NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF COMPUTER INFORMATION SYSTEMS

**UNLEASHING THE POWER OF DIGITAL LEADERSHIP SKILLS:
MAXIMIZING ORGANIZATIONAL PERFORMANCE IN THE ERA OF
DIGITAL TRANSFORMATION**

M.Sc. THESIS

Seyedali AGHAMIRI

Nicosia

June, 2023

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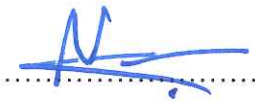
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Approval

We certify that we have read the thesis submitted by Seyedali Aghamiri titled **"Unleashing the Power Of Digital Leadership Skills: Maximizing Organizational Performance in the Era of Digital Transformation"** and that in our combined opinion, it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Educational Sciences.

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Declaration

I hereby declare that all information, documents, analysis, and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of the Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

Seyedali Aghamiri

17/June/2023

Acknowledgments

It is imperative that individuals keep their beliefs to themselves to ensure peaceful coexistence and prosperity with one another. Therefore, I firmly choose to maintain the privacy of my beliefs.

I am filled with gratitude for the guidance and support of my supervisor, Prof. Dr. Nadire Cavus, throughout my research. Her insightful feedback has been instrumental in the completion of my work.

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I am incredibly grateful for the values my father, Abbas, instilled in me - he taught me the importance of courage and humanity. And my mother, Delbar, has always been my guiding light, showing me the power of selflessness and love. I am humbled by their influence in my life and strive to embody their teachings every day.

My heart is filled with gratitude for my sisters, Shadi and Leila, whose unwavering support has been a source of inspiration and strength in my life.

Lastly, I am incredibly grateful for my unwavering dedication to personal growth and improvement. Even in the face of adversity, I have persevered and emerged stronger, wiser, and more resilient.

I want to finish with a phrase by the Persian poet Attar of Nishapur that always keeps me going; "This too shall pass".

Ali Aghamiri

Abstract

Unleashing the Power of Digital Leadership Skills: Maximizing Organizational Performance in the Era of Digital Transformation

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Effective digital leadership skills play a crucial role in driving successful digital transformations within organizations, ultimately leading to improved financial performance. However, there is currently a gap in the literature regarding a comprehensive model and scale to assess the importance of digital leadership skills and their impact on both digital transformation and financial performance. Hence, the goal of this study is to develop a reliable scale and a novel model to address this gap. The methodology used involves quantitative survey data collection, as well as validity, reliability, explanatory, and confirmatory factor analyses to create a high-quality model and scale that can help understand how digital leadership skills influence digital transformation and financial performance in organizations. The hypothesis created to test the proposed model was indeed approved, demonstrating the model's scientific validity for this topic. This research showed that despite the fact that the leadership is a part of organizational factors, but it can perform a vital role as an external factor that can influence all the organizational factors and plays a crucial role in the success or failure of the organizations, regardless of their size. The findings of this study can benefit academics seeking a deeper understanding of the crucial role of digital leadership skills, while researchers can use this model for further exploration. Additionally, practitioners can apply these findings to improve their organizational strategies and their digital leadership skills.

Keywords: Digital leadership skills, scale, digital leader, digital transformation, financial performance

Özet

Dijital Liderlik Becerilerinin Gücünü Ortaya Çıkarma: Dijital Dönüşüm Çağında Kurumsal Performansı En Üst Düzeye Çıkarma

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Bir kuruluşun dijital dönüşümünü başarılı bir şekilde gerçekleştirmesi, dijital liderlik becerilerinin kullanılmasıyla mümkündür ve bu da finansal performansın iyileşmesine yol açacaktır. Bununla birlikte, dijital liderlik becerilerinin önemini ve dijital dönüşüm ve finansal performans üzerindeki etkilerini değerlendirmek için mevcut literatürde kapsamlı bir model ve ölçekleme yoktur. Bu nedenle, bu boşluğu doldurmak için güvenilir bir ölçek ve yeni bir model bulmak bu çalışmanın amacı. Nicel araştırma verilerinin toplanması, geçerlik, güvenirlik, açıklayıcı ve doğrulayıcı faktör analizlerinin uygulanması, kullanılan yöntemdir. Bu nedenle, dijital liderlik becerilerinin şirketlerin finansal performansı ve dijital dönüşümünü nasıl etkilediğini anlamak için üstün bir model ve ölçek geliştirilmiştir. Önerilen modeli test etmek için geliştirilen hipotez gerçekten onaylanarak modelin bilimsel geçerliliğini göstermiştir. Bu araştırma, liderliğin bir kurumsal faktörlerin bir parçası olmasına rağmen, tüm kurumsal faktörleri etkileyebilen ve herhangi bir kuruluşun başarısı veya başarısızlığında önemli bir rol oynayabilen dış bir faktör olarak önemli bir rol oynadığını göstermektedir. Bu çalışmanın sonuçları, dijital liderlik becerilerinin önemli rolünü daha iyi anlamak isteyen akademisyenlere yardımcı olabilir. Ek olarak, araştırmacılar bu modeli daha fazla araştırma yapmak için kullanabilirler. Ayrıca, uygulamacılar bu bulguları dijital liderlik becerilerini ve kurumsal stratejilerini geliştirmek için kullanabilirler.

Anahtar Kelimeler: Dijital liderlik becerileri, ölçek, dijital lider, dijital dönüşüm, finansal performans

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List of Abbreviations

DT:	Digital Transformation
DL:	Digital Leader
DLSS:	Digital Leadership Skills Scale
AI:	Artificial Intelligence
ML:	Machine Learning
IoT:	Internet of Things
IIoT:	Industrial Internet of Things
ROI:	Return on Investment
EQ:	Emotional Intelligence
SME:	Small and Medium Enterprises
SMB:	Small and Medium Businesses
IDE:	Integrated Development Environment
4G:	Fourth generation of mobile telecommunications
5G:	Fifth generation of mobile telecommunications
EFA:	Explanatory Factor Analysis
CFA:	Confirmatory Factor Analysis
I.40:	Industrial Revolution 4.0
MBA:	Master of Business Administration
EMBA:	Executive Master of Business Administration

CHAPTER I

INTRODUCTION

This is the introductory chapter that introduces the study aim and problem statement, importance, study hypotheses, and summary of all the chapters in view.

1.1 Background of the Study

The technological leap in the late 18th century led to a new concept called the first Industrial Revolution, initiated with the steam engine. It was followed by the 2nd, the 3rd, and 4th Industrial Revolutions, the advent of Industry 4.0 (I4.0) occurred due to the novel development of the digital ecosystem in order to solve the problems that industries struggled with (Sorooshian and Panigrahi, 2020). I4.0 entails 9 pillars comprising Autonomous Vehicles, the Internet of Things (IoT), the Industrial Internet of Things (IIoT), Horizontal and Vertical System Integration, Cybersecurity, Cloud Computing, Augmented Reality, Big Data, and 3D Simulations (Rüßmann, 2015). Moreover, I4.0 is also known to be marked by Digital Transformation (DT) (Teng et al., 2022). Kääriäinen et al. (2020) It described DT as a vital change in the way an organization utilizes technology, people, and processes to provide value to its everchanging customer expectations of offered products and services. Also, DT has two main subsets known as Digitization and Digitalization. The Organization for Economic Co-operation and Development (OECD) defined Digitization as analog data and processes transformation into a digital machine-readable format, and, Digitalization is explained as the utilization of data and digital technologies in addition to their mutual connection that results in fresh or reformed activities (OECD, 2018). Currently, DT is a catchword in business and academic environments such as educational, governmental, financial institutions, manufacturing, and Small and Medium Enterprises (SMEs); nearly all industries are being digitally transformed amidst I4.0; moreover, in the last 25 years DT elements, barriers, and drivers are repeatedly debated, on the other hand as digital technology is altering the lives of people, the European Commission (EU) additionally prioritized DT for the business and society (Verina and Titko, 2019). The EU digital strategy intends to make DT

function for society and enterprises while aiding in attaining the climate-neutral Europe objective by 2050 (European Commission, 2021).

1.2 Statement of the Problem

In the 21st century, named as digital age in the literature Benson (2018), all organizations should start to focus on DT to keep or advance their market share, this so-called competition is not only with the local rivals but is rather a global competition for many businesses in a wide range of industries. Particularly after the COVID-19 pandemic showed how vital DT is for the human race (Amankwah-Amoah et al.,, 2021). For this reason, the aim of this study is to determine which factors are affecting DT and to what extent. Considering the importance of DT plus its undeniable effects on the human future, and fast pace changes caused by I4.0, there are still areas that require deep diving to help better understand the concept of the DT process and factors that can speed up the DT adoption while paving the way for the adoption of DT, especially by SMEs. As Schwertner (2017) indicated that effective DT demands human resource contribution. Nonetheless, human resources in the context of DT is mainly reviewed with a focus on the employee's digital skills Teng et al. (2022), also the findings (Aghamiri et al.,, 2022) showed that none of the recent DT models and frameworks were focused on role and effects of Leadership in DT, moreover, Verina and Titko (2019) pointed out that most professionals believed that DT implementation and adoption is an integral part of the DT.

In the digital age firms increasingly undergo DT, and the need to develop leadership approaches regarding DT seems an essential element, without effective leadership a successful DT is out of reach (Kane et al., 2016). Yet, the role of leadership is so important that scientists examined the quality of management and leadership courses and degrees. Researchers considered students of management and leadership courses such as Master of Business Administration (MBA) or Executive Master of Business Administration (EMBA) who freshly join the workforce regularly lacked the crucial skills to deal with business challenges and issues (Richards and Wilson, 2002). Nevertheless, the existing methods for curriculum development are inadequate for training reliable and visionary leaders who welcome change and challenge, and yet effectively achieve DT (Philip and Aguilar, 2022). Participants of a study were asked, "What is the most important skill an organizational leader should have to succeed in a digital workplace?" (p. 90) the results showed that almost 72%

of the respondents agreed that a leader should understand technology (i.e., decision-making based on analytical tools and platforms, also using mobile and social platforms to engage with the teams), acknowledging that organizational managers, management and leadership educators, business schools, and scholars are starting to recognize the interdependence between digital abilities and leadership skills, are all signs of the importance of digital literacy for the leadership role in the context of DT. On the other hand, Teng et al. (2022) investigated factors affecting DT and the performance of SMEs by looking into three main organizational factors digital technology, employee digital skills, and digital transformation strategy, however, there's a gap in the literature as the leadership and its effects on DT process are not pointed out.

A study by Klein (2020) gathered the main characteristics of digital leadership and found that because most enterprises are still at the beginning of their digital transformation adoption, a standard model of digital leadership and a common understanding are lacking in this regard. A considerable part of the existing studies is visionary and predictive types while only examining the requirements for digital leadership about the foresaw economic, technological, and organizational transformations. Thus, Digital Leadership Skills that can affect digital transformation is overlooked. Therefore, the topic of this study should be investigated to help gain a better understanding of the digital transformation adoption by enterprises and how a leader's skills can affect this process also the financial performance of the enterprise as well.

1.3 Aim of the Study

This study aims to investigate how digital leadership skills impact an organization's digital transformation and financial performance. To achieve this, a new model, and a new scale called the Digital Leadership Skills Scale (DLSS) is developed and proposed by this study.

1.4 Significance of the Study

The importance of this study is the beneficial information that it adds to the body of knowledge, as it has a unique perspective on digital transformation. A wide range of stakeholders in the educational sectors as well as businesses of all sizes in various industries will benefit from this study in the following ways:

Researchers: Anyone interested in performing new studies relevant to this topic will find this study useful since it will give information relevant to their research. Moreover, it developed a new scale with high reliability to assess the Digital Leadership Skills effects on the digital transformation of an organization. Also, the general view of the people may pivot towards the significant role that Digital Leadership Skills play in the success of organizations and businesses.

Practitioners: These include entrepreneurs, startups, SMEs, large enterprises, organizations, and other key stakeholders in different industries. This research's findings will assist them in developing more effective strategies to address the challenges of digital transformation implementation and adoption throughout their working environment. Also, assist them with the proper tool (Digital Leadership Skills scale) in the evaluation of the skills of their organization's leadership and make sure that they are equipped with the right combination of knowledge to lead the organization towards successful digital transformation and financial performance.

