Model 3. In Model 1, the direct effect of the "Digital Transformation" variable on "Organizational Innovation" was found to be (b=0.635, p<0.001). In Model 2, it was observed that the "Digital Transformation" variable had a mediating effect on "Organizational Innovation" through "Strategic Management". The direct impact coefficient between "Digital Transformation" and "Strategic Management" was calculated as (b=0.701, p<0.001). In Model 3, the direct effect of the "Strategic Management" variable on "Organizational Innovation" was found to be (b=0.606, p<0.001).

Hypothesis results about the direct role of variables;

H1a: Digital transformation affects organizational innovation. (Accepted)
H1b: Digital Transformation affects strategic management. (Accepted)
H1c: Strategic Management influences Organizational Innovation. (Accepted)

According to the results of the research, the indirect effect (a*b) coefficient was calculated as 0.425. The direct effect (c) coefficient was determined as 0.210. The total effect was found to be 0.635. The share of indirect effect in the total effect was calculated (66.93%). This finding shows

that organizations effectively manage their Digital Transformation processes and implement Strategic Management correctly have the potential to increase Organizational Innovation. When the indirect impact coefficient and total impact value are examined, it is seen that Strategic Management plays an important role in this mediation effect.

These results show that Strategic Management plays an intermediary role between Digital Transformation and Organizational Innovation. It can be said that the impact of Digital Transformation on Organizational Innovation is partly mediated by Strategic Management. This shows that Strategic Management functions as a bridge between Digital Transformation and Organizational Innovation and is effective in this relationship. The research results show that companies can increase the impact of Digital Transformation on Organizational Innovation by using Strategic Management strategies.

Table 20. *Regression Analysis Results for the Mediating Effect of Transformational Leadership Between Digital Transformation and Organizational Innovation*

Relationships	**Model 1**	**Model 2**	**Model 3**
Digital Transformation → Organizational Innovation	0.635**	-	0.461**
Digital Transformation → Transformational Leadership	-	0.547**	-
Transformational Leadership → Organizational Innovation	-		0.319**
R2	0,454	0,363	0,514
Adjusted R2	0,453	0,361	0,512
F	420,137**	287.18**	266.79**
*p<0.05 **p<0.001 Indirect Impact = 0.547*0.319 = 0.174 Direct Impact = 0.461 Total Impact = 0.635 Share of Indirect Effect in Total Impact = (Indirect / Total)*100 = 27.40%			

Table 20 presents the results of the regression analysis to analyze the mediating effect of Transformational Leadership between Digital Transformation and Organizational Innovation. Three models showing relationships were examined: Model 1 directly assesses the impact of Digital Transformation on Organizational Innovation; Model 2 examines the mediating effect of Transformational Leadership between Digital Transformation and Organizational Innovation; Model 3 evaluates the impact of Transformational Leadership on Organizational Innovation. According to the results, it was found that Digital Transformation had a significant effect on

Organizational Innovation (b=0.635, p<0.001). In Model 2, a negative relationship was observed between Digital Transformation and Transformational Leadership (b = 0.547, p<0.001), which shows that Transformational Leadership mediates the effect of Digital Transformation on Organizational Innovation. Furthermore, in Model 3, Transformational Leadership was found to have a positive effect on Organizational Innovation (b = 0.319, p<0.001). According to the results of the analysis, the Mediation Effect was calculated as 0.174. Indirect Impact occurs to the extent that Transformational Leadership mediates the impact of Digital Transformation on Organizational Innovation. The Direct Effect was found to be 0.461, that is, some of the total impact of Digital Transformation on Organizational Innovation is directly realized. Total Effect, on the other hand, expresses the total impact of Digital Transformation on Organizational Innovation and is calculated as 0.635. According to the results of Table 23, it is seen that Transformational Leadership has a mediating effect between Digital Transformation and Organizational Innovation. Examining the indirect impact coefficient and total impact value, it becomes evident that Transformational Leadership plays a significant role in this mediating effect.

Hypothesis results about the direct role of variables;

H2a: Digital transformation affects transformational leadership. (Accepted)
H2b: Transformational leadership influences organizational innovation. (Accepted)

According to the results of this analysis, it was determined that there was a partial mediation effect between the examined variables of the research. The impact of Digital Transformation on Organizational Innovation is partly mediated by Transformational Leadership. This shows that Transformational Leadership plays an effective role in the relationship between Digital Transformation and Organizational Innovation.

