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Research Article

Sustainable digital transformation of financial institutions[1]

Finansal kurumların sürdürülebilir dijital dönüşümü

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Abstract

Institutions constantly transform their products, services, and processes to increase profitability. By digitizing the transformation process of organizations, digital technologies change how they do business, their interactions with their customers, and the characteristics their employees should have. This study aims to review digital transformation practices in financial institutions in Turkey and how the examples encountered in literature reviews be implemented in daily business operations. Within the scope of the research, qualitative data were collected through semi-structured interviews, including questions in 4 categories with decision-makers of institutions operating in the banking and finance sector. This research has tried to determine the digital technologies that the institutions focus on most, what employee skills stand out to be successful in digital transformation, and how the institutions' organisational cultures have changed with digital transformation. To summarize the results, all financial institutions have put digital transformation on their agenda and allocated resources to invest in digital technologies. They have focused on the transformation of employees and investment in information technology infrastructures. Additionally, they are searching for solutions to cyber security risks arising from accelerating data sharing. For better customer experience and to meet and exceed customer needs, digital channels and smart systems are under consideration. This study focuses only on the financial sector, one of the most invested areas for digital transformation. It is one of the pioneering studies in evaluating the digital maturity of the Turkish finance sector and showing the examples encountered in the literature.

Keywords: Digital Transformation, Digital Capabilities, Financial Institutions

Jel Codes: L86, M15

Öz

Kurumlar kârlılıklarını artırmak için ürün, hizmet ve süreçlerini sürekli olarak dönüştürmektedir. Dijital teknolojiler, kuruluşların dönüşüm sürecini dijitalleştirerek iş yapma şekillerini, müşterileriyle olan etkileşimlerini, çalışanların sahip olması gereken özellikleri değiştirmektedir. Bu çalışma, Türkiye'deki finansal kurumlarda dijital dönüşüm uygulamalarını ve yazın taramalarında karşılaşılan örneklerin günlük iş operasyonlarında nasıl uygulandığını incelemeyi amaçlamaktadır. Yürütülen araştırma kapsamında bankacılık ve finans sektöründe faaliyet gösteren kurumların karar verici yöneticileri ile yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Bu araştırmada kurumların en çok odaklandığı dijital teknolojiler, dijital dönüşümde başarılı olmak için öne çıkan çalışan becerilerinin neler olduğu, dijital dönüşümle birlikte kurumların örgüt kültürlerinin nasıl değiştiği tespit edilmeye çalışılmıştır. Çalışmanın çıktılarını özetlemek gerekirse; tüm finansal kurumlar dijital dönüşümü gündemlerine almış ve dijital teknolojilere yatırıma kaynak ayırmaktadır. Çalışanların dönüşümüne ve bilgi teknolojisi altyapılarına yatırıma odaklanılmıştır. Ayrıca, veri paylaşımının hızlanmasından kaynaklanan siber güvenlik risklerine çözüm aranmaktadır. Daha iyi bir müşteri deneyimi ve müşteri ihtiyaçlarını karşılamak ve aşmak için dijital kanallar ve akıllı sistemler değerlendirilmektedir. Bu çalışma sadece dijital dönüşüm için en çok yatırım yapılan alanlardan biri olan finans sektörüne odaklanmaktadır. Türkiye finans sektörünün dijital olgunluğunun değerlendirilmeye çalışılması ve ilgili yazında karşılaşılan örneklerin gösterilmesi açısından öncü çalışmalardan biridir.

Anahtar Kelimeler: Dijial Dönüşüm, Dijital Yetenekler, Finansal Kurumlar

JEL Kodları: L86, M15

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Introduction

Technological developments and increasing customer expectations force companies to transform. The need to introduce the product to the market faster, have easier access to limited resources, and buy new products instead of repairing the old encourages institutions to increase production and efficiency. Companies try to stand out from their competitors and achieve a sustainable competitive advantage by increasing efficiency and reducing costs or by better perceiving customer needs and differentiating the product, shortening the time to market. This change in the presentation of the products changes the perception of the customers and positions the customers in the expectation of getting the service they need in the right place, at the right time, in the right and fast way, regardless of the sectors. It is possible to provide products and services with unprecedented speed and variety in human history using digital technologies to develop products and processes. Digitalization has radically changed the behaviour and expectations of customers, prompting companies to reconstruct their business manner to retain customers and reach new customers. Customers do not only expect companies to meet their demands but also to act proactively to identify and meet their customers' unnoticed needs. This proactive approach helps companies provide customer value and gain a competitive advantage (Leipzig, Gamp, Manz, Schöttle, Ohlhausen, Oosthuizen, Palm and Leipzig, 2017). Although companies realize the necessity of digital transformation, they may remain unsure and ignorant about where and how to start. Keeping up with change depends directly on institutions' digital transformation skills. According to former Accenture CEO Pierre Nanterme, the primary reason why a semi-list of the companies in the Fortune 500 no longer exists since 2000 is the existence of the digital concept and the disruptive change it brings. To be a part of this change, incumbent firms continue their investments. In finance, it has been revealed that in 2019, close to 135 billion dollars (KPMG International, 2020) was invested in financial technology (fintech) initiatives and 10 billion dollars (University of Cambridge, 2019) in regulation technology (regtech) initiatives in the world.

In this study, the effects of the prevalence of digital technologies and the transformation caused by these technologies will be studied to understand to find the response to what extent financial institutions in Turkey are disturbed. Which digital technologies stand out? How does digital transformation affect information technologies, business models and future strategies? Have financial institutions included the digital transformation on their agenda that has become necessary? What methods do they prefer at which stages of the digital transformation process? The methodological framework and knowledge accumulated in the conducted studies were conveyed in detail in the literature review section. It is tried to determine to what extent the covered topics in this study were implemented in financial institutions in Turkey, the current situation's similarity to the examples found abroad in the literature, and which method and stages come to the fore. Studies in the literature on topics such as definitions of digital transformation, dimensions of digitalization, digital maturity matrix, and creation of dynamic capabilities for the sustainability of digital transformation have been examined. In the following methodology section, information is given about the details of the interview study conducted with the senior managers selected among the financial institutions operating in Turkey, the reason for choosing the semi-structured interview method, the research design, data collection, data analysis and study outputs. The study outputs were examined in the results and discussion section, and information was given about the jointly important and prominent points. The outputs obtained from the findings were compared with the highlights observed in the literature. Finally, opinions were shared about the study's limits and the points that should be addressed in future research.