1.5 Contribution of the Topic to the Computer Information Systems Department

The Computer Information Systems (CIS) Department is a multi-disciplinary department at Near East University, where it has a deep focus on computer science and computer engineering also encourages students to see the business side of computer science and provides opportunities to combine technical knowledge with business knowledge. Therefore this study can contribute as a multidisciplinary study to the CIS department, and mainly to the Information Systems aspect, by providing valuable knowledge to address the significance of the digital transformation topic as a fresh area to do research and also pointing out the importance of the Digital Leadership Skills in the digital era and its effects on the organizational performance.

1.6 Limitations of the Study

Although this research provides insights into understanding that Digital Leadership Skills may affect the digital transformation and performance of enterprises, it also has certain limitations that constrain the interpretation of the findings. The following highlights some of the limitations of this research. First, the research findings are limited to the Spring and Summer of 2023, which is the time of data collection for this research. Also, it is limited to the developed model presented in Figure 3.

1.7 Definition of Terms

To ensure clarity in this thesis, the terminology used in this paper and its related meanings are briefly discussed.

Digital Transformation: Digital Transformation (DT) is a vital change in the way an organization utilizes processes, people, and technology in parts or throughout the whole organization.

Leadership: This is an extremely complex term carrying paradoxes that cannot be easily understood, yet it can be simple to use in various contexts; leadership in this study refers to the people ranked on the top level of the organization, disregarding the size of the organization leaders acts as most important decision-makers who directly and indirectly determine and affect the organization strategies and how it functions, and most importantly how it forms its culture throughout the organization.

Skills: When economists, sociologists, and psychologists discuss skill, they often appear to be talking about different things, even though they all speak about a concept of extremely high value; it would be best to be clear on what this study means by skill before moving forward. Skills have three key features: they are Productive, Expandable, and Social. But there is no consensus among social scientists about the meaning of the concept of skill (Green, 2015). Although in this study, skill refers to the characteristics or traits that equip a person to be able to face situations, environments, opportunities, and threats, while thriving for personal and professional growth.

Digital Leader: According to Promsri (2019), a digital leader is a leader with the six traits of digital knowledge and literacy, innovative visionary, customer focus, agility, risk-taking and experimental atmosphere creation, emotional intelligence, and collaboration, which are explained in detail in chapter II.

Organization: In this study, the term organization may refer to various types of organizations regardless of their revenue level or their size, meaning that it refers to Micro businesses, Small and Medium Enterprises (SMEs), and Large enterprises in different sectors and industries. Also, the term organization can be used interchangeably with business or enterprise.

Small and Medium Enterprises: Company size is one of the most important factors that provide quite significant information about a company. In total, companies are categorized into four sizes Micro Enterprises that have fewer than 10 employees; Small Enterprises that employ 10 to 49 staff; Medium Enterprises that have 50 to 249 employees; and lastly Large Enterprises that have more than 250 employees (OECD, 2018). In the literature, it is seen the abbreviation SME or SMB, which stands for Small and Medium Enterprises or Businesses.

1.7 Overview of the Thesis

In Chapter one, the thesis begins with an introduction that sets the stage for the research. The study's background provides a solid foundation for the research topic, while the problem statement clearly outlines the core issue the thesis aims to address. The chapter also outlines the study's goals and emphasizes its significance, highlighting why it could be valuable to both researchers and practitioners in the field. Additionally, the study's contribution to the Computer Information Systems Department of the Near East University is explored, highlighting how its findings could advance knowledge and understanding in the area. Finally, the chapter acknowledges the study's limitations, providing a realistic perspective on the scope and boundaries of the research while also defining the study's terminology to ensure clarity and understanding.

In Chapter two of this research, a literature review is presented. This review is important because it provides the foundation for the study. The chapter explores theoretical frameworks that are relevant to the research topic, which helps to provide a conceptual basis for understanding the topic. Additionally, the chapter examines related research studies, identifying gaps in the existing body of knowledge. These gaps in the literature are used to form the hypotheses for this study. By analyzing previous research critically, this chapter establishes the need for the current research and prepares the reader for the upcoming chapters.

In Chapter three, the research includes questionnaires that gather demographic information and the technological background of the participants. The reliability of the research instruments is evaluated through a Cronbach's alpha analysis to ensure internal consistency. The collected data will be analyzed and interpreted using specific procedures outlined in the research. Ethical considerations are addressed to protect

participants and ensure ethical conduct in alignment with the Near East University Ethical Committee.

In Chapter four, the research findings are presented in a detailed manner. The collected data is analyzed and interpreted using statistical analysis and other appropriate methods to answer research questions and test hypotheses. The chapter provides a clear and concise summary of the quantitative findings, supported by relevant data, tables, figures, or other visual aids. The presentation of the findings is logical and organized to make it easy to understand and interpret.

In Chapter five, the researcher delves into the discussions and interpretations of this research findings. This study analyzes the results in relation to this research questions and hypotheses and explore their implications and significance. Furthermore, this study compares and contrast this finding with previous research studies, highlighting the unique contributions and insights that this study provides. The researcher also examine the implications of this findings for theory, practice, and future research and provide recommendations and suggestions for further investigation.

The last chapter, Chapter six, wraps up the thesis by summarizing the main discoveries. These conclusions are based on the research goals and the outcomes achieved. Additionally, the chapter provides suggestions for practitioners and researchers to develop upon the current findings for further research.

CHAPTER II

LITERATURE REVIEW

In this chapter, the literature review of digital transformation and digital leadership skills, theoretical framework, and related studies are explained in detail.

2.1 Theoretical Framework

The theoretical framework is a crucial element in research that provides a conceptual and methodological foundation for the study.

2.1.1 Digital transformation

Incorporating digital technologies into different divisions of an organization or business and their processes in a way that offers added value to customers or consumers and abolishes the need for paperwork, plus complicated and time-consuming bureaucracy, is called digital transformation. Since digital transformation is not a concept solely made for a business, organization, or enterprise, in this study, these three terms are used interchangeably. Digital transformation requires a well-planned strategy considering that it should leverage technology to stimulate innovation and improve efficiency. Most importantly, digital transformation can be complex and hard to achieve since it brings considerable changes in corporate culture. Moreover, it provides new opportunities for development and innovation within an organization, enabling the organizations to utilize technologies for generating new products and services that can solve customers' problems. To thrive in digital transformation, organizations must have a clear vision, mission, strategy, sturdy and digital leadership, innovative culture, and a proper digital transformation model or framework that matches their organization's core values and long-term plans (Aghamiri et al., 2022). Organizations must be willing to invest generously in adopting new technologies and tools, be open to novel experiments, and take risks. They must also be able to address the benefits of digital transformation to all stakeholders and generate consensus on the objectives. Digital transformation requires a well-planned strategy considering that it should leverage technology to stimulate innovation and improve efficiency. Most importantly, digital transformation can be complex and hard to achieve since it brings considerable changes in corporate

culture. Moreover, it provides new opportunities for development and innovation within an organization, enabling the organizations to utilize technologies for generating new products and services that can solve customers' problems.

2.1.2 Organizations

The term organization has multiple meanings. It can refer to the formal planning, division of labor, and leadership of a group. Additionally, an organization can be viewed as a social entity that is purposefully structured and goal-oriented, with a boundary that is not completely rigid (Burrell, 2022). Incorporating digital technologies into different divisions of an organization or business and their processes in a way that offers added value to customers or consumers and abolishes the need for paperwork, plus complicated and time-consuming bureaucracy, is called digital transformation. Since digital transformation is not a concept solely made for a business, organization, or enterprise, in this study, these three terms are used interchangeably. To thrive in digital transformation, organizations must have a clear vision, mission, strategy, sturdy and digital leadership, innovative culture, and a proper digital transformation model or framework that matches their organization's core values and long-term plans (Aghamiri et al., 2022). Organizations must be willing to invest generously in adopting new technologies and tools, be open to novel experiments, and take risks. They must also be able to address the benefits of digital transformation to all stakeholders and generate consensus on the objectives.

2.1.2.1 Organizational Factors

On the other hand, Teng et al. (2022) conducted research on the relationship between digital transformation and the performance of SMEs through an empirical analysis of the performance of the SMEs that are experiencing the adoption of digital transformation. They attempted to identify the influencing factors and used an interview method to investigate the impact of three main resources on digital transformation, employee digital skills, digital technologies, and their impact and relation to digital transformation strategy. Also, they evaluate the impact that digital transformation has on the financial performance of SMEs. They utilized the structural equation model through the questionnaire method; their findings revealed that in the context of Chinese SMEs, the three mentioned resources positively correlate with the digital transformation of SMEs and found that digital transformation affects SMEs'

financial performance as well. The researcher developed a conceptual model depicted in Figure 2.

Figure 1

Conceptual model (Teng et al.,, 2022)
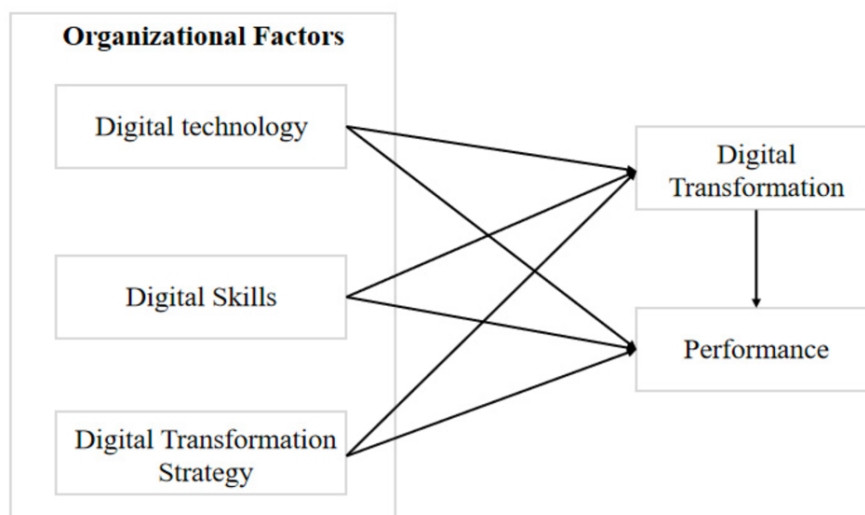
2.1.3 Leadership Skills

In this study, the words characteristics, skills, and traits will be used interchangeably; with this in mind, this paper found several related studies that pointed out the most important skills for a digital leader in the digital era. Klein (2020) used the content analysis of literature review, which is a system that is capable of application in both qualitative and quantitative manners. The study findings elaborated on 23 characteristics of a digital leader categorized into 3 dimensions depicted in Figure 1. Under the Digital Business dimension, Innovative Visionary and Networking Intelligence and Digital Intelligence are top skills, for General Mindset dimension, the Adaptable and Agile are the top skills and last but not least, for the Social Attitude dimension, the Motivating Coach and Social Intelligence are top skills.