2.6.6. Structural Equation Model

The Structural Equation Model (SEM) is a statistical analysis method used to model the relationships and interactions between observed and unobservable variables. This model is widely used to study many research questions used in the social sciences and in the field of business. YEM consists of two key components: the measurement model and the structural model. The measurement model describes the measurement of observed variables in relation to unobservable or latent variables (factors). This model, like a factor analysis, allows a set of observed variables to represent an underlying factor. The measurement model determines how the observed variables are related to the factors and estimates the factor loads (coefficients).

The structural model, on the other hand, describes the relationships and interactions between unobservable factors. This model is used to test hypotheses and examine theoretical relationships.

The structural model determines the relationships between factors and the effects of factors on observed variables. In this way, it allows researchers to evaluate the fit of the theoretical model and understand the relationships. The Structural Equation Model uses goodness-of-fit indices to assess the fit of the analyzed data. These indexes measure how well the model fits the data. Goodness-of-fit indices include measures such as RMSEA, CFI, TLI, GFI, and NFI. These indexes help assess how well the model is in terms of accuracy and generalizability.

The Structural Equation Model is a powerful tool for studying complex relationships and interactions, as well as for testing theoretical models. Creating models based on observed variables facilitates the data collection process and provides researchers with the opportunity to obtain results based on observational data.

DDO: Digital Transformation Scale, SYO: Strategic Management Scale, OIO: Organizational Innovation Scale, DLO: Transformational Leadership Scale

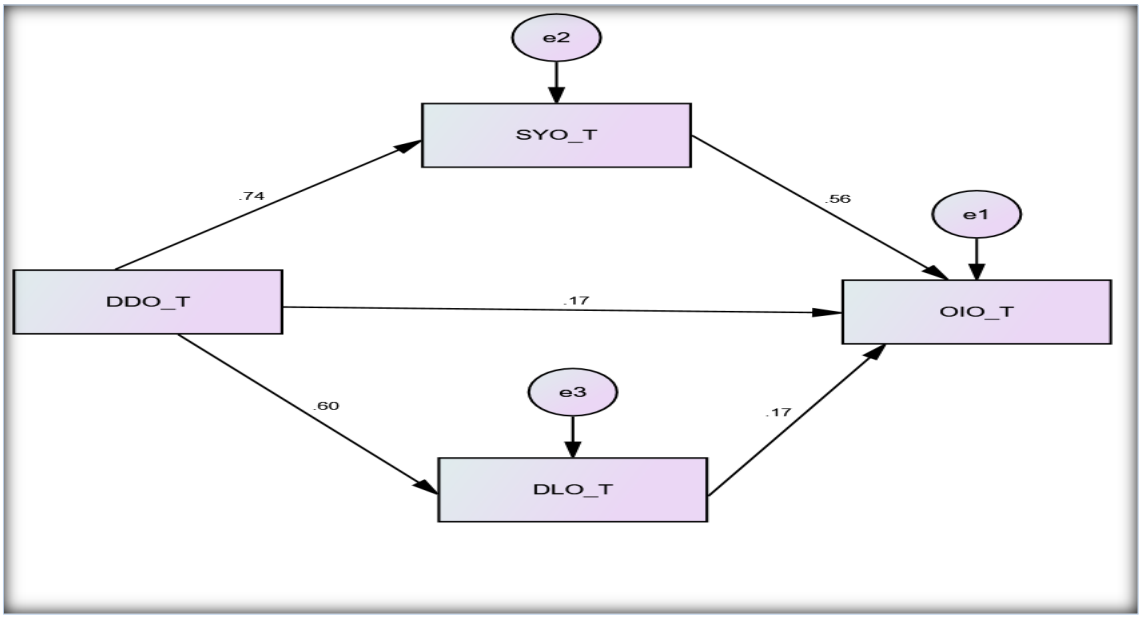

Figure 5. *Path Graph of the Structural Equation Model Achieving Goodness of Fit*

This structural equation model evaluates the relationships between Digital Transformation, Transformational Leadership, and Strategic Management and the effects of these variables on Organizational Innovation. When the goodness-of-fit indices of the structural equation model are also evaluated, the fit values obtained are at an acceptable level. $\chi 2/df$ value was found to be 4.120, RMSEA value was 0.100, GFI value was 0.901, CFI value was 0.951 and NFI value was 0.901.