Literature review

Digital transformation can be defined as an ongoing strategic renewal process that promotes advancements in digital technologies to develop abilities that renew or transform an organization's business model, collaborative patch and culture. Warner and Wager (2018) defined digital transformation as emerging digital technologies, including client solutions, business intelligence, cloud solutions, blockchain and IoT. These technologies will provide the basis for developments required to increase customer experience, facilitate transactions or offer new products and business models. Institutions have had to embark on a digital transformation journey to maintain their competitive power and increase efficiency. Faced with a major technological revolution that has radically changed how all industries do business, they should redefine their organizations and prioritize those geared towards technology in their investments (International Data Corporation, 2018). However, digital transformation should not be limited to technological innovation alone. The institution must gain awareness by bringing new ideas about managing its knowledge accumulation. It emphasizes developing tactical or practical skills on how quickly, customer-focused, and agile these ideas will be transformed into decisions and actions (Warner and Wager, 2018). Digital transformation has effects on

institutions such as creating new and expanding customer segments, increasing cultural diversity in the global market, uncertainty in the market, increasing customer expectations on the quality of products and services and increasing the impact of the internet on the core business of organizations (Sousa and Rocha, 2019). The goal of digital transformation for incumbent firms is to balance external and internal cooperation, establish flexible and convenient governance structures, and ensure that externally hired and internally promoted workforce has the skills to cope with the challenges that may arise from improving digital maturity. Incumbent institutions must solve some internal and external barriers while performing digital transformation. These include subheadings such as employee transformation, digital disruption, digital business model, digital customer, digital generations and digital channels (Shrivastava, 2017). For digital transformation to gain momentum in organizations, it is important for the institution's employees to own this process and to spread it with the systems triggered by the employees. With the creation of content by users, information sharing, informal problem solving, and sharing of digital content, including social elements, institutions will be able to create and convey information through the social network created by the employees in a way that affects the corporate culture (Sousa and Rocha, 2019). Employees should also be regularly monitored to get excited about their involvement in transformation. Instead of starting with a problem and finding a viable solution, employees will first be able to find problems to be solved with technology. In the long run, these reverse technology initiatives can create barriers to enterprise-wide initiatives (KPMG Türkiye, 2018).

Digital disruption continues to trigger tremendous changes in technological developments, the enhancement of service experience by pioneering digital companies, and the continuous increase in customer expectations. Therefore, it can be said that the most important difficulties companies face in the external environment are the sources of disruption that make the digital transformation necessary. For example, as shown in Figure 1, in a study conducted by KPMG with participants from the financial sector, 57 per cent of respondents cited fintech as the most disruptive factor. In contrast, 51 per cent show the increasing complexity of the regulatory environment and new business models, which are the most there have been many cited sources of destruction (KPMG Türkiye, 2018).

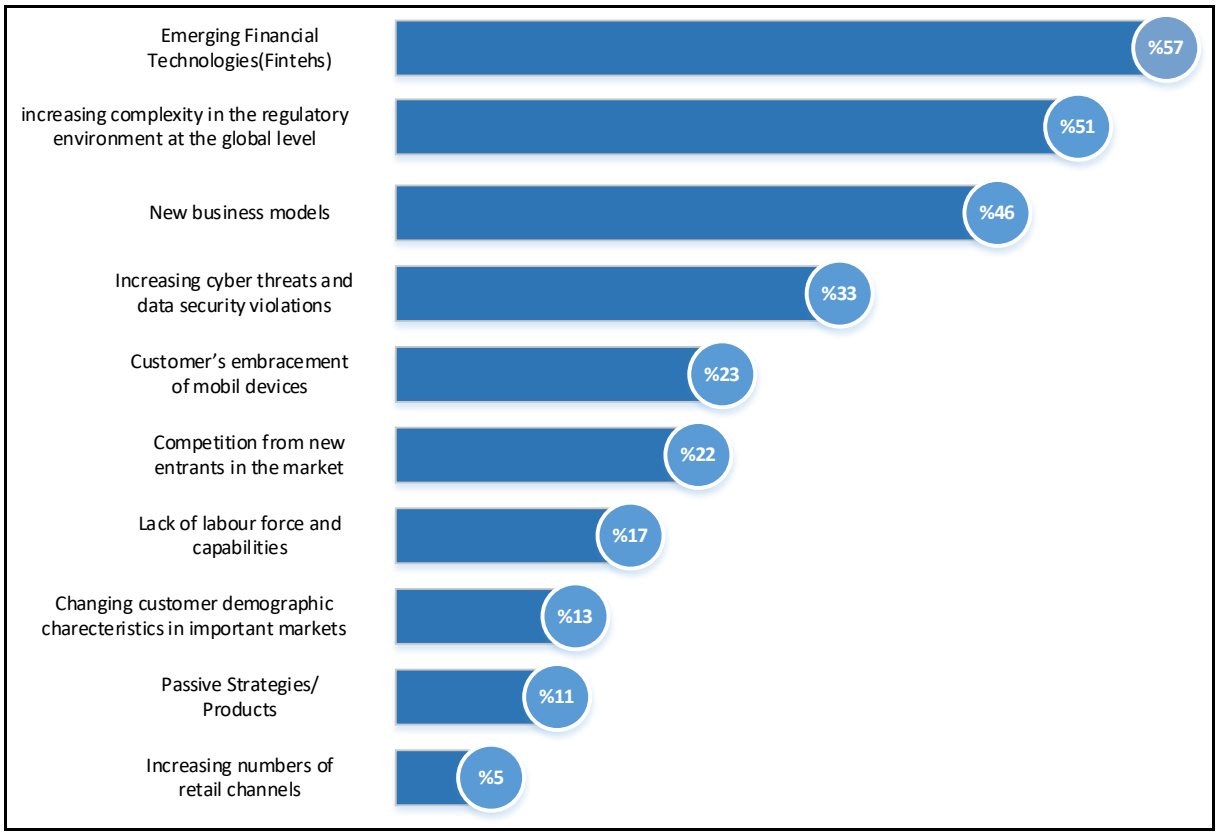

Figure 1: Three Biggest Disruptors according to Financial Institutions

Source: (KPMG International, 2017)