Figure 2

Digital leadership characteristics (Klein, 2020)
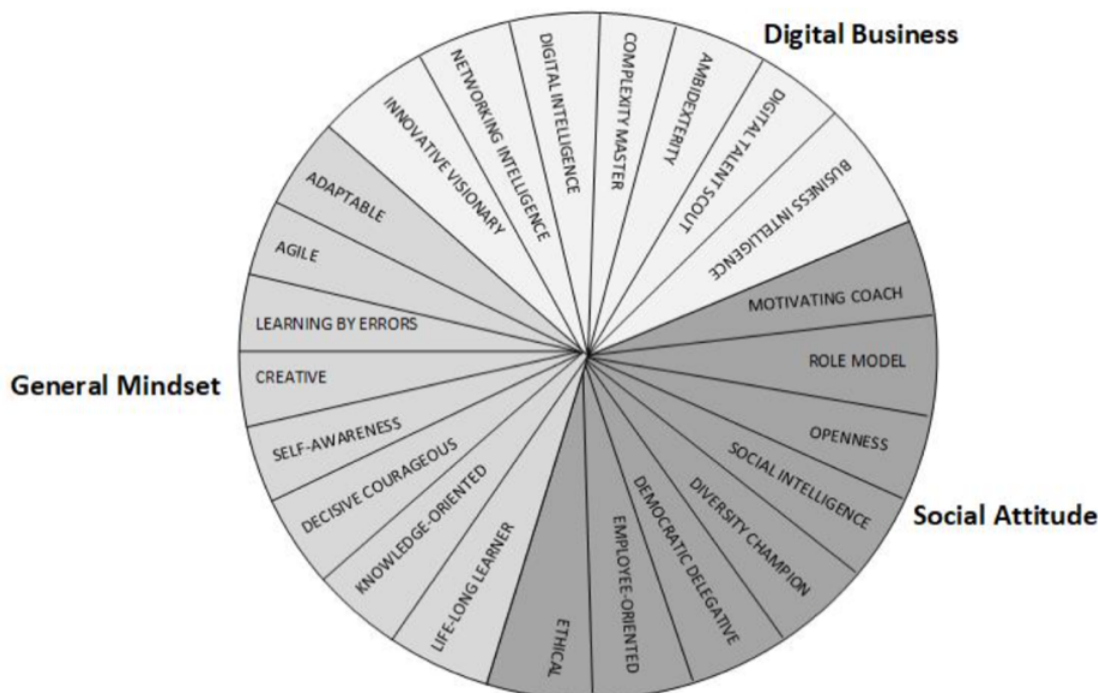
It is challenging to determine what are the most important characteristics and skills among the 23 recognized skills that a digital leader (DL) needs to possess to guide the organization through an effective DT, mainly because there are not sufficient studies (Klein, 2020). Therefore some researchers looked into this area to show some of these significant skills of a DL; one study by Promsri (2019) pointed out 6 characteristics as the main skills a DL needs to have, listed in Table 1. The study employed content analysis with the synthesis matrix methods with the congruence index of sources technique to find the most significant skills of a digital leader in the digital era. An interesting view is that there is a huge overlap of the top skills pointed out by these authors are obvious (Promsri, 2019; Klein, 2020). Because Promsri (2019) findings specified these 6 characteristics as the most important skills of a digital leader and emphasized their importance, and it is the most relevant to the aim of this study. As a result, the top six digital leader skills that are mentioned in Table 1 are interpreted by this study that will be the base for Digital Leadership Skills Scale (DLSS).

Table 1

Digital leader top six skills

Digital Leader Characteristics	Description
Digital Knowledge and Literacy	DL's digital knowledge and the ability to comprehend the digital technologies which impact DT in an organization
Innovative Visionary	DL ability to have clearly defined and stated vision and purpose of DT, and can communicate that vision to employees of all levels in the organization and to have entrepreneurial mentality
Customer Focus	DL is required to understand customer's true needs and address them while implementing the DT
Agility	DL's capability to be flexible, agile and adaptive for tackling the rapidly changing environment in digital era
Risk Taking and Experimental Atmosphere Creation	DL enables employees throughout the organization to experiment new product, services and changes, while embracing the failure and mistakes and learn from them, also actively looking for fresh opportunities
Emotional Intelligence and Collaboration	DL needs to equip himself/herself with high emotional intelligence which enable the self-awareness, empathy, communication skills, collaborative skills, cultural awareness and understanding others, these skills will encourage employees and teams to collaborate in an open and positive environment across boundaries to ensure a successful DT

2.1.4 DT in organization

Incorporating digital technologies into different divisions of an organization or business and their processes in a way that offers added value to customers or consumers and abolishes the need for paperwork, plus complicated and time-consuming bureaucracy, is called digital transformation. Since digital transformation is not a concept solely made for a business, organization, or enterprise, in this study, these three terms are used interchangeably. Digital transformation requires a well-planned strategy considering that it should leverage technology to stimulate innovation and improve efficiency. Most importantly, digital transformation can be complex and hard to achieve since it brings considerable changes in corporate culture. Moreover, it provides new opportunities for development and innovation within an organization, enabling the organizations to utilize technologies for generating new products and services that can solve customers' problems. To thrive in digital transformation, organizations must have a clear vision, mission, strategy, sturdy and

digital leadership, innovative culture, and a proper digital transformation model or framework that matches their organization's core values and long-term plans (Aghamiri et al., 2022). Organizations must be willing to invest generously in adopting new technologies and tools, be open to novel experiments, and take risks. They must also be able to address the benefits of digital transformation to all stakeholders and generate consensus on the objectives.

As a subsection, and a turning wheel of digital transformation, digital leadership is of high value within this context, even more valuable than before, since a digital leader is a frontier in the digital transformation of any organization. Klein (2020) explained the relevance of a successful digital transformation with an emphasis on the role of the digital leader as the main owner of this fundamental change in the organization; moreover, it is worth mentioning that a leader before the digitalization era was a classical leader, and digital transformation pushed the leadership context into a whole new level as being called a digital leader. The digital era speed is on the rise year by year or even day by day now since the recent rise of cutting-edge digital technologies such as artificial intelligence. There are plenty of relevant areas that were previously overlooked and are definitely worth examining and discussing. For example, Tigre et al. (2023) found in a study that the digital leadership topic is a fresh field of study to be looked into. This topic will continue to appeal to more researchers because it has not yet entered its maturity stage. The authors' study provided interesting insights into the literature by analyzing digital leadership and identifying it as a leading factor in a fast-changing world.

Building upon the mentioned theoretical foundations, this study seeks to develop a novel framework that integrates these three theories, two of which discussed digital leaders' most required skills and one that studied the digital transformation relationship with enterprise success and performance. These theories have individually contributed valuable insights into their respective domains. However, the potential for greater understanding and applicability emerges when their intersecting elements are explored. By combining key concepts, principles, and findings from these theories, the proposed framework in Figure 3 aims to bridge existing gaps, reveal new connections, and provide a more comprehensive understanding of the role and effect of Digital Leadership Skills on digital transformation adoption and performance of Organizations, and investigate it through analysis of a survey.

Through this integration, the present study aims to offer a fresh perspective that capitalizes on the strengths of each theory and creates a more holistic view by the integration it makes among these theories, trying to point out the crucial and undeniable fact that Digital Leadership Skills and to be more exact, which Digital Leadership Skills derive the adoption of digital transformation and how it'll affect the performance of Organizations, finally paving the way for an innovative theoretical approach.

2.2 Related Research

Patel and McCarthy (2000) discussed how the future of business is hand in hand with the Internet and provided a road map for the leaders on how to reform from business to e-business; the authors also discussed the principles of Digital Transformation. Also, it emphasizes the significant impact of the Internet on the future of business. It provides practitioners with a roadmap to steer the transition from traditional business to e-business while uncovering the essential principles behind digital transformation. This book offers valuable insights and tips from successful business figures.

Koene et al. (2002) examined different leadership styles and their effect on financial measures and organizational performance; this study found that there's a clear relationship between leadership and financial performance of 50 large supermarkets in the Netherlands. This study investigates how various leadership styles affect financial performance and organizational atmosphere in 50 Dutch supermarkets. Previous studies have mostly concentrated on subjective effects. The findings show a link between local leadership and both financial success and organizational atmosphere. In tiny stores, charismatic leadership and thoughtfulness have favorable benefits, highlighting the need for personal leadership by store managers in these settings. In small or big stores, however, establishing structure leadership has little effect on financial success or organizational environment. These findings suggest future study directions.

Westerman et al. (2012) argued the rising speed of technology development and the attention it receives from CEOs across industries. It recognizes the swarm of possibilities for achieving a digital advantage but advises about the availability of misconceptions and contradicting advice around digital transformation. It conducts

two-year research that includes a global survey of 400 large organizations as well as interviews with senior executives from more than 50 companies. The findings suggest that digital maturity has a major influence on profitability and market rewards. It highlights that no organization is excused from digital transformation since digitally complex rivals endure in every industry, Therefore, leaders are encouraged to think about the benefits and challenges of digital transformation in advance and urge taking early action to establish a tailored digital edge in view of the swiftly approaching future.

Schwertner (2017) examined the opportunities for the business that digital transformation brings as a change linked with the utilization of digital technology in all aspects of business; it found that businesses that are in the maturity stage of digital transformation are mainly focused on the integration of digital technologies, such as social, mobile, analytics/big data and cloud, in the services. It also found that these digitally transformed businesses had higher revenues and achieved a bigger market valuation than competitors.

Benson (2018) discussed the 21st-century leadership skills that the graduates of university business schools need to have to be successful in the digital age. It explained the common themes from the leadership literature; these themes are then compared with the requirements from 1. accrediting agencies for university business schools, 2. national committees and national councils, and 3. sponsoring foundations. Providing some fresh perspective on what leadership skills are needed the most for real business growth.

Reis et al. (2018) argued to provide insights into the current status of Digital Transformation and to propose future research possibilities. The report presents an overview of the literature by conducting a systematic review of 206 peer-reviewed papers. The findings emphasize the importance of managers adjusting their company plans to match the digital world, which will impose the adaption of related processes. The authors challenge additional difficulties since earlier studies may have overlooked key possibilities and constraints related to digital transformation. Furthermore, while Digital Transformation has infiltrated various industries, specific areas need future development more than others.

Promsri (2019) examined digital leader characteristics from related digital leadership articles on the Internet and developed qualities of a digital leader model.

The findings suggested 64 qualities of digital leaders, and with final results revealed that there are six characteristics that a digital leader must have, which included digital knowledge and literacy, vision, customer focus, agility, risk-taking (experimental atmosphere creation), and collaboration. These qualities were employed to create a model called Six Characteristics of a Digital Leader for Digital Transformation Success.

Klein (2020) discussed the understanding of leadership and the so-called digital leaders in the digital era who are expected to act quickly and elastic in organizational structures. Also, they should direct the digital transformation of the organization. The author pointed out a lack of a common understanding and a standard model of digital leadership. Most of the existing research works are visionary and predict the necessities for digital leadership on predicted technological, economic, and organizational variations; only a few of them report on changes in leadership based on implemented cases. The findings of this study gathered the main characteristics of leadership in the era of digital transformation.

Teng et al. (2022) studied the performance of SMEs undergoing digital transformation while attempting to identify the influencing factors that control their sustainable development to provide a reference for researchers and practitioners. The findings show that in the Chinese context, digital transformation affects SME performance and digital technologies, and employee digital skills and digital transformation strategy positively correlate with SMEs' digital transformation. Also, digital transformation is positively correlated with financial performance, and it is the mediator of the impact of digital transformation strategies on performance. As a result, companies focusing on investment in digital technologies, employee digital skills, and digital transformation strategies benefited from their digital transformation, thus helping to improve performance and maintain their sustainable development.

Tigre et al. (2023) evaluated both Scopus and Web of Science databases to provide new insights into the evolution of the digital leadership research field. This study reviewed and analyzed 79 publications from 57 journals published between 2000 and 2020. The findings show that digital leadership is an area that needs to be examined and researched more as it is a fresh area that is overlooked.

2.3 The Gap in the Literature

While previous studies have examined the importance of digital transformation, the crucial role of leadership, and, to be more specific the undeniable role of digital leaders in the success of digital transformation in the digital era, also pointed out and found the most important skills of a digital leader. Yet, there's still a gap in the study to show how these leadership skills (digital leader skills) contribute to the adoption of digital transformation and the performance of Organizations, as digital leadership has been identified as one of the most overlooked areas in the context of digital transformation and needs academics attention to dive deeper into this topic. Therefore, this study aims to fill this gap by developing a new model to integrate the digital leadership factor into the existing models to meet the new trends in the technologies of the year 2023; for this reason, this research is examining the influence of Digital Leadership Skills on the digital transformation and performance of organizations.

CHAPTER III

METHODOLOGY

This chapter provides a detailed explanation of the research method, hypothesis, research model that the researcher used, the participants and sampling method, data collection tool, and methods of analyzing data.

3.1 Research Method

A researcher's idea's reflection can be referred to as research design. It can help prevent confusion by linking the research together with a structured plan that shows the way how all the main parts of the research are connected in order to address the research questions or hypothesis. The strategy that this research is based on is well-structured to provide a logical framework and consistency for data gathering and analysis. This study is based on a quantitative research design that produces quantifiable values; it also uses a non-experimental survey research (Bostley, 2019). This research used quantitative survey method, and scale development. Additionally, for the evaluation of the hypothesis of this study, the Pearson Correlation Coefficient (r) method will be used; this method is also known as Pearson's r.

