INFORMATION AND COMMUNICATION TECHNOLOGY CAPABILITIES OF SERVICE-SECTOR SMES IN TURKEY

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INFORMATION AND COMMUNICATION TECHNOLOGY CAPABILITIES OF SERVICE-SECTOR SMES IN TURKEY

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DECLARATION OF ORIGINALITY

I, Rafet Karaoğlu, certify that

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Date 12.03.2020

ABSTRACT

Information and Communication Technology Capabilities

of Service-Sector SMEs in Turkey

Information and communication technology (ICT) adoption has been a widely researched topic in the literature, yet as information technologies evolve and penetrate business even further, an in-depth look at how digitalization process takes place has been an interesting question. In order to narrow the focus of the research, small and mid-sized enterprises (SMEs) in the service sector in Turkey were selected as population due to their critical role in the economy and great growth potential.

In the study, a theoretical model was developed with various internal and external factors that try to explain ICT utilization capabilities of firms. A survey was prepared to test the theoretical model and was shared with service-sector SMEs. Based on the data collected from 103 respondents, evidence showed that ICT utilization capabilities had a statistically significant positive correlation with innovation orientation, skilled human capital, sector dynamism and external resources. As expected, there was also a statistically significant positive correlation between firm performance and ICT utilization capabilities. The analysis also showed that as the diversity of ICT utilization increases, firms are more likely to consider these technologies essential for a wider range of their practices. On average, firms that use ICT tools in a diverse and intense manner had higher ICT utilization capabilities and better firm performance.

ÖZET

Türkiye'deki Hizmet Sektörü KOBİ'lerinin
Bilgi ve İletişim Teknolojilerine İlişkin Yetkinlikleri

Bilgi ve iletişim teknolojilerinin (BİT) kullanımı, literatürde pek çok araştırmaya konu olmuş, ancak bilgi teknolojileri gelişip işletmeleri daha derinden etkiledikçe, dijitalleşme süreçlerinin nasıl işlediği de detaylı şekilde incelemeye değer bir konu halini almıştır. Araştırmanın kapsamını belirlerken ülke ekonomisi açısından sahip oldukları kritik rol ve sundukları üstün büyüme potansiyeli göz önünde bulundurularak Türkiye'de hizmet sektöründe faaliyet gösteren küçük ve orta büyüklükteki işletmeler (KOBİ) seçilmiştir.

Araştırmada, firmaların BİT kullanma yetkinliklerini açıklamaya yardımcı olacak çeşitli iç ve dış etkenleri içeren bir teorik model geliştirilmiştir. Teorik modelin test edilmesi amacıyla hazırlanan anket hizmet sektörü KOBİ'leri ile paylaşılmıştır. 103 katılımcıdan toplanan veriler ışığında BİT kullanma yetkinlikleri ile inovasyon yönelimi, yetkin insan kaynakları, sektör dinamizmi ve harici kaynaklar arasında istatistiksel olarak anlamlı bir pozitif ilinti bulunduğu tespit edilmiştir. BİT kullanma yetkinliklerinin, şirket performansı ile de pozitif ilintili olduğu görülmüştür. Ayrıca, analiz sonucunda BİT kullanımında çeşitlilik arttıkça şirketlerin bu teknolojileri daha çok faaliyet için vazgeçilmez olarak nitelendirdiği anlaşılmıştır. BİT araçlarını daha çeşitli ve daha yoğun biçimde kullanan şirketlerin, ortalamada BİT kullanma yetkinlikleri ölçeğinde daha yüksek skorlar elde ettiği ve daha yüksek şirket performansı gösterdiği tespit edilmiştir.

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CHAPTER 1

INTRODUCTION

Today's business environment is being shaped by information and communication technologies (ICT). As people's preferences are shifting rapidly, businesses are forced to adapt and keep up. When we consider the rapid developments in technology, such as the wide availability of broadband internet access, smart devices that get progressively cheaper and more capable with each iteration, and consequently, the ubiquitous nature of modern communication opportunities, it can be said that ICT are more present in our lives than ever. Naturally, the effects of this presence go beyond just users and consumers. It fundamentally affects the way businesses carry out their operations.