Digitalization has created opportunities for companies to interact with their customers and lead to new and unexpected models for business. In the digital context, the business model has become a new unit of analysis that investigates how a company builds and submits value to its customers and gains profit from managing a series of monitored activities (Zott et al., 2011). Digital transformation of a leader's business model is a complex review process that combines the company's business model with the

business models of different business units. Research has shown that managers make a series of calculated and interconnected strategic decisions in which managers prefer the strategic options they are more familiar. Nevertheless, unfamiliar options can drive transformational change (Gavetti and Levinthal, 2000). Another obstacle is the management of conflicting demands in the transformation of complicated business models. Difficulties with the business model's complexity place powerful stress on mid-level managers and their direct reporter employees, requiring high-profile abilities to manage opposing claims. Overcoming mentioned obstacle requires balancing agility and balance (Doz and Kosonen, 2010), leveraging investments in prior learning (Itami and Nishino, 2010). Digital technologies also change how organizations interact with customers and share value (Yadav and Pavlou, 2014). The rapid spread of different devices with different operating systems, such as laptops, mobile phones, tablets, wearable technology products, and how smartphones are used, has changed customers' lifestyles (Shrivastava,2017). Since digital customers prefer to plan and organize according to their own needs, they expect authorization from companies to manage their product or service subscriptions, usage or preferences according to their changing personal or commercial needs. Therefore, companies need to change themselves into digital entities with digital talents to satisfy the changing customer experience at every point of contact with the customer. Providing improved customer experience, creating value for customers and increasing customer loyalty has become new challenge for organizations (Shrivastava,2017).

Digitally transforming organizations must search for sources of idea generation and learning centres to pioneer knowledge. They know that innovation is the most important way companies can put themselves forward in the competition. Institutions have increased their innovation capabilities by adopting digital processes and have formed the basis of having a higher competitive power in the market by contributing to their performance (Ferreira, Fernandes and Ferreira, 2018). They create new revenue opportunities by meeting the increasing customer expectations of digital disruption. Using digital technology and capabilities correctly aligned with business processes, they access different channels through smart devices and adapt to digital customers' ever-changing behaviour and disruptive market conditions faster than their competitors (Shrivastava, 2017).

Rogers (2016) argued that "*digital transformation is basically about strategy, not technology*" and stated that senior management should lead to finding ways to take advantage of new and unexpected business models that will improve the needs and experiences of customers. When organizations embark on a digital transformation journey, they should transform the collaborative approach first in-house and then with the ecosystem they are in, starting with the transformation of the business model. The success, habituation and sustainability of these transformations are possible with the transformation of the organizational culture in a way that supports this transformation.

Regardless of the stage of this transformation, it is important to take a picture of the current situation and be aware of where the transformation journey is to continue to develop. Azhari, Farabi, Rossman and Wichmann (2014) proposed a model in which companies can demonstrate their maturity in the digital transformation journey. Table 1 summarizes the eight digitization dimensions and the components of the dimension that the model handles.

Table 1: Eight Dimensions of Digitalization

Digitalization Dimension	Components
Strategy	Strategic vision, the transformation roadmap
Leadership	Management methods, sponsorships, resources
Products	Business model, innovation capabilities, digital value chain
Operations	Channels & business practices, processes, agility
Culture	Customer centricity, hierarchy vs network, openness
People	Roles, expertise, capabilities
Governance	Communication & collaboration rules, KPIs, alignment
Technology	Software tools, cloud architecture, ICT infrastructure, Industry 4.0

Source: (Azhari et. al., 2014)

On the other hand, Leipzig et al. (2017) determined and defined the digital maturity matrix stages in Table 2 by contributing to the positioning and classification of companies on this model.

Digital transformation is possible by focusing on technology and realizing radical strategic and cultural change. Therefore, institutions should activate strategic management models to achieve digital

transformation (Leipzig et al., 2017). While organizations may be hesitant about where to start their digital transformation, any transformation effort should focus on efficiency and effectiveness, positively impacting customer engagement. (Bloomberg, 2019).

Table 2: Digital Maturity Matrix Levels and Descriptions

Digital Journey Levels	Description
Unaware	It does not have a digital transformation strategy or existing digital skills, does not yet offer digital products or services, and lacks a general awareness of the need for digital transformation.
Conceptual	Offer a few digital products, but products will be without a digital strategy.
Defined	A culture of digital thinking is taking root in the company. The profitability of these partial strategies and the effects of piloting are evaluated and used to develop an overall digital strategy.
Integrated	A clear digital strategy is developed
Transformed	Implemented across all products and business processes

Source: (Leipzig et. al, 2017).

Radical innovation, which asserts that the institution should take big leaps to transform, and continuous improvement, which advocates the transformation of the institution step by step with continuous minor improvements, are two different approaches that can be used to initiate the transformation model. With a model that does not deny the contribution of both approaches, it is necessary to use the leaps that trigger the digital and innovative thinking structure, including continuous improvement and corporate culture that will change the processes (McAffee, Ferrais, Bonnet, Calméjane and Westerman, 2011). Bessant, Lammink, Noke and Philips has outlined the main lines in the innovation model to go beyond the "Stagnant State". For the model that will initiate development, the model that researchers think will trigger innovation in an unstable situation consists of the following steps (Bessant et al., 2005).

1. Look from multiple and alternative perspectives.
2. Research potential new technologies
3. Adapt your signals in distant markets to be able to notice trends beforehand.
4. Develop ideas that are compatible with outside perspectives
5. Emphasize experience.

Leipzig et al. (2017) developed the model in Figure 2 to initiate digitization using this model of Bessant et al. (2005)

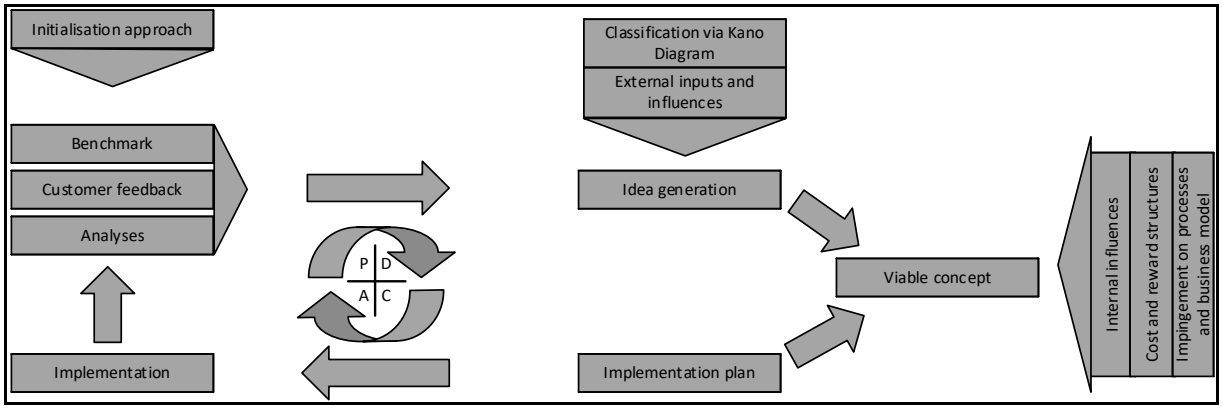

Figure 2: Conceptual Model for Initializing Digitization and Sustaining Competitiveness

Source: (Leipzig et al., 2017).