3.2 Research Model

The research model of this study is proposed to examine the positive correlation between digital leadership skills and organizational factors consisting of digital technology, digital transformation strategy, and employees' digital skills, following with the examination of the impact that organizational factors positively impose on digital transformation and finally the influence of digital transformation in financial performance of organizations. The researcher took the idea from the literature review and developed 6 items as digital leader's most important skills which are items of Digital Leadership Skills Factor that are developed by the author of this research. On the other hand found in the literature that Teng et al. (2022) studied the digital transformation relationship with enterprise success and performance. The literature has individually contributed valuable insights into their respective domains. However, the potential for greater understanding and applicability emerges when their intersecting elements are explored. By combining key concepts, principles, and

findings from these theories, the proposed framework in Figure 3 aims to bridge existing gaps, reveal new connections, and provide a more comprehensive understanding of the role and effect of Digital Leadership Skills on digital transformation adoption and performance of enterprises, and investigate it through analysis of a survey. Through this integration, the present study aims to offer a fresh perspective that capitalizes on the strengths of each theory and creates a more holistic view by the integration it makes among these theories, trying to point out the crucial and undeniable fact that Digital Leadership Skills affect digital transformation and the financial performance of Organizations, finally paving the way for an innovative theoretical approach.

Figure 3

Research model
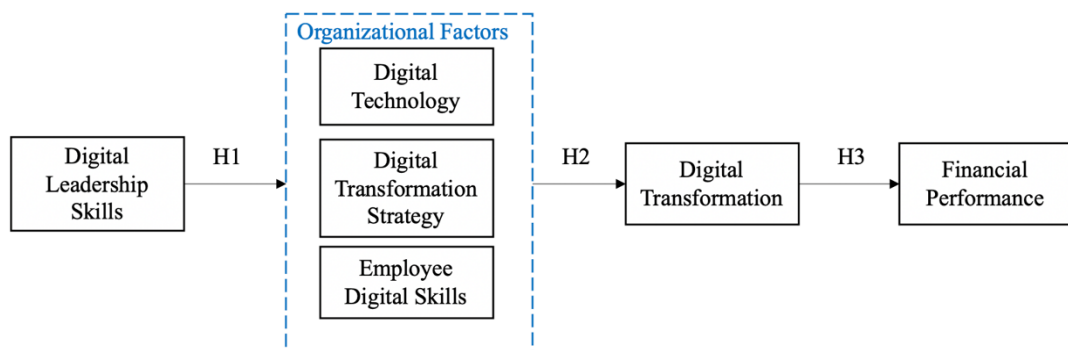
Figure 4

Proposed model construction

Factors	Reference	Items Quantity
Leadership Skills	Author	6
Digital Transformation Strategy	(Teng et al. 2022)	7
Digital Transformation	(Teng et al. 2022)	3
Digital Skills of Employees	(Teng et al. 2022)	5
Digital Technology	(Teng et al. 2022)	8
Financial Performance	(Teng et al. 2022)	6

3.2.1 Hypothesis

The main hypothesis of this study is that there is a positive influence of the Digital Leadership Skills of an organization on its organizational factors. Those organizational factors positively affect the digital transformation of an organization, and digital transformation positively affects the financial performance of an organization.

3.2.1.1 Digital Leadership Skills

Leadership plays a vital role in the triumph or failure of an organization. Virtuous leadership can motivate and encourage employees to explore and provide room for growth, build a positive work environment, and nurture innovation and collaboration. However, poor leadership can cause miscommunication, lack of purpose, absence of direction, and low morale. Eventually, it is the leader who ensures the success of an organization (Tigre et al., 2023). In today's digital age, with artificial intelligence leading the way in technology and impacting all aspects of human life, the importance of Digital Leadership Skills in driving digital transformation and financial performance has been overlooked; also, in the literature review, a developed scale is missing to fill the gap for assessment of Digital Leadership Skills significance in the context of digital transformation. This study is aimed to evaluate the influence of Digital Leadership Skills on organizational factors as a whole, the effect of organizational factors on digital transformation, and digital transformation on financial performance.

H1: Digital Leadership Skills positively influence organizational factors.

H2: Organizational factors positively influence digital transformation.

H3: Digital transformation positively influences financial performance.

3.3 Research Participants

This research collected voluntary opinions of non-random participants with specific characteristics in order to analyze their opinions and find a trend to base knowledge regarding the topic of the research. This study used a peer-reviewed online survey questionnaire. The sampling technique of this research is convenience/purposive sampling or judgment sampling, also known as selective or subjective sampling. Purposive sampling is based on the judgment of the researchers to choose whom to ask to participate in the survey. This research used a sample to suit

the needs of this research and approached individuals with specific characteristics. According to Acharya et al. (2013), one advantage of purposive sampling is that it is cost- and time-effective to perform, which could help with some of the limitations of this study.

This study used purposive sampling. Therefore, the respondents were chosen from Academicians and Practitioners, as well as Organizational (Organizations, Firms, SMEs, and Large Enterprises) employees that, at the time of the study, were actively employed by an organization. Any Participant that is not employed is asked not to continue to participate in the survey; however, if they did, the Google Forms that researchers designed provided the opportunity to filter out those unfit responses from the sampling population. This questionnaire included structured questions. Additionally, it comprised brief, specific, and straightforward questions that necessitated prompt answers from responders; also, for the responses to the related hypothesis questions. A seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used for the participants to answer factors presented in the questionnaire. The researcher then used professional social media channels such as Linkedin and WhatsApp and sent the survey link to more than 1000 individuals; as a result, the collected results were 714 responses that showed a good return rate of 71%. After screening analysis, 13 of 714 responses were eliminated because they didn't pass the first criteria of being employed at the time of the survey. Therefore, 701 responses were recorded in almost 3 months.

To make sure that how many participants are enough for this study and what sample size is needed for this research, this study utilized the statistical model presented in Figure 3; this statistical and online survey provider website, considering the population size at 20000 people because the exact population number is unknown to the researchers. Therefore, the recommended sample size is 377 individuals, with a confidence level of 95% and a margin of error of 5%. However, in the online survey of this study, the researchers collected 701 responses, which increased the confidence level of this study to 99.295%, with a margin of error of 3.64%, as depicted in Figure 4. For the statistical evaluations of this study, specifically for the explanatory factor analysis and the confirmatory factor analysis, the data set will be divided into two parts, n=1 (351), and n=2 (351), the division method will be randomly.

Figure 5

Statistical model for population and sample size calculation (www.raosoft.com)

3.3.1 Demographic Information

Considering the full privacy mode that respondents had in filling out the questionnaire of this research, the demographic information captured in this research is depicted in Table 2, which will provide valuable insights. In the following, it is briefly explained the reason for choosing the related questions. The respondents were asked about their gender in categories of male, female, and other; of course, the other was added to cover any category rather than traditional male or female; respondents were allowed to describe their gender identity as they'd like to be referred to in this question. However, this study received only 1 response as Other, and the rest 700 responses were split into 476 (67.9%) male individuals and 224 (31.9%) female individuals. The next question of this survey asked which country the respondent resides in; the aim of this question was to provide the possibility to assess the different perspectives about the topic of this research in different countries. The results show that 466 (66.2%) individuals of respondents live and have working experience in high-income countries, while 235 (33.3%) participants live and work in upper-middle, lower-middle, and low-income countries. The next question indicated the birth year of the participants with the aim of understanding how the respondent's perspectives may differ based on their generation. Years of working experience is another question that can show the depth of respondents working experience and how this experience can affect their opinion about the topic and related questions. Another question is about the participants' workspace company size, which can show how the size of the companies can affect the way the questions were answered regarding the topic of this

study. Up next is the Industry and then the working department of the participant, with the aim to assess the employee's perspective in different industries and departments about the questions.

And the last question in the demography section is to determine the education level of the participants and how the education level may affect their perspective in this research. The technological Background of the Participants also was measured. Participants of this study were asked four questions to determine their technological background. First, they were asked, Do you have any technological certifications? this question is designed with the aim of assessing if the participant was involved in any personal or professional development plans regarding the technological aspect of their professional life. The results show that 646 (93.7%) of participants answered Yes, and 55 (6.3%) answered No. Second, they were asked, Do you use any computer software or applications for your current role? the purpose of this question was to assess the participant's engagement with technology as software in accomplishing their job role. 689 (98.2%) of the participants of this study indicated that they use software applications for their current role, while 12 (1.8%) of them answered No to this question. Third, they were asked, Do you use any digital tools for your current role? with the aim to evaluate the need of the participant's current job role to use any digital or technological hardware tools. The findings show that 641 (90.6%) of the participants use digital tools for their job role, while 60 (9.4%) of them said they are not using such tools. And the last question in this section of the study asked the participants, Do you have working experience with any of the following technologies? this question was designed to assess which technologies are used by the participants and which one is a dominant technology in their professional life. The results are depicted in Table 3, which shows the dominance of software applications, 4th-generation, and 5th-generation of Telecommunication technologies, Cloud Computing, Artificial Intelligence, the Internet of Things, Robotics, and Drones, respectively. At the same time, only 27 (3.9%) of the participants don't use any of these technologies in their job roles.

Table 2

Demographic information

Demographic	Variable	Respondents	Percentage
Gender	Male	476	67.9%
	Female	224	31.9%
	Other	1	0.1%
Which country do you live in?	Canada	224	32.0%
	Cyprus	147	21.0%
	Germany	33	4.7%
	UAE	26	3.7%
	Sweden	18	2.6%
	Netherlands	6	0.9%
	Italy	2	0.3%
	Austria	1	0.1%
	Australia	1	0.1%
	USA	1	0.1%
	UK	1	0.1%
	New Zealand	1	0.1%
	France	1	0.1%
	Singapore	1	0.1%
	Croatia	1	0.1%
	Denmark	1	0.1%
	Iran	133	19.0%
	Turkiye	85	12.1%
	Azerbaijan	8	1.1%
	Iraq	2	0.3%
	Kenya	2	0.3%
	Brazil	1	0.1%
	Romania	1	0.1%
	Nigeria	1	0.1%
	Serbia	1	0.1%
	Colombia	1	0.1%
	Afghanistan	1	0.1%
What is your birth year?	Baby Boomer (1946 - 1964)	5	0.7%
	Generation X (1965 - 1980)	35	5.0%
	Generation Y or Millennials (1981 -1996)	409	58.3%
	Generation Z (1997 - 2004	252	35.9%
Years of Working Experience	1-3 Years	69	9.8%
	4-5 Years	164	23.4%
	6-10 Years	297	42.4%
	> 10 Years	171	24.4%

Table 2 (continued)

Company Size			
Company Size	< 10 Employees	71	10.1%
	10 - 50 Employees	402	57.3%
	51 - 250 Employees	114	16.3%
	> 250 Employees	114	16.3%
Industry	Information and Communications Technology	478	68.2%
	Education	98	14.0%
	Retail	33	4.7%
	Food	32	4.6%
	Banking	18	2.6%
	Health and Medicine	19	2.7%
	Oil and Gas	8	1.1%
	Agriculture	5	0.7%
	Transportation	4	0.6%
	Fashion	3	0.4%
	Art	1	0.1%
	Diplomat	1	0.1%
	Immigration	1	0.1%
Working Department	Operations	257	36.7%
	Sales and Marketing	82	11.7%
	Information Technology/Engineering	273	38.9%
	Customer Service	34	4.9%
	C-Suit	14	2.0%
	HR	24	3.4%
	Academician	9	1.3%
	Medical	4	0.6%
	Musician	1	0.1%
	Designer	1	0.1%
	Diplomat	1	0.1%
	R&D	1	0.1%
Education Level	Ph.D. / Post-Doc	77	11.0%
	Master's Degree	214	30.5%
	Bachelor's Degree	392	55.9%
	Associate's Degree	3	0.4%
	High School Diploma	15	2.1%

Table 3

The technological background of the participants

Item	Variable	Respondents	Percentage
Do you have any technological certifications?	Yes	646	93.7%
	No	55	6.3%
Do you use any computer software or applications for your current role?	Yes	689	98.2%
	No	12	1.8%
Do you use any digital tools for your current role?	Yes	641	90.6%
	No	60	9.4%
Do you have working experience with any of the following technologies	AI (Artificial Intelligence)	409	58.3%
	Cloud Computing	430	61.3%
	IoT (Internet of Things)	72	10.3%
	Robots or Drones	57	8.1%
	Software Applications	581	82.9%
	4G - 5G	549	78.3%
	All of above	65	9.3%
	None of above	27	3.9%

3.4 Data Collection Tools

The online survey was used in this study to collect data from the participants using Google Forms. This questionnaire consists of 3 main sections illustrated in Figure 5. Any participant that was not employed was asked not to continue to participate in the survey; however, if they did, the designed Google Forms provided the opportunity to filter out those unfit responses from the sampling size. This questionnaire included structured questions. Additionally, it comprised brief, specific, and straightforward questions that necessitated a prompt answer from responders; also, for the responses to the related factors, the respondents answered on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

3.4.1 Section One

In this section, the demographic information from participants will be gathered by the researcher. The researcher created a set of 12 questions for this purpose. The data collected will first be used to show the demographics of the participants. Then,

the data will be analyzed to identify any relationships or correlations with the study results. This will provide a foundation for the researcher to explore this topic further.