Table 21. Goodness-of-Fit Indices for the Structural Equation Model

Harmony Index	Value	Good Fit Range	Accepted December	Evaluate dirme
$\chi 2/df$	4,120	$0 < \chi 2 /df < 3$	$0 < \chi 2 /df < 5$	Admissions
RMSEA	0,100	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.10$	Admissions
GFI	0,901	$0.95 \leq GFI \leq 1$	$0.90 < GFI < 0.95$	Admissions
CFI	0,951	$0.97 \leq CFI \leq 1$	$0.95 \leq CFI < 0.97$	Admissions
NFI	0,901	$0.95 \leq NFI \leq 1$	$0.90 < NFI <.95$	Admissions

According to the results, the effect of Digital Transformation on Transformational Leadership was found to be ($\beta = 0.602$, $p < 0.001$). In addition, the impact of Digital Transformation on Strategic Management was determined as ($\beta = 0.735$, $p < 0.001$). Strategic Management was found to have an effect on Organizational Innovation ($\beta = 0.56$, $p < 0.001$). Transformational Leadership also had a positive effect on Organizational Innovation ($\beta = 0.170$, $p < 0.05$).

Table 22. Results on the Structural Equation Model

Relationships	b	SE	β	C.R.
Digital Transformation → Transformational Leadership	0,547	0,032	0.602^{**}	16,96
Digital Transformation → Strategic Management	0,701	0,029	0.735^{**}	24,41
Strategic Management → Organizational Innovation	0,549	0,039	0.564^{**}	14,18
Transformational Leadership → Organizational Innovation	0,174	0,034	0.170^{**}	5,04
Digital Transformation → Organizational Innovation	0,155	0,041	0.167^{**}	3,74

*p<0.05 **p<0.001

These results show that Transformational Leadership and Strategic Management factors are important mediating variables in the Digital Transformation process and that these variables are effective on Organizational Innovation. The impact of Digital Transformation on Organizational Innovation is realized both directly and through intermediary effects. These findings show that managers need to manage the Digital Transformation process by focusing on Transformational

Leadership and Strategic Management factors. In addition, when Transformational Leadership is used effectively as a leadership approach in the Digital Transformation process, it increases the innovation capabilities and motivation of employees, thus promoting Organizational Innovation. Similarly, the Strategic Management factor plays an active role in the process of determining and implementing Digital Transformation strategies. Proper direction of Strategic Management encourages Organizational Innovation by increasing the impact of Digital Transformation.

3. Conclusion

Digital transformation, strategic management, transformational leadership, and organizational innovation are critical elements for the success of organizations in the complex and rapidly changing business environment of the 21st century. The dynamics within the intersection of these four components determine an organization's competitiveness capacity and shape the opportunities required for market leadership. Understanding the relationships between these concepts offers unique opportunities for organizations to maintain their competitiveness and be pioneers in their markets.

Digital transformation refers to integrating technology into business processes, culture, and customer experiences. Digital transformation can make business processes more efficient, flexible, and scalable by utilizing data analytics, cloud computing, artificial intelligence, and other advanced technologies. However, the success of digital transformation is closely related to the strategic management of the organization.

Strategic management determines the long-term goals of the organization and reveals the resources required to achieve these goals. Strategic management plays a significant role in setting digital transformation goals and roadmap. In addition, transformational leadership is critical to the success of digital transformation. Transformational leaders encourage their followers to embrace the organization's vision and goals, guiding them to make the necessary changes to achieve those goals. These leaders can increase employee motivation and commitment during the digital transformation process, thereby increasing the likelihood of organizational innovation. Organizational innovation refers to an organization's ability to develop new products, services, or business processes. Organizational innovation is a process that is encouraged by strategic management and transformational leadership and accelerated in the digital transformation process. Organizational innovation increases the competitiveness of the organization in the market and can promote sustainable growth and success.

The aim of this study is to analyze the relationships between digital transformation, strategic management, transformational leadership and organizational innovation. Structural equation

modeling has allowed for a comprehensive evaluation of these relationships. The results obtained from the study confirmed that there are positive and significant relationships between digital transformation, strategic management, transformational leadership and organizational innovation.

The findings obtained from the study show that strategic management plays an intermediary role between digital transformation and organizational innovation, and that digital transformation has a direct impact on organizational innovation and strategic management. In addition, it has been determined that strategic management has a direct impact on organizational innovation. These findings (Lingling and Ye, 2023; Zhang et al., 2021) are consistent with the results of their studies revealing the positive relationship between transformation and organizational innovation. The weak presence of the indirect effect obtained in the study shows that strategic management partially mediates the relationship between digital transformation and organizational innovation. Hsiao and Chang (2011) reveal the mediating role of strategic management, and the results obtained from the study show that strategic management acts as a bridge between digital transformation and organizational innovation, increasing the impact of digital transformation on organizational innovation.