The first step in implementing the model is to define the initial approach specific to the company's industry, such as the business model or customer touchpoints. In the next stage, multiple analyses such as customer analysis, market analysis, competitor and competition analysis and especially the analysis of other sectors and companies are performed. Analysing other sectors and companies is important because customers expect similar regardless of the institution's sector. Digitalization may not occur only in certain sectors, and the absence of digitalization in the organisation's sector may not mean that customers will remain satisfied. Their perspective on the institution may change due to another service

they receive. This process is similar not only for the external but also for the internal customer. It is a common situation that employees want to see some digital processes and facilities that they see as customers in other companies or their private lives in the way their companies do business (Bessant et al., 2005).

Institutions must have dynamic capabilities to thrive in the digital maturity matrix. Dynamic capabilities are based on innovation and enable a firm to build, expand and change the necessary foundation for its resources. Dynamic capabilities are listed below under three groups (Warner and Wager, 2018):

a) To perceive and frame opportunities and threats,

b) Evaluating opportunities

c) Transforming the business model and resources of the organization. Increasing the company's capacity to maintain its competitive power by improving, combining, protecting and restructuring its tangible and intangible assets.

While mundane capabilities enable companies to perform daily tasks, mundane skills in functions such as sales, accounting, HR management etc., have become easily imitable. They can now be outsourced through the cloud or similar platforms and do not provide any favour for competition. Additionally, dynamic capabilities control the rate of development in a firm's mundane capabilities. (Teece, 2007) and are more difficult to imitate (Teece, 2014). It supports the emerging relevance of the institution, enabling it to change its current methods. Dynamic skills need to be built rather than purchased because it is emphasized that "*ordinary skills are about doing things right, and dynamic skills are about doing the right things*" (Teece, Peteraf and Leih., 2016).

Big or smart data; It is achieved by organizations using digital infrastructures, including Internet of Things platforms, analysing scaled and real-time collected microdata to predict human behaviour and use it for profit. Considering advancements in computing speed, data storage, data retrieval, sensors and algorithms, the cost of machine learning-based predictions used by some companies to turn to AI to predict new trends and overcome cognitive boundaries has significantly decreased (Agrawal and Gans, 2017). Organizations must develop effective detection capabilities that managers use to create and test versatile hypotheses that help explain surprising or strange events and assess the impact of unexpected trends. It is important for companies seeking digital innovation to collect data through new digital terminals. The channels improve their sensing of user behaviour emerging in markets in digital evolution scanning. Sensing capabilities can be created with the internal resources of companies and other stakeholders in the business ecosystem (Warner and Wager, 2018). To address opportunities or neutralize threats, incumbent firms' leaders must have opportunity assessment capabilities that allow their leaders to avoid arrogance, deception, prejudice, and deception and enables companies to practice with decentralized borders, digital platforms, and new business models.

Seizing is an experimental capability that supports action and engagement to calculate cost and income using techniques including rapid prototyping and logical option. Digitalization has led companies to seize opportunities through segregation (regulation of the asset feature of power relations), separation and productivity of existing value chains (unrivalled innovative outputs). However, although the institution senses an opportunity, it may not be able to invest in this opportunity due to dependencies arising from its cumbersome structure. To overcome such a state of inertia, incumbent firms in conventional industries must continue to experience agility (Warner and Wager, 2018).

Sensing and seizing talent helps discover opportunities, but companies require a transformational talent for pursuing a digital strategy, enabling them to recognize the benefit of strategic transformation. Transformation capabilities support incumbents by constantly strategically reconsidering assets and responsibilities to ensure agility under variable environmental conditions. Even though businesses are ready to embrace digital innovation, digital transformation is difficult as they face four major concerns. These concerns are developing innovation capabilities while continuing innovation practices for the current product, process and product innovations, and governance structures that provide tension, flexibility, and control in cooperation between employees and external stakeholders (Warner and Wager, 2018). Even those that have started digital transformation are in the early stages of this transformation, as a large part of the income of incumbent firms comes from traditional products and services. For this reason, incumbent firms should develop digital strategies using digital technologies that will provide them with rapid innovation and sensing capabilities for new value propositions and operational excellence (Hess, Matt, Benlian and Wiesböck, 2016).

Warner and Wager (2018) propose the process model in Figure 3, consisting of nine micro-foundations to reveal the general contingency factors that trigger, enable and prevent the development of dynamic capabilities for digital transformation based on the experience of senior managers who leads digitization projects.