3.4.2 Section Two

The second section of the questionnaire pertains to a newly developed scale called DLSS. It comprised six items and was created by the researcher to facilitate the measurement and evaluation of the new scale developed in this study. Because there was a gap in the literature on the Digital Leadership Skills scale, the author developed six new questions that were added to a questionnaire in alignment with the hypothesis of this study. The Cronbach's alpha of the new factor (Digital Leadership Skills scale) is 0.92, which is depicted in Table 4.

Item 1 of leadership skills, A leader's digital knowledge and the ability to comprehend digital technologies positively affect the digital transformation strategy of your enterprise. This factor aims to measure the significance of a leader's digital literacy and measure if it can affect the digital transformation strategy of an enterprise positively.

Item 2 of leadership skills, A Leader's futuristic entrepreneurial mentality and ability to clearly define and communicate the enterprise's vision to employees positively affect the digital transformation strategy of your enterprise. This factor aims to measure the significance of a leader's entrepreneurial mindset and evaluate if it can affect the digital transformation strategy of an enterprise positively.

Item 3 of leadership skills, A leader's understanding of customers' true needs and addressing them positively affect the digital transformation strategy of your enterprise. This factor aims to measure the importance of a leader's level of understanding of the true needs of the customer or consumers of an organization and assess if it can positively affect the digital transformation strategy of an enterprise.

Item 4 of leadership skills, A leader's capability to be flexible, agile, and adaptive for tackling the rapidly changing environment positively affects the digital transformation strategy of your enterprise. This factor aims to measure the significance of a leader's agile mindset and measure if it can affect the digital transformation strategy of an enterprise positively.

Item 5 of leadership skills, A leader's ability to encourage employees to experiment with new products and services, and learn from their failures, positively affects the digital transformation strategy of your enterprise. This factor aims to measure the importance of a leader's influence to encourage employees to discover

new areas and assess if it can affect the digital transformation strategy of an enterprise positively.

Item 6 of leadership skills, A leader's emotional intelligence, self-awareness, empathy, and communication skills, positively affect the digital transformation strategy of your enterprise. This factor aims to measure the impact of a leader's emotional intelligence and assess if it can affect the digital transformation strategy of an enterprise positively.

3.4.3 Section Three

In the section three, the questionnaire questions were adapted from the research study Teng et al. (2022), this section has 5 factors, namely digital transformation with 3 items, digital transformation strategy with 7 items, digital technology with 8 items, employee digital skills with 5 items, and financial performance that has 6 items. The aim of this section is to collect related data for testing the relevance of the proposed model of this study with digital transformation, and financial performance.

For the effectiveness of the research, a standardized and peer-reviewed online questionnaire was adopted from Teng et al. (2022) and because the literature review showed that the new component integrated into the model presented by Teng et al. (2022) lacked the leadership aspect, therefore this study combined Teng et al. (2022) questionnaire with the hypothesis of this study as part of the questionnaire and developed the questionnaire used for this study for the purpose of filling this gap and to be aligned with the aim of this research. This online survey questionnaire was also observed by senior Professors and advisors of Near East University as well as Senior leaders and experts in the Information Technology industry. The data collection tool that was adopted in this study was Google Forms which allowed the researchers to structure the different sections of the survey questionnaire aligned with the research design strategy and filter out the unfit responses from the pool of data sampling. The data collection for this quantitative survey was a questionnaire. The researcher breaks it into 3 main sections, demographic information, the technological background of the participants, and factors related to the research model. Then the data was collected from academicians and practitioners, as well as organizational employees who, by the time of the survey, were employed in an organization and had real-life working experience.

Figure 6

The illustration of questionnaire structure

Section 1	Demographic Information 12 Items
Section 2	Leadership Skills 6 Items
Section 3	Digital Transformation Strategy (7 Items) Employee Digital Skills (5 Items) Digital Technology (8 Items) Digital Transformation (3 Items) Financial Performance (6 Items)
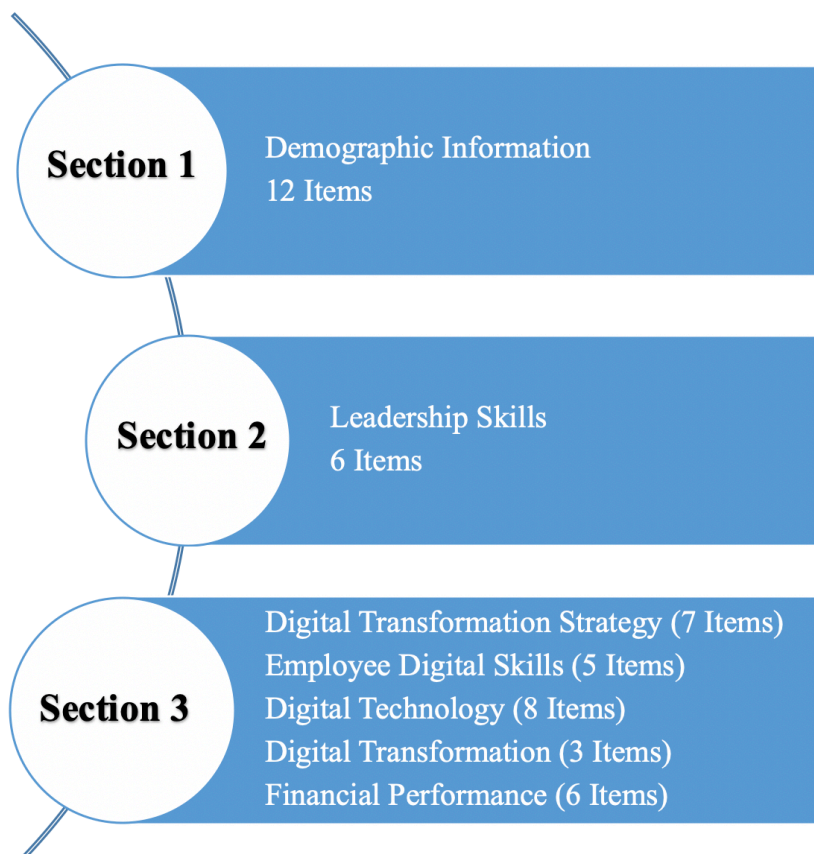
Table 4

The Cronbach's alpha for the factors in the research questionnaire

Factors	Items Quantity	Cronbach Alpha
Leadership Skills	6	0.92
Digital Transformation Strategy	7	0.92
Digital Transformation	3	0.83
Digital Skills of Employees	5	0.84
Digital Technology	8	0.79
Financial Performance	6	0.89
Total	35	0.95

3.4.4 Ethical Considerations

At every level of the research process, the ethical implications were taken into consideration when conducting this study. Before gathering data, the study questionnaire was approved by the Near East University Ethics Committee. This study was created with the ethical values of voluntary participation, guaranteeing participant safety, respecting their right to privacy and anonymity, and empowering them to make their own decisions in mind. The importance of the research and its purpose were explained to participants throughout the study. Participation in the study was voluntary, and the data collected during it was used only for academic research purposes; it may have been presented at national or international academic meetings and published. Information about study participants also has been guaranteed to remain confidential and anonymous.

3.5 Data Analysis Method

All statistical analyses of the dataset were performed using Statistical Program for Social Science (SPSS) version 24 and R Studio version 2022.02.0+443 Prairie Trillium Release for macOS with psych, foreign, and lavaan packages.

The Digital Leadership Skills Scale, which is developed by this study, is evaluated by metrics such as Content Validity, Explanatory Factor Analysis, Confirmatory Factor Analysis, Reliability, and Items analysis which are thoroughly discussed in the chapter four.

In chapter four, this study will conduct a thorough analysis of the Explanatory Factor Analysis, Confirmatory Factor Analysis, and Reliability of each of the six scales found in the newly developed scale, namely Leadership skills, Digital Transformation, Employee Digital Skills, Digital Technologies, Digital Transformation Strategy, and Financial Performance.

3.8 Data Analysis Procedures

At the beginning of the study, the relevant research was reviewed, and the features related to digital leaders' necessary skills were investigated. After the literature review, it was found that a scale for Digital Leadership Skills was not developed by the researchers yet, and there's a gap in the literature; for this reason, the author of this study developed a Digital Leadership Skills scale as a new scale to

be integrated with existing scale for organizational factors, digital transformation factor, and financial performance factor. In this context, studies carried out in the literature were analyzed, and related skills that could be used in the scale were defined. At first, a 12-item pool was created for leadership skills, considering that each skill is highly relevant to a digital leader's needed skills. The content validity of these items was both qualitatively and quantitatively performed. In the qualitative step, the 12-item trial form was evaluated by 6 information technology (IT) top-level managers who are experienced in working in the leadership roles of small, medium, and large enterprises and were knowledgeable in the subject area. To attain expert opinions, the collected data of the conducted survey was first gathered in a Google Sheet and then downloaded as a Microsoft Excel file, Microsoft Excel was used to transmit the data acquired for this study, which was then subjected to Factor Analysis by R programming language as the base of this operation, and this study used RStudio which is an Integrated Development Environment (IDE), and Statistical Program for Social Science (SPSS) that act as a set of tools to help for a more productive outcome. There are several reasons that R was chosen to be used in this study as Factor Analysis (FA) tool; one; is that R is a popular open-source statistical programming language widely used in data analysis and research. It offers a vast collection of packages for conducting factor analysis. As a summary, the steps taken are below:

Step 1. Literature was performed during the spring and summer of 2023 while writing of the thesis to comprehensively understand what models are proposed and which scales are developed.

Step 2. Thesis proposal was prepared and submitted to the Computer Information System Department for review.

Step 3. Throughout the project, I received valuable guidance from my supervisor, who remained actively engaged and offered consistent feedback on critical aspects of the work.

Step 4. The ethical committee thoroughly scrutinized the ethical standards pertaining to the research field, the questionnaire, and the privacy of the participants.

Step 5. The researcher distributed the questionnaire to 1000 individuals one by one, asking for their invaluable participation in the survey of this study using Linkedin and WhatsApp social media platforms.

Step 6. Upon collecting the data, the author utilized an array of powerful tools such as Google Sheets, Microsoft Excel, SPSS, and R programming to conduct a

thorough analysis. This approach enabled the researcher to derive highly precise results and a deep understanding of the insights embedded within the data.

Step 7. The analysis of the data was conducted using the most suitable method for the purpose, and the findings were presented in a comprehensive report.

Step 8. The supervisor was kept up to date throughout every phase of the project, and any corrections and feedback provided were carefully considered.

Step 9. The ultimate version of the thesis was presented to the Jury board, and further feedback and corrections were taken into consideration until the final thesis was approved. In Figure 6, the main steps taken for the whole research procedure are depicted in the chart.