In this environment, ICT emerge as a requirement for businesses and the question of ICT usage becomes a matter of "how much" rather than "whether or not." Of course, even after the merits of ICT are widely accepted, there remain many lingering questions: Which technologies have widespread use? Which operations rely on ICT? What are the factors that determine the usage of ICT? What are the characteristics of businesses that can effectively utilize ICT? Which areas should businesses focus on to increase the benefits they receive from ICT?

This thesis aims to investigate these questions and provide answers. In order to approach the issues at hand from a specific angle and to narrow down the focus, small and medium sized enterprises (SMEs) operating in the service sector in Turkey were selected as the subject of the research. SMEs were selected because they represent interesting predicaments in terms of the choices they face in their decision-making

processes. Due to their limited resources compared to larger enterprises, SMEs are usually forced to adopt a more conservative approach in terms of the investments they make and the activities they focus on. However, despite the challenges they face, they still account for a huge portion of Turkey's economy, meaning that any gains in efficiency can directly contribute to the country's progress and development. Within the SMEs, the scope of the research was restricted to the service sector. Similarly, the service sector accounts for a huge portion of the economy. It also presents certain challenges to firms as they try to allocate their resources to technologies that best support their activities. Compared to manufacturing, where the outcomes and advantages are usually clearly visible thanks to tangible data, it is harder for the service sector to immediately determine the advantages of certain tools and approaches over others.

Therefore, keeping in mind the challenges faced by service-sector SMEs as they try to increase their ICT capabilities, which become ever more essential in the fast-paced, always online world we live in, the goal of this thesis is twofold:

(1) To offer an updated overview of service-sector SMEs in Turkey and their pursuit of ICT adoption and digitalization through an analysis of their ICT utilization capabilities.

(2) To present a roadmap for service-sector firms planning to integrate ICT more thoroughly into their processes.

A survey was conducted to better understand the current factors that influence ICT adoption characteristics of service-sector SMEs in Turkey. Looking at various internal and external factors that contribute to ICT utilization capabilities of firms, it is

hypothesized that a higher capacity of ICT utilization will lead to better firm performance.

In Chapter 2, the existing literature that contributed to this study will be presented. In Chapter 3, the theoretical model and the hypotheses will be explained. In Chapter 4, the research methodology will be laid out. In Chapter 5, the findings of the study will be shared and in Chapter 6, the results will be discussed.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview of information and communication technologies (ICT)

ICT refer to a diverse set of technological tools and resources used to collect, process, store, or exchange information in a digital format. Their rapid development in the recent years have made them crucial for companies, organizations and even countries in terms of achieving economic growth and increased competitiveness (Tarute & Gatautis, 2014).

At macroeconomic level, in their study comparing productivity growth (measured as GDP per hour of work) between the United States (US) and the European Union (EU) Ark, O'Mahony, and Timmer (2008) highlight that while the US enjoyed accelerated growth between 1995 and 2006 compared to preceding two decades, the overall growth in the 15 EU countries decelerated in the same period. The researchers attribute this difference to two keys factors: high levels of investment in information and communication technologies in the second half of the 1990s and the rapid growth in the market services sector in the first half of the 2000s. Thus, their study serves as a reference point for the significance of ICT and the service sector as drivers of economic growth. Similarly, in their analysis of the G20 countries, Pradhan, Mallik, and Bagchi (2018) cite a positive association between the development of ICT infrastructure and economic growth. Furthermore, Niebel (2018) remarks that ICT contributes to growth not only in developed countries but also in developing and emerging markets, signifying ICT's role as a driver of growth at macroeconomic level irrespective of the development level of the countries.

Moving on to a smaller scale, at firm level, the existing literature also champions ICT usage. Prajogo, et al. (2018) discuss how information technology pushes information management capabilities of firms to unprecedent levels, which lead to better process management and better operational performance. Ollo-Lopez and Aramendia-Muneta (2012) suggest that the use of these technologies offer advantages to firms when it comes to innovating and increasing their competitiveness through new products and services as well as by improving their existing processes. In a study conducted in Switzerland, Arvanitis (2005) presents evidence of positive correlation between ICT and firm efficiency and firm performance. He also posits a "complimentary effect" between ICT and human capital, meaning that combined emphasis on these two factors lead to further improvement of firm performance that go beyond the individual effects of each one. Lee, Chu, and Tseng (2011) offer a model interconnecting ICT adoption, business process reorganization, and firm performance. They also conclude that ICT adoption facilitates the optimization of business processes, which in turn leads to improved corporate firm performance.