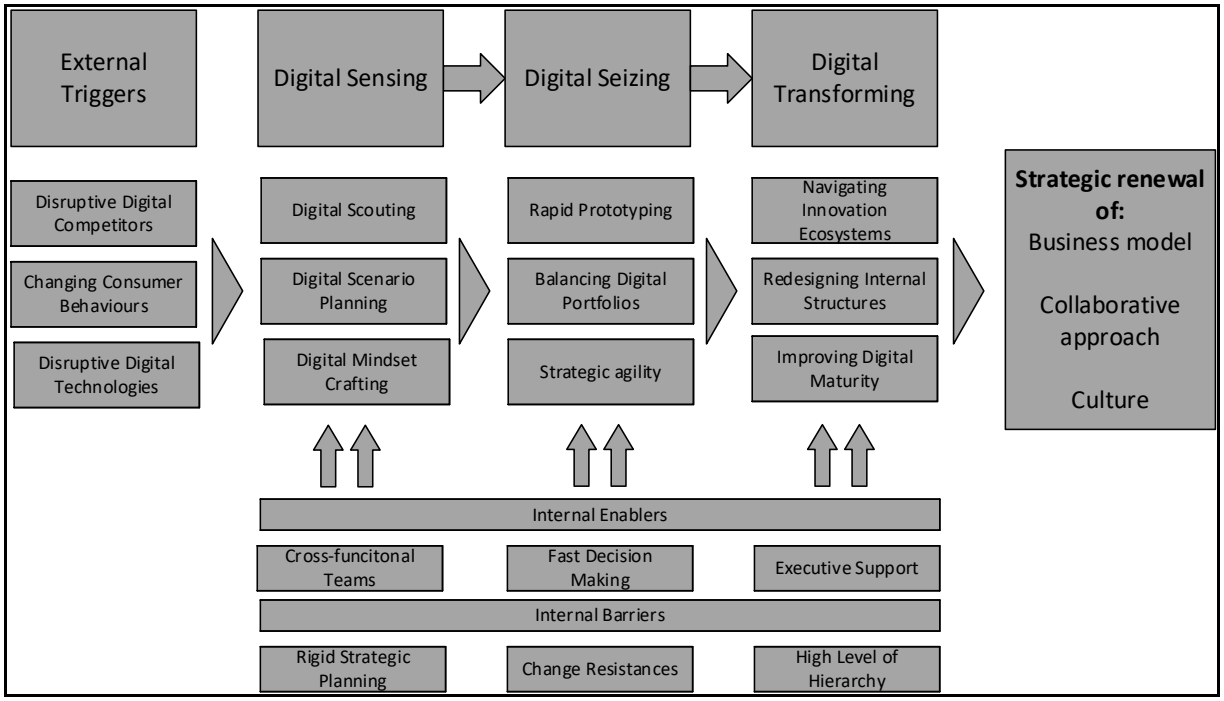

Figure 3: Building Dynamic Capabilities for Digital Transformation: A process Model

Source: (Warner ve Wager, 2018)

Digital technologies are gradually transforming B2B companies, and these companies can access a wide digital system network by managing their relations with different actors in their networks (Pagani and Pardo, 2017). It has been observed that five items stand out for the most successful segment in digitally transforming institutions to be more successful than other organizations (Gale and Aarons, 2018.)

- Successful managers who lead change, who do not stay away and roll up their sleeves, and human resources managers who can employ employees with digital thinking and skills.
- To train and improve employees capable of customer-centred agile working who can make their own decisions and succeed in working together.
- All departments are accountable to each other to experience and innovate to improve.
- Due to the rapid transformation of the digital world, making decisions according to the conditions required by the moment, not annually or even quarterly, and training employees and managers to gain the competence to make these kinds of decisions.
- Transformation of the corporate culture and mindset in a way that is curious, compatible with working together, future-oriented and open to innovations to achieve success.

Sixty per cent of large organizations think their investment in digital transformation has a return. It is seen that OPEX provides three times more savings, sales performance and customer satisfaction compared to other companies. In addition, 42 per cent of organizations recognized and overcame digital challenges and obstacles they had not encountered before, and 87 per cent observed increased demand growth (Gale and Aarons, 2018). Senior executives spend an average of 20 business hours per week (more than two business days a week) to manage digital transformation and ensure its success. Much of this time is spent on the digital transformation of employees, which has become the most important asset in today's digital-centric business world. Achieving the digital transformation of employees is important. How the organizational structure is created or what technology is invested in has less importance (They reached this inference after intense, long-term interviews with transformation leaders of successful global commercial organizations.) (Gale and Aarons, 2018).

Methodology

Selection of methodology

Qualitative research aims to gain an in-depth understanding of underlying ideas, causes, and behaviours. Instead of measuring an event with figures and statistics, the qualitative study uses a method with open questions to investigate the opinions and preferences of the interviewees (Corbin and Strauss, 2007). To increase validity, structuring interview guidelines can serve as a protocol that reduces research bias and subjectivity. Marshall and Rossman (2016) suggested that by including participant control and data from different sources, the convergence and verification of operational values would provide a more accurate data collection process. Curzi and Rosana (2012) stated that qualitative research focuses on interpreting events and attributing meaning, leaving statistical procedures out of the process, and realizing events in their natural environment. For these reasons, a qualitative case study method appears to be the most appropriate data collection and analysis strategy to seek an answer to the research question in this study. The researcher collected qualitative data through a semi-structured interview by asking the participants pre-determined open-ended research questions. Effective results can be achieved with well-planned and realistic qualitative research (Lawrence and Tar, 2013). In this research, semi-structured interviews were conducted with the participants, including questions about how they understood digital transformation and positioned it in management practices in their companies. The research questions were prepared in a guiding nature to serve the purpose of the study, not static or limiting. It aimed to understand the digital technologies of the participants, the digital transformation initiated by these technologies, how their institutions address digital transformation, the stage of digital transformation, and the methods in which they try to acquire the skills needed for digital transformation. A snapshot of the transformation journey of financial institutions in Turkey by this opinion has been tried to take.

Interview design

The preferred method for the interview is the face-to-face interview, where the researcher can interact more closely with the participants and observe their body language while answering research questions. The questions are divided into four different categories to ensure fluent conversations. At the beginning of the interview, the participants were asked their personal informative questions to record the position, the responsibilities they undertook, and how many years of managerial experience they have. Afterwards, the participants were asked to get their general ideas about digital transformation and their opinions on the outputs of digital transformation and the transformation process. According to the participants' answers, they were asked about the developments in the literature. The first question asked was about the reasons for their interest in digital processes. According to the answers received from the participants, the opinions of Warner and Wager (2018) were asked about the three main reasons stated by the institutions they examined in their studies. Then, referring to the digital maturity matrix presented in the study of Leipzig et al. (2017), the participants were asked the question of at what stage they saw their institutions and their sectors and what investments they planned in the short and medium term to make progress in the transformation journey. Finally, their views on digital technologies or other technologies that the participants deem valuable were asked. In the last part, participants shared their organizations' progress thanks to digital technology and transformation, how companies' position in the competition has changed and the digital services it offers. While preparing the questions of the last part of the semi-structured interview question list, PhD level dissertations focused on information technologies were examined, such as Kharabe's work in 2012, Swaratsingh's research in 2015 and Sewpaul's dissertation in 2018. After the questions were prepared, they were finalized after the examination and pre-tests, and then the interviews were carried out in line with the interview instructions.