Figure 7

Research procedure
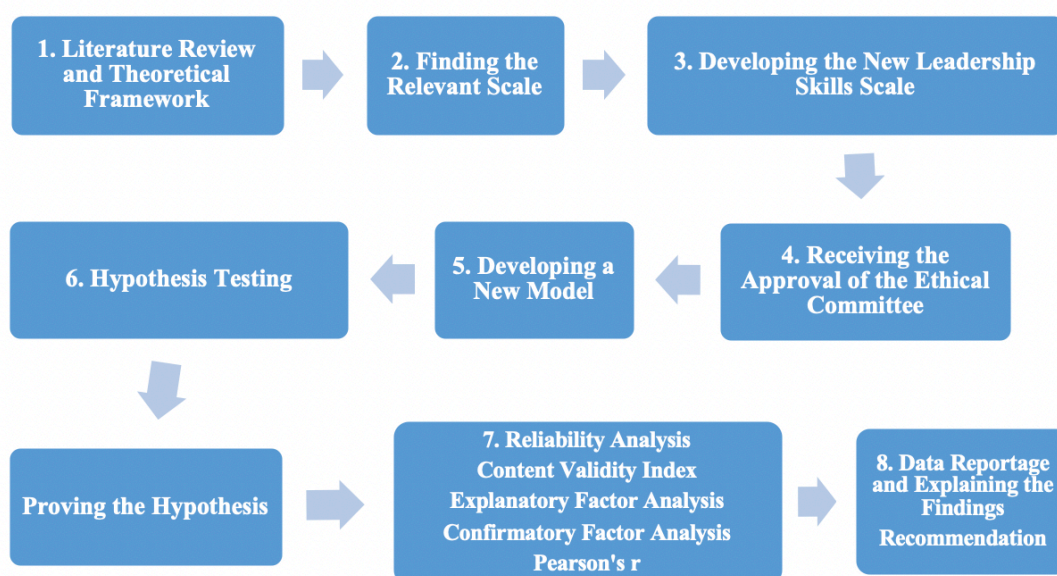
3.9 Research Schedule

Conducting research can be complex and varied, depending on the activities involved. Starting a research project can be particularly challenging. This study began in November 2022 and was completed in the spring and summer of 2023. This research has divided the schedule into different stages to understand the timeline better. Each stage was dependent on the previous one, and the groups showed how the process unfolded. Below is a depiction of each task and its duration in Table 5 and

Figure 7, outlining the actual research activities and how long each one took to complete.

Table 5

Research duration

Activity	Start	Duration (Weeks)
Literature Review	Nov-2022	28 Weeks
Theoretical Framework	Nov-2022	6 Weeks
Finding Relevant Scale and Questionnaire	Dec-2022	2 Weeks
Developing New Leadership Skills Scale	Dec-2022	2 Weeks
Get Expert Opinion	Dec-2022	1 Week
Preparing the Complete Questionnaire	Jan-2023	2 Weeks
Getting the Ethical Committee Approval	Jan-2023	7 Weeks
Data Collection	March-2023	11 Weeks
Creating a New Model	March-2023	2 Weeks
Reliability Analysis	May-2023	1 Week
Data Analysis	May-2023	2 Weeks
Data Reportage	May-2023	3 Weeks
Writing Complete Thesis	Nov-2022	28 Weeks

Figure 8

Research duration chart (Notion software was used for creating this illustration)
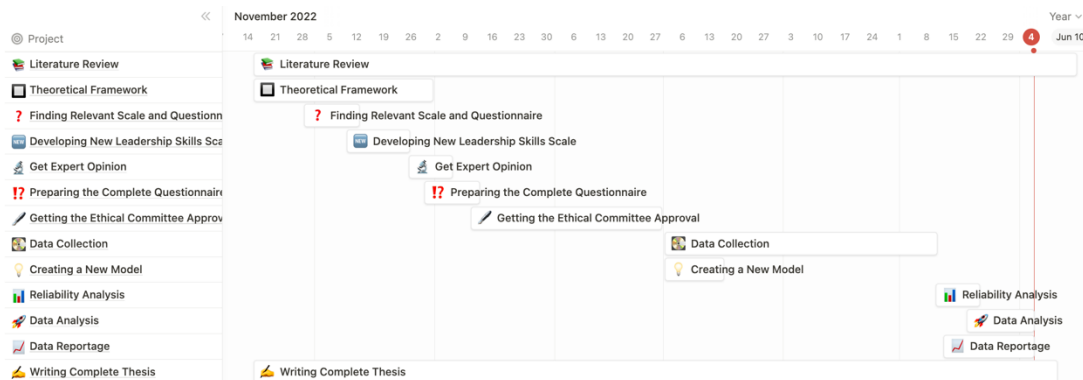
CHAPTER IV

FINDINGS

The chapter on findings in this thesis contains an in-depth analysis of the data gathered from a quantitative survey with purposive sampling. The study focused on creating a new scale called Leadership Skills Scale (DLSS) to measure the influence of Digital Leadership Skills on digital transformation and enterprise performance.

4.1 Validity and Reliability Analysis for Digital Leadership Skills Scale

The survey responses provided valuable insights into the role of Digital Leadership Skills in shaping digital transformation outcomes and organizational performance. These findings shed light on the relationship between leadership skills, digital transformation, and enterprise performance and offer practical implications for organizations looking to enhance their digital transformation efforts and overall performance. Content Validity, Explanatory Factor Analysis, Confirmatory Factor Analysis, Reliability, and Items analysis which is thoroughly discussed in the following.

4.1.1 Content Validity of the Digital Leadership Scale

At first, a 12-item pool was created for leadership skills, considering that each skill is highly relevant to a digital leader's needed skills. The content validity of these items was both qualitatively and quantitatively performed. In the qualitative step, the 12-item trial form was evaluated by 6 information technology (IT) top-level managers who are experienced in working in the leadership roles of small, medium, and large enterprises and were knowledgeable in the subject area. As a result of the expert's opinion, six items were removed.

This study has evaluated the Leadership Scale to determine its accuracy in measuring the necessary skills required for leadership in digital transformation. Our evaluation included the calculation of the Content Validity Index (CVI), which assesses the percentage of experts who consider each item on the scale to be relevant and representative of the Digital Leadership Skills being measured. The results of this study determined that the Digital Leadership Scale had an excellent level of content validity based on our calculations of CVI, I-CVI (Relevance), CVI (Simplicity), and

CVI (Clarity), which all scored 0.78. Additionally, our cutoff for Content Validity Ratio (CVR) was set at 0.99.

4.1.2 Explanatory Factor Analysis of the Digital Leadership Scale

We unequivocally analyzed the Leadership Scale's underlying factor structure using an exploratory factor analysis (EFA). Our sample size was more than sufficient for the analysis, as the Kaiser-Meyer-Olkin Measure of Sampling Adequacy reported a value of 0.908. Moreover, Bartlett's Test of Sphericity confirmed that our data were suitable for factor analysis, with an approximate chi-square value of 1420.398. The factor analysis revealed that the Leadership Scale had a one-factor scale with an initial eigenvalue of 4.244, explaining 70.729% of the total variance. Furthermore, the component matrix showed a high level of association between the items and the underlying Digital Leadership Skills construct, with factor loadings ranging from 0.801 to 0.899. And as it is depicted in Table 6, Factor Loadings and Communalities of all 6 items of the new scale are measured and illustrated.

Table 6

Items, factor loadings, and communalities for the digital leadership skills scale

Item No	Statement	Factor Loading	Communalities
1	A leader's digital knowledge and the ability to comprehend digital technologies positively affect the digital transformation strategy of your enterprise.	.801	.641
2	A Leader's futuristic entrepreneurial mentality, and ability to clearly define and communicate the enterprise's vision to employees, positively affect the digital transformation strategy of your enterprise	.899	.809
3	A leader's understanding of customer's true needs and addressing them, positively affect the digital transformation strategy of your enterprise.	.846	.715
4	A leader's capability to be flexible, agile and adaptive for tackling the rapidly changing environment, positively affect the digital transformation strategy of your enterprise.	.839	.704
5	A leader's ability to encourage employees to experiment new products and services, and learn from their failures, positively affect the digital transformation strategy of your enterprise.	.851	.725
6	A leader's emotional intelligence, self-awareness, empathy, and communication skills, positively affect the digital transformation strategy of your enterprise.	.806	.650

Figure 9

Scree plot
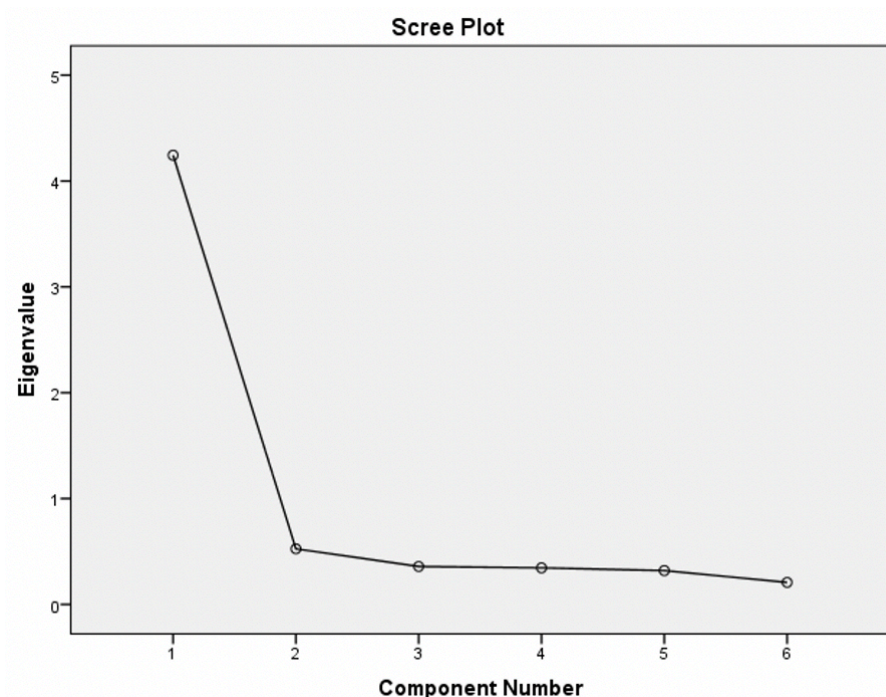
4.1.3 Confirmatory Factor Analysis of the Digital Leadership Scale

The study evaluated various model fit indices, including Chi-square ($\chi2$), Chi-square/degrees ($\chi2/df$), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Nonnormed Fit Index (NNFI) or Tucker-Lewis Index (TLI), Comparative Fit Index (CFI). All are depicted in Table 7 and show the suitable fit measures, suggesting that the proposed scale is a good fit and applicable.

Table 7

Fit indices values of confirmatory factor analysis of digital leadership skills scale

Fit Index	Value	Recommended Threshold Value	
		Good Fit	**Acceptable Fit**
$\chi2$	22.085	$0 \leq \chi2 \leq 2df$	$2df < \chi2 \leq 3df$ (df =9)
$\chi2/df$	2.453	$0 \leq \chi2/df \leq 2$	$2 < \chi2/df \leq 3$
RMSEA	0.064	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.08$
SRMR	0.018	$0 \leq SRMR \leq 0.05$	$0.05 < SRMR \leq 0.10$
TLI (NNFI)	0.985	$0.97 \leq TLI \leq 1.00$	$0.95 \leq TLI < 0.97$
CFI	0.991	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI < 0.97$

4.1.4 Reliability of the Leadership Scale

Our evaluation of the Leadership Scale's consistency was conducted through a rigorous reliability analysis. The results were indisputable, indicating an exceptionally high level of reliability with a Cronbach's Alpha coefficient of 0.917. This demonstrates that the items in the scale are not only closely related but also effectively measure leadership skills. Furthermore, the item-total statistics showed a robust correlation between each item and the overall scale. It is observed that the p-value for all items is less than ($p < 0.001$). During the reliability testing of the Digital Leadership Skills scale, it was found that removing any of the 6 items resulted in a decrease in Cronbach's alpha value. This indicates that all 6 items have a strong correlation and are necessary for the scale. Thus, it is crucial to retain all 6 items to maintain the total Cronbach's Alpha.

Table 8

Item analysis results

Item	$\bar{x}$ (s)	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	6.34 (1.162)	.713	.909
2	6.18 (1.167)	.846	.890
3	6.27 (1.107)	.770	.901
4	6.17 (1.099)	.764	.902
5	6.28 (1.085)	.778	.900
6	6.08 (1.115)	.720	.908

4.1.5 Item Analysis of the Leadership Scale

The item analysis of the Leadership Scale revealed crucial insights into the individual performance of each item. According to the scale statistics, there were six items with a mean score of 37.34540, a variance of 31.662, and a standard deviation of 5.626943. The item-total statistics presented the mean and variance of the scale if each item was eliminated, along with the corrected item-total correlations. Also, the Spearman-Brown Coefficient value is 0.896. It is significant to note that all items

contributed significantly to the scale's overall reliability, with corrected item-total correlations varying from 0.714 to 0.778.

4.2 Validity and reliability analysis for Proposed Model

The researcher's aim is to provide an in-depth understanding of the factors and how they can influence other factors, as well as to assess the consistency and stability of the scale's measurements. For the tastings in the following sections, the 701 responses were divided into two parts, n1=351 for testing the EFA and n2=350 for testing the CFA, which are discussed entirely in the following sections.