The level of direct impact of strategic management on organizational innovation has been relatively limited. Most of the total impact of digital transformation on organizational innovation is indirect. This situation reveals the importance of effective management of digital transformation processes and the correct implementation of strategic management in increasing organizational innovation. As a matter of fact, Hsiao and Chang (2011) stated that strategic management has a positive effect on organizational innovation.

In the study, it was concluded that digital transformation has a significant impact on organizational innovation. In addition, a negative relationship has been observed between digital transformation and transformational leadership. Transformational leadership is a leadership style that has characteristics such as creating a vision in the organization, inspiring, motivating and developing individuals. However, in the digital transformation process, there are factors such as technological changes, restructuring of business processes, and the development of digital capabilities that leaders need to focus more on. Therefore, the transformational leadership approach may not be effective in the digital transformation process and may even be a hindering factor.

The results obtained from the study show that transformational leadership plays an intermediary role between digital transformation and organizational innovation. This can be summarized as an indication that transformational leadership plays a critical role in the digital transformation process. On the other hand, transformational leadership can be said to be effective in developing

employees' digital skills. As a matter of fact, it can be said that transformational leaders play an important role in this field by offering various training and development opportunities to improve the digital skills of employees. In this way, it can be inferred that employees are supported to use digital technologies effectively and contribute to digital innovation.

The results obtained from the study revealed that transformational leadership and strategic management factors have a significant impact on organizational innovation in the digital transformation process. These results clearly emphasize the impact of digital transformation on organizational innovation, with both direct and mediated effects of these factors. In this context, managers need to manage the digital transformation process by focusing on transformational leadership and strategic management factors. In addition, when transformational leadership is used as an effective leadership approach in the digital transformation process, it increases the innovation capabilities and motivation of employees, thus encouraging organizational innovation. Leaders play an important role in developing employees' digital skills and supporting a culture of innovation. Likewise, the Strategic Management factor plays an effective role in the determination and implementation of Digital Transformation strategies. Proper direction of Strategic Management increases the impact of Digital Transformation and encourages organizational innovation.

These complex interactions between digital transformation, strategic management, transformational leadership, and organizational innovation are critical factors that determine the success of organizations. Each of these components must be handled carefully and deliberately so that organizations can remain competitive and innovative.

Future studies may delve deeper into the dynamic relationships between these topics, examining the impact of these factors across different industries and geographic regions, and establishing a comprehensive understanding to further unravel their interactions. Organizations should incorporate digital transformation processes and strategic management practices into their actions to improve transformational leadership and organizational innovation and consider investing in these areas. This can help them become more resilient and adaptable to the challenges and opportunities that come with the digital age. Furthermore, it is important for leaders to be aware of the dynamic relationships between these four factors and understand how they can use them in their own leadership practices. It can be said that the effectiveness of digital transformation processes and strategic management practices, transforming leadership and encouraging organizational innovation can play a key role in the long-term success of organizations.

This study shows that the relationships between digital transformation, strategic management, transformational leadership, and organizational innovation are important. Organizations putting

these findings into practice and future studies examining these issues in more depth can reveal insights and strategies that will enable organizations to thrive in the digital age. The results of this study underscore the need for organizations to review their technological transformations, leadership styles, strategic management practices, and innovation processes. It also highlights the need to learn more about how these factors interact with and influence each other. The findings of this study serve as a guide on how organizations can be more competitive and effective in the rapidly changing and digitalizing business world. Understanding and managing these critical interactions between digital transformation, strategic management, transformational leadership, and organizational innovation is critical for organizations to develop new business models, optimize business processes, and ultimately achieve greater business success.

Examining the relationships between the topics mentioned in the study in an even broader framework, especially understanding how the effects of digital transformation, strategic management and transformational leadership can be managed together, can be considered as effective elements in determining the direction of future research. Therefore, examining the dynamics between these topics in a broader context and across different sectors or geographic regions will contribute to a more comprehensive understanding of the subject. Additionally, considering the rapid advancements in technology and the ever-changing business world, it is clear that organizations need continuous learning and adaptation skills to manage these factors successfully. Therefore, investing in training and development opportunities to ensure that leaders and employees possess these skills is a necessity for organizations to effectively manage future challenges and opportunities.

The results of this study shed light on the complexity and importance of the relationships between digital transformation, strategic management, transformational leadership, and organizational innovation. It shows that each of these factors has a significant impact on the competitiveness and success of organizations, and therefore focusing on these factors will help organizations succeed in the digital age.

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