Data collection

Researchers are seen as the primary data collection tool collecting data through face-to-face interviews, which is a rich form of data collection. In this study, the researcher collected data through face-to-face interviews and served as the primary data collection tool of the research. Cronin (2014), Doody and Noonan (2013), and Kaczynski, Salmona and Smith(2014) recommended that researchers ask participants open-ended questions to motivate participants on problem-solving strategies on issues that others do not know or do have limited knowledge about it. In comparison, Danque, Serafica, Lane, and Hodge (2014) stated that closed-ended questions are only yes and no answers, and they can make limited meaning from the experience of the target population. McIntosh and Morse (2015) suggested using a semi-structured interview format because the questions are defined in advance, and the interview process takes place in dialogue.

Interviews were held with information technology professionals representing the finance sector from banks, financial leasing, investment, factoring companies, and information technology companies with know-how in the finance field. The companies where the relevant participants' work are considered industry leaders and innovators in their fields, and the participants are top-level managers and managers working in the IT positions of the institutions.

Voice recordings of qualitative data in words and written notes were collected from ten research participants. The participants interviewed within the scope of this paper were selected from among the information technology professionals who are eligible and consented to participate in the study from an industry leader or pioneer companies in the Turkish finance sector. Some of the participants whose opinions were requested were contacted personally, and some were reached via e-mail or phone via the official contact information of the institutions.

Semi-structured interviews were held face-to-face with research participants from finance companies. The exact timing for the interviews has been agreed upon with the participants from each company based on availability between October 2019 to December 2019. All participants agreed to conduct face-to-face interviews, and suitable meeting rooms in the institutions of the participants were used as meeting places. The interviews were recorded so the researcher could cross the references and listen back to the interview for remote analysis and reporting. Each interview session was conducted professionally but in a friendly and open manner. All participants were given general information about digital transformation and technologies, sensing, seizing and transformation capabilities, and how to transform within an organization.

Data analysis

Data processing begins with secure storage to protect against accidental leakage of information shared by participants. Written notes and audio recordings are kept private and can only be accessed by the researcher. The collected data were categorized according to the codes to preserve the integrity of the information, and questions were given to the participants for later comparison. Participants' real names and identities are not recorded in the notes or audio recordings. Instructions, physical notes taken, sound recordings, and all other documents are stored in the relevant folders. Data security has been ensured by backing up all electronic copies obtained on the researcher's computer, external disk, and cloud.

Data analysis is a method used to discover, define, select and organize unique emerging themes and connect themes to the phenomenon under study (Silverman, 2013). The researcher's knowledge and experience are critical for analysing the collected data. Qualitative research that targets mechanistic explanations poses some difficulties in qualitative data analysis because it needs to integrate the existing theory with the models defined in the data (Glaser and Laudel, 2013). Data collected through articles, telephone conversations, and recordings were used in this qualitative research to assist efforts to achieve triangulation. After semi-structured interviews were recorded with a voice recorder, they were transcribed in the computer environment. In the interview transcripts prepared, comparisons were made between the questions based on the participants and based on answers given by different participants to the same questions. The prominent points were analysed by comparing them with similar studies in the literature, especially Warner and Wager's 2018 study.

Results

The results section includes the study's outputs, which are conducted based on semi-structured interviews and enriched with information from the literature. For example, one study aims to analogize observed topics in the literature with institutions operating in Turkey's financial sector. Another aim was to determine how financial institutions overcame the problems and obstacles encountered in the digitalization process, how they triggered innovation, and whether they implemented a model based on digital thinking throughout the organization.

Participants were first asked about their position in their institutions, their total work and their management experience. The answers received are shown in Table 3.

Table 3: Participants' Titles and Experiences

Participant	Title	Total Work Experience (Year)	Managing Experience (Year)
P1	Credit Intelligence Assistant Manager	15	9
P2	Operation & IT Director	30	10
P3	Head of IT and Project Management	19	6
P4	Chief Information Officer	23	6
P5	Chief Information Officer	22	12
P6	Chief Information and Operation Officer	25	13
P7	Chief Sales Officer	28	19
P8	Sales Director	20	2
P9	Sales Assistant Manager	13	3
P10	IT Director	16	2

The prominent answers received from the questions asked to the participants for the part included in this report are summarized in the tables below. In addition, the reasons why financial institutions are interested in digital processes are listed in Table 4.

Table 4: Reasons for Financial Institutions' Interest in Digital Processes

Reasons	Participants Opinions		
Disruptive competition	Digitalization of financial system and focus on smart programs	Desire to reach new segments and growth	The emergence of new initiatives to meet the demand empowered by sector-independent service models, sharing economy, and diversifying demand structure
Using digital transformation to increase service quality	Virtual financial services over mobile and internet banking	Customer-friendly processes, accessibility, self-service	Being fast, automated processes rather than manual, ensuring output quality with checkpoints and procedures.
Customers increasing and changing demands	Satisfactory customer experiences in sectors other than finance set higher expectations. For example, customers expect similar customer experiences from financial institutions, and increased service quality of financial instructions sets a standard for others.	Consumers are using more advanced technology than instructions. Using digital technology to meet customer experience expectations	To offer a single customer experience in a multi-channel approach with fewer employees, more accessible and possible service, low churn rate, and high satisfaction.

For financial institutions, the prominent answers to the effect of digital technology and processes on the business performance of companies and the way the industry does business are presented in Table 5.

Table 5: Digital Technology and The Effect of Processes on Financial Institutions' Business Performance

Effects	Participant Opinions		
Digitalization of processes and increasing efficiency with automation	Automation of operational works, focus on paperless service, simplification of processes with internet and mobile services, shortening the time to market	To increase productivity by moving processes to digital, doing more business with the same number of people, and establishing a more controllable structure that meets customer expectations.	Digitalization of approval processes, transparency of performance management, follow-up of employee duties and responsibilities (traceability)
Need for a more qualified labour force	Focusing on jobs that will increase income by using higher quality resources by automating the work. Less number of employees at the branches, more number of better-qualified employees at the HQ	Shifting repetitive jobs to the RPA, using the saved labour force in sales and other more value-added areas	Increased use of automation with digital technology redirects saved resources to more value-added jobs
Being more successful in reaching customers, increasing demand and better evaluation of applications	Making more accurate decisions with advanced and successful algorithms using analytics and artificial intelligence in the evaluation of applications	To ensure the continuation of cooperation with the customer to provide the desired service quality and meet customer expectations. To serve different segments by offering customer-specific offers.	Increasing customer satisfaction, business volume, and transaction volume, and improving brand loyalty and customer experience by meeting customer expectations

Participants were asked about the obstacles they face while embarking on their digital transformation journey or while the transformation journey continues. Commonly specified obstacles are summarized in Table 6.