4.2.1 Explanatory Factor Analysis of Proposed Model

The Explanatory Factor Analysis (EFA) was conducted on a set of 35 items across six scales, with the aim of identifying the relationships between them and grouping them into distinct factors based on their common variance. The analysis utilized the Extraction Method of Principal Component Analysis (PCA) and the Rotation Method of Oblimin with Kaiser Normalization. The results of the EFA, as presented in Table 9, revealed that two items, item number 17 (To what extent your enterprise uses artificial intelligence) and item number 24 (To what extent your enterprise uses cybersecurity technology), did not meet the acceptable range of factor loading and they were less than 0.40. These items were removed from the study since they failed to demonstrate adequate performance during the analysis, despite being initially included under the Scale of Digital Technology. Following the removal of these two items, the scale was refined to comprise 33 items. The revised scale demonstrated satisfactory factor loadings and communalities, and the Extraction Method of PCA and the Rotation Method of Oblimin with Kaiser Normalization were utilized to derive these results.

The EFA successfully refined the original set of 35 items, resulting in a more robust scale comprising 33 items. This process allowed for a better understanding of the underlying factors within the data, thereby enhancing the reliability and validity of the scale for subsequent analyses.

Table 9

Items, factor loadings, and communalities for proposed model

Item	Statement	Factor Loading	Communalities
Leadership Skills			
1	A leader's digital knowledge and the ability to comprehend digital technologies positively affect the digital transformation strategy of your enterprise.	-0.702	0.67
2	A Leader's futuristic entrepreneurial mentality, and ability to clearly define and communicate the enterprise's vision to employees, positively affect the digital transformation strategy of your enterprise	-0.916	0.819
3	A leader's understanding of customer's true needs and addressing them, positively affect the digital transformation strategy of your enterprise.	-0.806	0.719
4	A leader's capability to be flexible, agile and adaptive for tackling the rapidly changing environment, positively affect the digital transformation strategy of your enterprise.	-0.82	0.748
5	A leader's ability to encourage employees to experiment new products and services, and learn from their failures, positively affect the digital transformation strategy of your enterprise.	-0.839	0.735
6	A leader's emotional intelligence, self-awareness, empathy, and communication skills, positively affect the digital transformation strategy of your enterprise.	-0.868	0.731
Digital Transformation			
7	Assess your organization's digital transformation maturity compared to peers	0.898	0.824
8	Assessment of the use of digital technology	0.904	0.796
9	Assess how widely your own digital technology is used	0.834	0.738
Digital Transformation Strategy			
10	Your company's digital transformation strategy can increase sales	0.645	0.681
11	Your company's digital transformation strategy can improve competitiveness	0.696	0.749
12	Your company's digital transformation strategy can fundamentally change business processes	0.883	0.699
13	Your company's digital transformation strategy can improve customer experience and satisfaction	0.843	0.775
14	Your company's digital transformation strategy can improve innovation capabilities	0.671	0.712
15	Your company's digital transformation strategy can improve business decisions	0.683	0.605
16	Your company's digital transformation strategy can improve efficiency	0.772	0.68
Digital Technology			
18	To what extent your enterprise uses blockchain technology	0.822	0.658
19	To what extent your enterprise uses cloud technologies (cloud computing, edge algorithms, cloud-edge collaboration)	0.658	0.641
20	To what extent your enterprise uses big data and data analysis	0.514	0.606
21	To what extent your enterprise uses mobile technology 4.5G-5G	0.712	0.655
22	To what extent your enterprise uses the internet of things (IoT)	0.663	0.743
23	To what extent your enterprise uses social media (collaboration technology)	0.689	0.463
Employee Digital Skills			
25	We advance continuous learning in digital technologies	0.597	0.726
26	A balance between general digital skills and specialized digital roles is adequate	0.63	0.706
27	We can assemble teams with the right mix of skills for each digital project	0.776	0.719
28	Employees are compound talents who understand both business and digitalization	0.624	0.651
29	My organization provides employees with resources or opportunities to acquire the right digital skills for digital transformation	0.745	0.716
Financial Performance			
30	Digital transformation of your business can help increase sales	0.671	0.663
31	Digital transformation of your business can help return on sales	0.627	0.606
32	Digital transformation of your business can help increase gross profit	0.69	0.659
33	Your enterprise's digital transformation can help increase net profit	0.725	0.662
34	Digital transformation of your business can help return on equity	0.651	0.787
35	Digital transformation of your business can help return on investment	0.741	0.615

4.2.2 Confirmatory Factor Analysis of Proposed Model

In the Confirmatory Factor Analysis section, the CFA was performed to verify the factor structure obtained in the EFA section. Based on the fit indices obtained as a result of CFA, it was evaluated whether the factors have a valid structure illustrated in Table 10.

Table 10

Eigenvalues and squared loadings for proposed model

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
Factor 1	12.752	38.641	38.641	12.752	38.641	38.641	9.029
Factor 2	3.710	11.243	49.884	3.710	11.243	49.884	4.744
Factor 3	2.142	6.491	56.374	2.142	6.491	56.374	4.967
Factor 4	1.814	5.496	61.870	1.814	5.496	61.870	8.254
Factor 5	1.422	4.310	66.180	1.422	4.310	66.180	2.161
Factor 6	1.116	3.382	69.562	1.116	3.382	69.562	7.948

4.2.3 Reliability of All of Proposed Model

This passage presents the findings of a study that examined six factors using a newly developed scale. These factors include Leadership skills, Digital Transformation, Employee Digital Skills, Digital Technologies, Digital Transformation Strategy, and Financial Performance. The study used Cronbach's alpha to assess the reliability of each factor, which is a commonly used measure of internal consistency. The study found that the total Cronbach's alpha for all 33 items in the scale was 0.941, indicating a high level of internal consistency. This suggests that the items within the scale are strongly related to each other and effectively measure the intended constructs. The study found that Digital Leadership Skills had a Cronbach's alpha coefficient of 0.917, indicating a high level of internal consistency. This suggests that the items related to Digital Leadership Skills reliably measure the construct and can be used to evaluate an individual's competence in this area. The factor of Digital Transformation had a Cronbach's alpha of 0.854, indicating a good level of internal consistency. This suggests that the items assessing Digital

Transformation effectively measure the intended construct and can be relied upon to evaluate an organization's level of digital transformation. The Digital Transformation Strategy factor had a Cronbach's alpha of 0.915, indicating a high level of internal consistency. This suggests that the items within this factor reliably and consistently measure an organization's digital transformation strategy. The Digital Technologies factor achieved a Cronbach's alpha of 0.781, indicating an acceptable level of internal consistency. While there may be room for improvement in terms of increasing the consistency of the items, the items assessing Digital Technologies reliably measure the construct. For Employee Digital Skills, Cronbach's alpha was found to be 0.866, indicating a high level of internal consistency. This suggests that the items assessing Employee Digital Skills reliably measure the competence of employees in digital skills and can be used to evaluate their proficiency. Lastly, the Financial Performance factor had a Cronbach's alpha of 0.908, indicating a high level of internal consistency. This suggests that the items within this factor reliably measure an organization's financial performance. All of the mentioned items are illustrated in Table 11.

In conclusion, the study found that the newly developed scale demonstrates overall high internal consistency. Except for items 17 (To what extent your enterprise uses artificial intelligence) and 24 (To what extent your enterprise uses cybersecurity technology) of the 35 original items, these two were removed due to inconsistency, leaving a total of 33 reliable items. Each factor within the scale shows good to high levels of reliability, as indicated by their respective Cronbach's alpha coefficients. These findings support the use of the scale to assess and evaluate the various factors related to digital transformation and organizational performance.

Table 11

Cronbach's alpha values for each factor

Factor	Cronbach's Alpha
Leadership skills	0.917
Digital Transformation	0.854
Digital Transformation Strategy	0.915
Digital Technologies	0.781
Employee Digital Skills	0.866
Financial Performance	0.908
Total (33 items)	0.941

Table 12

All items analysis results

Item	x̄ (s)	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Factor 1. Leadership Skills			
1	6.34 (1.162)	.551	.939
2	6.18 (1.167)	.533	.939
3	6.27 (1.107)	.545	.939
4	6.17 (1.099)	.586	.939
5	6.28 (1.085)	.578	.939
6	6.08 (1.115)	.560	.939
Factor 2. Digital Transformation			
7	5.29 (1.205)	.487	.940
8	5.34 (1.234)	.420	.940
9	5.54 (1.170)	.455	.940
Factor 3. Digital Transformation Strategy			
10	5.60 (1.067)	.632	.939
11	6.00 (1.207)	.572	.939
12	5.54 (1.145)	.504	.940
13	5.91 (1.130)	.632	.939
14	6.06 (1.182)	.572	.939
15	5.79 (1.182)	.504	.939
16	5.91 (1.197)	.643	.938
Factor 4. Digital technology			
18	2.96 (2.156)	.325	.940
19	5.31 (1.447)	.519	.940
20	5.05 (1.527)	.578	.939
21	5.73 (1.619)	.499	.940
22	4.27 (2.173)	.364	.940
23	5.60 (1.363)	.567	.939
Factor 5. Employee Digital Skills			
25	5.63 (1.253)	.700	.938
26	5.80 (1.331)	.578	.939
27	5.37 (1.394)	.650	.938
28	5.15 (1.534)	.601	.939
29	5.41 (1.513)	.663	.938
Factor 6. Financial Performance			
30	5.81 (1.090)	.695	.938
31	5.77 (1.077)	.715	.938
32	5.68 (1.078)	.689	.938
33	5.60 (1.050)	.666	.938
34	5.52 (1.180)	.671	.938
35	5.55 (1.194)	.676	.938

4.3 Hypothesis Evaluation

According to the analyzed using the Pearson Correlation Coefficient method illustrated in Table 12:

H1: Digital Leadership Skills and Organizational Factors have a statistically significant linear relationship (r=0.513, p<.001). The direction of the relationship between Digital Leadership Skills and organizational factors is positive, i.e. Digital Leadership Skills and organizational factors are statistically positively and moderately correlated.

H2: Organizational Factors and Digital Transformation have a statistically significant linear relationship (r=0.513, p<.001). The direction of the relationship between organizational factors and digital transformation is positive, i.e. Organizational factors and digital transformation are statistically positively and moderately correlated.

H3: Digital Transformation and Financial Performance have a statistically significant linear relationship (r=0.513, p<.001). The direction of the relationship between digital transformation and financial performance is positive, i.e. digital transformation and financial performance are statistically positively and moderately correlated. As the result of this study all three hypothesis are statistically proven and have positive correlation, therefore the hypothesis of this study is scientifically proven.

Table 13

Hypothesis evaluation using Pearson's r method

		Leadership Skill	Organizational Factors	Financial Performance	Digital Transformation
Leadership Skills	Pearson Correlation	1	.670**	.664**	.376**
	N	701	701	701	701
Organizational Factors	Pearson Correlation	.670**	1	.809**	.504**
	N	701	701	701	701
Financial Performance	Pearson Correlation	.664**	.809**	1	.409**
	N	701	701	701	701
Digital Transformation	Pearson Correlation	.376**	.504**	.409**	1
	N	701	701	701	701

**. Correlation is significant at the 0.01 level (2-tailed).

Table 14

Hypothesis status

No.	Hypothesis	Status
H1	Digital Leadership Skills positively influence organizational factors	Accepted
H2	Organizational factors positively influence digital transformation	Accepted
H3	Digital transformation positively influences financial performance	Accepted

In conclusion, the validity and reliability analysis of the Digital Leadership Skills Scale demonstrated compelling evidence of its effectiveness and consistency in measuring Digital Leadership Skills and their impact on digital transformation and enterprise performance. The scale exhibited high content validity, a clear factor structure, good model fit in confirmatory factor analysis and high internal consistency reliability. These findings establish a robust foundation for utilizing the Leadership Scale in future research and practical applications aimed at enhancing digital transformation efforts and overall organizational performance.

CHAPTER V

DISCUSSIONS

This chapter provides a complete and thorough overview of the results obtained from this study and a comparison with the existing literature.