Table 6: Challenges in Digital Transformation

Challenges	Participant Opinions		
Employee transformation	Employees' resistance to digitalization and particularly the involvement of employees in middle-top management	The necessity of digital transformation, the necessity of explaining it to senior management and providing top management sponsor support in employee transformation	Providing competent resources, training employees to increase their competence and experience to enable digital transformation
Adapting to agile methodology	Allocating the limited resources of the institution, which can be shortened to quarterly periods, between different projects and needs in a more agile and proactive manner instead of the standard annual planning.	Making investments in conventional infrastructure architecture apart from the agile method, which slows down the speed of digital transformation	
Transformation of digital channels and difficulty in satisfying corporate integrity	Financial institutions deliver the same message in all channels and achieve the same success	Use of digital channels outside of branches and conventional channels to reach more customers with existing human resources	The obligation of the company to continue to do business and earn income while performing the digital transformation, to implement change with a holistic determination

Participants were directed to what initiatives their institutions have to transform digitally. Among the answers received, those whose importance was stated in common are shared in Table 7.

Table 7: Attempts to Realize Digital Transformation

Attempts	Participant Opinions		
Developing an internal collaborative environment	The digitalization desire of the employees and their tendency to make suggestions on these issues are increasing as the way of doing business changes, and realizing that the jobs that have been more laborious before can be done more easily.	Efforts are made to establish structures where employees can present their development ideas and evaluate the effects of incoming ideas on all units.	For the transformation of the business model, under the leadership of the IT unit, the business units continue to search for what we can digitize and do differently with digital technologies.
Taking an active role in the ecosystem and developing the ecosystem	Sectoral regulatory institutions such as the association of financial institutions and the BRSA play a role in creating the sectoral ecosystem to establish common databases and central systems.	Financial institutions play a pioneering role in the finance industry with services such as mobile applications, online transactions and functional websites, and guide the ecosystem.	
IT infrastructures to meet the demand arising from digitalization	The transformation usually starts with the changes made in the IT infrastructure architecture. Then, with the sponsorship support of the management, the transformation with core business teams affects the entire infrastructure.	To advance the transformation process, it is necessary to establish a controllable, accountable and reliable infrastructure that is free from manual operations. In addition, an infrastructure that will enable all systems to work on a single platform should be established to ensure interdisciplinary cooperation.	

Participants were informed about the concept of the digital maturity matrix, and their views were asked about the stage where their institutions are located. However, it has been learned that the institutions see themselves mostly in the defined and integrated phase. Financial institutions with foreign partnerships think their transformation is approaching the transformation stage. Initiatives planned to increase digital maturity are shown in Table 8.

Table 8: Attempts to Increase Digital Maturity of Institutions

Attempts	Participant Opinions		
Investment in artificial intelligence and automation technologies	Establish autonomous structures that can learn and make decisions on commercial and corporate loans by evaluating the inputs and requests from the branch and transmitting a loan decision or response.	The aim is to take people out of processes to increase digital maturity and completely digitalize processes.	For the transformation of the business model with the guidance of IT, it must be searched for what business units can digitize and do differently with digital technologies.
Raising the service quality, maturity and standard to provide Self-Service	With the legal basis of the electronic signature, it aims to create a self-service environment where customers can carry out all application processes independently.	A self-service financing system in which the customer chooses the product from the seller's website, enters their information, receives the loan offer, and then fills and uploads the necessary documents to the system to minimize the intervention.	
Disseminating digitalization into departments	The most important approach to raise awareness before the investments are made is to spread digital transformation to all departments culturally and take the teams still resisting digital transformation on a digital transformation journey.	To increase digital maturity by realizing projects on digital channels and cooperating with start-up companies and technoparks.	While the products and processes that touch the customer continue to become agile and transformed, the management processes that remain in the conventional approach seem to be one of the most important transformation pain points.

As far as the participants observed in their institutions, their views on which of the capabilities in the dynamic ability model of Warner and Wager (2018) and how they used them were listed in Table 9.

Table 9: Capabilities in the Strategic Change Model

Capabilities	Participant Opinions		
Digital Sensing	Thanks to digital scouting and imitation of digital products discovered outside, digital transformation is initiated within the institution, and some products and services are digitized.	Digital scouting is used to monitor what has been done outside the organization, and digital scenario planning capabilities are used with working groups focusing on what the organization can do to be more digitally transformed.	Institutions use their digital scouting ability to keep the institution up-to-date with the information and developments the employees learn from their customers and through consultancy firms.
Digital Seizing	Strategic skills are used when evaluating the seized opportunities with the support of senior management and the teams with relevant competencies.	Rapid prototyping is used with the establishment of agile structures.	Rapid prototyping enables a minimum viable product to be presented to the customer. In addition, it leads to increased features with the received feedback and increased demand and capability.
Digital Transformation	In the digital transformation phase, digital transformation is achieved by re-designing the internal structures and participating in the innovative ecosystems as a participant or an observer.	By using excessively navigating innovation ecosystems, the re-design of internal structures is considered with the perspective of re-evaluating internal processes. A digital transformation is tried by constantly reviewing them.	Increasing the rate of the teams which work in agile methodology up to %50 and following the master plan of the institution. Trying to get an active role in innovation ecosystems by cooperating with a university, R&D ventures, technoparks and angel investors

Taking into account the sectoral experiences of the participants, the answer they gave to the question of what the biggest effects of digital transformation on the finance sector are, is given in Table 10.

Table 10: Effects of Digital Transformation to Finance

Effects	Participant Opinions		
The Transition of financial services from physical to digital	The Working environment in the finance sector was branch-centric. Customers were waiting in the queue, and services were not agile. Fewer documents exist in the branches, and electronic signatures and approvals replace the dense paper contracts in the electronic environment.	Productivity, value-added services, and profitability have increased with digital transformation since costs per product and service have dropped significantly.	Digital transformation has allowed end users to do the necessary operations regardless of location and time. However, it has taken the institutions working and earning hours beyond the working hours.
Shortening the time needed for application, evaluation, approval and extension	The industry's way of doing business has changed by facilitating the application processes and transferring them into the digital environment, faster evaluation of applications by using RPA when evaluating and processing them, which leads to faster proposals and shortening the time to return to customers.	With the digitalization moves, such as online transactions and mobile applications, the way of doing business is transferred to digital channels.	
Financial institutions add to become platform providers in their strategic plans	Financial institutions will also become institutions that do not have branches as they complete their digital transformation and will be a platform that offers financial services over digital media.	As financial institutions become more invisible, they will become technology companies and platforms by investing in information technologies.	Institutions that enable customers to perform their transactions faster have had the opportunity to earn additional income and increase customer satisfaction by offering other products and services

Discussion and conclusions

Today, one of the biggest challenges for companies worldwide is the digitalization of the industry and the ability to adapt to the changes created by the transformation from the business model required by digital transformation. As observed within the scope of the study, institutions digitize the sub-concepts

that form the business model, starting with the custom component and the areas that direct the interaction with the customer, similar to the transformation of the framework in Kotarba's (2018) study. They should enhance existing business models to enrich product offerings with new value-added services or favour entirely new business lines. As Sewpaul (2018) observed in his thesis, banks have enriched their business models by effectively using the services they offer to the customers and the digital banking systems that will meet the needs that will satisfy the customer in a way to increase their profitability.

Fintechs, especially digital services offered by banks and other financial institutions, have emerged due to the disruptive effects of digital transformation on the financial sector. In Sewpaul's (2018) study, the participants drew attention to the importance of crypto money, artificial intelligence and digital technologies, including blockchain-based technologies that threaten incumbent institutions by creating digital innovation in banking and a development area for fintech. The current situation, led by the banking and finance industry, seriously threatens the profitability and customer service satisfaction of banks and financial institutions with the risk of disruptive innovations created by digital technologies and fintech.

Our research findings assert that financial institutions in Turkey show interest in digital technologies to cope with the disruptive competition caused by the economic conditions and digital technologies. Investing in digital technologies is an opportunity to increase institutions' service quality and cope with customers' increasing and changing demands. Although allocated resources and dedicated importance in corporate strategies of institutions vary, it has been revealed that all of them have taken digital transformation on their agenda to a certain extent. Still, it is not enough to want to invest in this area, and some obstacles must be overcome. Organizations need to be able to use agile methodology more effectively to enable the transformation of their employees and digital transformation and to use digital channels more holistically and efficiently. With the widespread use of digital technologies, it becomes possible to increase efficiency by digitizing and automating the processes of institutions. The perfect realization of routine work using technology has resulted in organizations needing more qualified resources to create and manage these systems. With this employee-oriented approach gaining priority, the culture of doing business is spreading. The ecosystem created with cooperation inside and outside the institution contributes to the institution's digital transformation.

According to the outputs obtained from the interviews within the scope of our study, some dynamic capabilities are more prominent than others, or current investments and priorities have gained importance around these capabilities. As in the study of Warner and Wager (2018), the capabilities that organizations need in the digital transformation process were handled in three stages sensing, seizing and transformation, approved by participants who were interviewed within the scope of the study. When examining which capabilities come to the fore at which stage of the transformation process, digital scouting, which makes it possible to follow developments outside the institution, especially through digital scouting and imitation of external digital products, stands out. In addition, organizations form work groups that seek answers to which products and services can be used in digitalization, showing the digital scenario planning ability. Intense digitalization demands from business units and innovative ideas gathered in the pool of ideas are established in institutions. That shows a digital mindset crafting or that the first steps have been taken. Financial institutions should evaluate the digital opportunities they sense with strategic skills, with the support of their senior management and by establishing competent teams to understand digital transformation and anticipate the organisation's contribution to its business and make it come true.

Digital transformation is not a goal. It is a tool to be closer to the customer, which is the main goal, to offer the service and the product that the customer demands in a merchantable manner at the most appropriate time and to understand the customer. At this point, it is observed that the digital transformation journey of financial institutions is beneficial in achieving the targeted outputs with the digital customer experience maturity model that Shrivastava (2017) determined. Having effective and successful digital strategies that will provide digital services independent of time and location according to the convenience of the customers will contribute to their success by bringing financial institutions closer to their customers (Parise, Guinan and Kafka, 2016). Financial institutions in Turkey interpret big data, analytics and artificial intelligence as digital technologies with the potential to create a great impact that is close to each other and complements each other. Robotics and blockchain are also pointed digital technologies with great potential. All processes, from making value propositions to the customer, better perception of the customer's needs, predicting future demand and operational efficiency, are included in analytics. It is also thought that the blockchain can be an effective and safe alternative for performing and recording transactions in the financial sector. When financial institutions take digital

transformation on the agenda, they should focus on transforming digital processes and investing in the infrastructures on which digital processes and technologies will work. Investment in digital processes of financial institutions in Turkey is focused on digital channels prioritizing customer-facing services and interfaces. Facilitating information retrieval and increased accessibility to institutions, meeting customer needs very quickly, and making financial services more comprehensive and value-added by going beyond the traditional framework is among the benefits that digital transformation will bring to institutions. As seen in the examples in the literature, increasing growth in the demands of financial institutions, increasing sales performance and customer satisfaction, achieving savings of up to 3 times in operational expenses (Gale and Aarons, 2018) and more will be possible by initiating and systematically following the digital transformation process.

Limitations and future research

The research is based on various assumptions about the population, sample and reasons that support the research design due to its qualitative nature. The findings and results obtained from this study were limited to the participants' perspectives. Participants provided extremely valuable information in open communication and talked about the investment and plans of their institutions, but this information lacks methodology, process details and sensitive information.

Research data are limited to words and audio recordings and do not contain any quantitative data that could lead to different results. In future studies, similar studies can be done with the survey method, which has just started to be used.

Researchers can examine the difficulties encountered, the strategy followed and the preferred abilities with a systematic study examining the digital investing process. In addition, similar or extended research could be conducted in each financial sub-sector, such as banking, factoring, leasing, investment, brokerage services, and asset management, rather than an overall extent.

A similar study can be done with the participation of decision-makers outside the financial sector. Without a doubt, the answers received, the skills and technologies that would be promoted, and the institutions' digital awareness and maturity levels will differ dramatically. In addition, since each country's economic and cultural characteristics and general level of development are at different levels, the answers to similar or different questions may differ significantly. Researchers can use qualitative or mixed methods to examine the effective digital transformation strategies of the organizations where senior managers work and improve the transformation process of their companies.

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