5.1 Discussions

Technological advancements affect every sector, specifically businesses. These novel technological trends power businesses towards digitalization all their operations Cavus, N., Sancar, N. (2023). The literature review showed that digital transformation is crucial for the survival and competency of businesses Westerman et al. (2012), as examined by Teng et al. (2022); the relationship between digital transformation and the performance of SMEs is positively correlated, and a new scale is developed by the authors that evaluated the relationship of organizational factors, and digital transformation, also digital transformation with the financial performance of Organizations. But this study overlooked Leadership as a whole and Digital Leadership Skills as an extremely important factor that can affect organizational factors. Another study by Tigre et al. (2023) pointed out how important a leadership role is in the success of an organization. However, this study also had a different approach to proving leadership's significance and didn't develop a Digital Leadership Skills scale.

On the other hand, other researchers conducted studies to point out which Digital Leadership Skills are the most important traits in the digital era and in relevant to the digital transformation (Promsri, 2019; Klein, 2020). Therefore, this study utilized the finding their findings as a foundation for the most important Digital Leadership Skills of a digital leader.

The analysis of the data clearly highlights the crucial and indispensable role of Digital Leadership Skills in digital transformation and enterprise performance. The findings of this study reinforce the importance of effective leadership in driving successful digital transformation initiatives and align with prior research that emphasizes this critical factor. It is evident from the survey responses that Digital

Leadership Skills have a positive impact on digital transformation outcomes and overall organizational performance.

Furthermore, this study introduces the Digital Leadership Skills Scale (DLSS) as a reliable measurement tool that specifically assesses Digital Leadership Skills within the context of digital transformation. Our comparisons to similar scales or measurement instruments in previous studies demonstrate the uniqueness and advantages of the DLSS. By evaluating the psychometric properties and reliability of the DLSS, we provide researchers and practitioners with a validated instrument to assess and enhance Digital Leadership Skills in the digital transformation context.

This research not only aligns with existing literature and helps make a more comprehensive model and proposes a stronger model but also offers new insights and nuances that further enrich our understanding of the impact of Digital Leadership Skills on digital transformation and enterprise performance. By analyzing the relevant studies in the literature, we can identify consistencies, discrepancies, and gaps in the current knowledge, which in turn guide future research directions. This chapter serves as a bridge between our findings and the broader literature, highlighting the unique contributions and implications of our study while situating it within the existing body of knowledge. Also, the statistical results showed that the new scale developed by this research is reliable to be used for scientific purposes. And the statistical analysis of this study confirmed that all hypotheses were supported, and the proposed model was accepted. As a result, a new high-quality model depicted in Figure 9 was developed to fill a gap in the literature in this area.

In order to achieve successful digital transformation and optimize financial performance, it is highly recommended for organizations to utilize the organizational Digital Leadership Skills model which can be beneficial to the organizations, and thrive in today's competitive business environment.

Overall, this discussion chapter presents a comprehensive and robust examination of our findings in comparison to studies in the literature. By drawing connections to prior research, we validate our findings, emphasize their significance, and contribute to the ongoing scholarly discourse on leadership skills, digital transformation, and enterprise performance. It is clear that Digital Leadership Skills are essential for navigating the complexities of digital transformation, and our study provides valuable insights into enhancing these skills and driving successful digital transformation initiatives.

CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

This chapter presents conclusions based on the research findings according to the aims and purpose of this study and provides recommendations to researchers and practitioners accordingly.

6.1 Conclusion

Through this thesis, we have explored the relationship between leadership skills, digital transformation, and enterprise performance, filling a gap in the current literature. Our study has confirmed the vital role that Digital Leadership Skills play in driving successful digital transformation initiatives and improving organizational performance. We have compared our findings to previous studies and validated the significance of Digital Leadership Skills in the digital era.

Our analysis of the data gathered from a quantitative survey provides valuable insights into the impact of Digital Leadership Skills on digital transformation and enterprise performance. Our findings align with previous research that highlights the positive correlation between digital transformation and organizational performance. However, prior studies have often overlooked the role of Digital Leadership Skills as a crucial factor in this relationship. In contrast, our study has specifically developed the Digital Leadership Skills Scale (DLSS) to assess Digital Leadership Skills within the context of digital transformation.

By introducing the DLSS and evaluating its psychometric properties, we have provided researchers and practitioners with a reliable instrument to assess and enhance leadership skills in the digital transformation context. Our comparisons to similar scales in previous studies highlight the uniqueness and advantages of the DLSS.

Furthermore, our research contributes new insights and nuances to the existing body of knowledge. By analyzing relevant studies in the literature, we have identified consistencies, discrepancies, and gaps in the current understanding of the impact of Digital Leadership Skills on digital transformation and enterprise performance. This examination serves as a bridge between our findings and the broader literature, further enriching the understanding of this critical area. This research showed that despite the fact that the leadership is a part of organizational factors, but it can perform a vital

role as an external factor that can influence all the organizational factors and plays a crucial role in the success or failure of the organizations, regardless of their size.

This research sheds light on the impact of Digital Leadership Skills on the digital transformation and performance of Organizations. However, there are certain limitations that should be noted when interpreting the findings. Firstly, it's important to approach the results with caution as the respondents were limited to specific regions of the world where their perceptions may have been influenced by their organizational environment, salary, well-being, facilities, etc. This means that the findings may not necessarily be representative of all organizational and digital leaders. Additionally, the results may only be applicable to the countries covered by the participants. Secondly, the research had a broad industrial contribution from respondents, so the effectiveness of the findings across all sectors may vary. However, most of the respondents were experienced in the IT sector, which is a leading industry worldwide. Thirdly, the study was limited by a lack of a research budget and a small number of respondents due to the author's personal funding of the research. Finally, the study was also limited by the lack of access to a large number of industry leaders to participate in the survey, which may have affected the direction of the findings. Despite these limitations, the author believes that the study highlights the importance of digital leadership skills.

6.2 Recommendations and Future Studies

There is still much to be discovered in this area, so it is highly recommended to conduct further research using various methodologies. Specialized surveys based on the industry can aid in uncovering more information about this topic. Additionally, using the scale and model developed in this research to conduct surveys in other countries may provide new perspectives and knowledge for both academics and practitioners, further enhancing our understanding of the topic.

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APPENDICES

Appendix A: Ethical Committee Approval

NEAR EAST UNIVERSITY

SCIENTIFIC RESEARCH ETHICS COMMITTEE

06.04.2023

Dear Seyedali Aghamiri

Your application titled **"How Leadership Skills Affect the Digital Transformation Adoption and Performance of Enterprises"** with the application number NEU/AS/2023/185 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Prof. Dr. Aşkın KİRAZ

The Coordinator of the Scientific Research Ethics Committee

Appendix B: Similarity Report

MASTER THESIS
by Seyedali Aghamiri

Submission date: 20-Jun-2023 06:43PM (UTC+0300)
Submission ID: 2119753320
File name: THESIS-CONTROL.docx (7.65M)
Word count: 12334
Character count: 71331

NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF COMPUTER INFORMATION SYSTEMS

UNLEASHING THE POWER OF DIGITAL LEADERSHIP SKILLS:
MAXIMIZING ORGANIZATIONAL PERFORMANCE IN THE ERA OF
DIGITAL TRANSFORMATION

M.Sc. THESIS

Seyedali AGHAMIRI

Supervisor
Prof. Dr. Nadire Cavus

Nicosia
June, 2023

MASTER THESIS

15%	12%	7%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.mdpi.com Internet Source	3%
2	www.researchgate.net Internet Source	2%
3	docs.neu.edu.tr Internet Source	2%
4	gphjournal.org Internet Source	1%
5	Nadire Cavus, Nuriye Sancar. "The Importance of Digital Signature in Sustainable Businesses: A Scale Development Study", Sustainability, 2023 Publication	1%
6	Submitted to Asia Pacific University College of Technology and Innovation (UCTI) Student Paper	1%
7	Yue Li, Guo Zhen Fei. "Network embeddedness, digital transformation, and enterprise performance—The moderating	1%

Appendix C: Survey Questionnaire

Dear Participant,

This questionnaire aims to define your understanding and opinions of "how leadership skills affect the digital transformation adoption and performance of enterprises". You are expected to choose the answer that you feel closest to. *Please only proceed with the questionnaire if you are working in an enterprise.* The results of this questionnaire and your personal information will only be used for the analysis in the academic research report, and will not be provided to any other institution in any way. Please note that your participation in the study is voluntary and by filling in the following questionnaire you agree to participate in this study.

Thank you in advance for taking the time to answer this questionnaire.

Seyedali Aghamiri (Master's Student)
20210614@std.neu.edu.tr
Prof. Dr. Nadire Cavus (Supervisor)

SECTION 1: Demographic Information

1. Gender   a) Female   b) Male   c) Other ………………………

2. Ethnic   a) Middle Eastern b) European c) African d) Asian e)
North American
f) South American

3. Birth Year a) 1946-1964 b) 1965-1980   c) 1981-1996   d) 1997-2004

4. Years of Experience   a) 1-3   b) 4-5   c) 6-10   d) >10

5. Industry   a) Information and Communication Technology   b)
Education
c) Oil and Gas   d) Agriculture   e) Banking   f) Health and
Medical
g) Manufacturing   h) Entertainment

6. Working Department   a) Information Technology or Engineering   c)
Operations   d) HR
e) Sales and Marketing   f) Customer Service   g) Other
………………………

7. Enterprise Size   a) < 10   b) 10-50   c) 50-250   d) > 250

8. Education Level   a) Ph.D. / Post-Doc   b) Master's Degree   c)
Bachelor's Degree
d) High School Diploma

SECTION 2: Technological Background of the Participant

9. Do you have any technological certifications?   a) Yes   b) No

10. Do you use any computer application or software for your role? a) Yes   b)
No

11. Do you use any digital tools for your role?   a) Yes   b) No

12. Do you have working experience with any of the following technologies?   a) Cloud

b) Internet of Things (IoT)   c) 4G or 5G   d) Robots or Drones   e) all   f) none

Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
LEADERSHIP SKILLS							
1. A leader's digital knowledge and the ability to comprehend digital technologies, positively affect the digital transformation strategy of your enterprise.							
2. A Leader's futuristic entrepreneurial mentality, and ability to clearly define and communicate the enterprise's vision to employees, positively affect the digital transformation strategy of your enterprise.							
3. A leader's understanding of customer's true needs and addressing them, positively affect the digital transformation strategy of your enterprise.							
4. A leader's capability to be flexible, agile and adaptive for tackling the rapidly changing environment, positively affect the digital transformation strategy of your enterprise.							
5. A leader's ability to encourage employees to experiment new products and services, and learn from their failures, positively affect the digital transformation strategy of your enterprise.							
6. A leader's emotional intelligence, self-awareness, empathy, and communication skills, positively affect the digital transformation strategy of your enterprise.							
DIGITAL TRANSFORMATION							
1.Assess your organization's digital transformation maturity compared to peers							
2. Assessment of the use of digital technology							
3. Assess how widely your own digital technology is used							

DIGITAL TRANSFORMATION STRATEGY								
1. Your company's digital transformation strategy can increase sales								
2. Your company's digital transformation strategy can improve competitiveness								
3. Your company's digital transformation strategy can fundamentally change business processes								
4. Your company's digital transformation strategy can improve customer experience and satisfaction								
5. Your company's digital transformation strategy can improve innovation capabilities								
6. Your company's digital transformation strategy can improve business decisions								
7. Your company's digital transformation strategy can improve efficiency								
DIGITAL TECHNOLOGY								
1. To what extent your enterprise uses artificial intelligence								
2. To what extent your enterprise uses blockchain technology								
3. To what extent your enterprise uses cloud technologies (cloud computing, edge algorithms, cloud-edge collaboration)								
4. To what extent your enterprise uses big data and data analysis								
5. To what extent your enterprise uses mobile technology 4.5G-5G								
6. To what extent your enterprise uses the internet of things (IoT)								
7. To what extent your enterprise uses social media (collaboration technology)								
8. To what extent your enterprise uses cybersecurity technology								
EMPLOYEE DIGITAL SKILLS								
1. We advance continuous learning in digital technologies								
2. A balance between general digital skills and specialized digital roles is adequate								
3. We can assemble teams with the right mix of skills for each digital project								

4. Employees are compound talents who understand both business and digitalization							
5. My organization provides employees with resources or opportunities to acquire the right digital skills for digital transformation							
FINANCIAL PERFORMANCE							
1. Digital transformation of your business can help increase sales							
2. Digital transformation of your business can help return on sales							
3. Digital transformation of your business can help increase gross profit							
4. Your enterprise's digital transformation can help increase net profit							
5. Digital transformation of your business can help return on equity							
6. Digital transformation of your business can help return on investment							