Ultimately, these studies indicate a strong positive connection between ICT usage and operational and financial performance of firms. Furthermore, this connection is also supported by studies that highlight ICT's transformative influence on intangible and intermediate measures of performance (Brynjolfsson & Hitt, 2000; Melville, Kraemer, & Gurbaxani, 2004). Therefore, it is not a stretch to assume that as the availability of ICT increases, they will continue to be essential for firms that would like to protect and extend their competitive advantage.

2.2 Digital divide

First introduced through the reports of US Department of Commerce in the 1990s comparing rural and urban regions, the "Digital Divide" has become a frequently referred concept in the literature. A useful definition of this concept is provided by the Organisation for Economic Co-operation and Development (OECD), which defines it as "the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities," (OECD, 2001). As the technology evolves, the discussion on the digital divide follows suit. The debate that used to revolve around "haves" and "have nots" has extended to "can" and "cannots" since those who can utilize ICT better than others set themselves apart (Zheng, 2009) creating a divide between businesses based on their capabilities.

Describing digital divide as a question of access, Dijk and Hacker (2003) distinguish four different types of barriers:

1. Lack of elementary digital experience caused by lack of interest, computer anxiety, and unattractiveness of the new technology ("mental access").
2. No possession of computers and network connections ("material access").
3. Lack of digital skills caused by insufficient user-friendliness and inadequate education or social support ("skills access").
4. Lack of significant usage opportunities ("usage access").

The researchers explain that these access problems gradually shift from the first two items to the latter two while also highlighting the dynamic and complex nature of the issue. Indeed, the questions of skills and usage access are more interesting when discussing digitalization tendencies of firms. Arendt (2008) points out that there is a

substantial gap between smaller firms and larger corporations especially in terms of utilization of ICT potential. This gap broadens as the applications get more complex, further supporting the notion that the issue goes beyond a material access limitation. He cites the lack of knowledge and skills, i.e. a well-trained human capital, as the biggest cause of the digital divide between smaller firms and bigger corporations.

Clearly, smaller firms face much different challenges and deserve a dedicated focus to help bridge the inevitable divide that exists between them and the larger corporations (Alam & Noor, 2009). They need ICT to remain competitive, yet they also need to know how to allocate their resources in a way that enables them to utilize their existing potential to the fullest.

2.3 Small and medium sized enterprises (SMEs)

At this point, SMEs stand out as a critical topic of research. There is a plethora of studies concerning SMEs and ICT adoption and deservedly so. SMEs are the drivers of economy all around the world. In emerging economies, they represent 45% of total employment and 33% of GDP; however, these values only refer to registered and formal enterprises. When informal businesses are taken into account, they are estimated to account for more than half of the total employment and GDP in most countries (Teima, et al. 2010). In the OECD area, SMEs account for approximately 99% of all firms and for 70% of total employment, while being responsible for 50% to 60% of added value generation (OECD, 2017). As the development level of the countries increases, these contributions go further up signifying the role of SMEs as the growth engines of economies. In a comprehensive study assessing 27 EU member states, as well as 10

other countries that are involved in the Competitiveness and Innovation Framework Programme (CIP) of the European Commission, de Kok et al. (2011) assert that SMEs account for 85% of total employment growth in the non-financial business economy in the EU for the period between the years 2002 and 2010. More recent data from EU also yield similar results as SMEs account for 66.7% of the employment in the non-financial business economy and are responsible for 56.2% of the total value added (Eurostat, 2019).

As seen in Figure 1, the data for Turkey is very close to OECD and EU averages. According to Turkish Statistical Institute's (TurkStat) data from 2016, SMEs account for 73.5% of the employment and 62% of the total turnover in the Turkish economy. Their significance for Turkey is also clear in the foreign trade statistics, where they account for 55.1% of the exports.

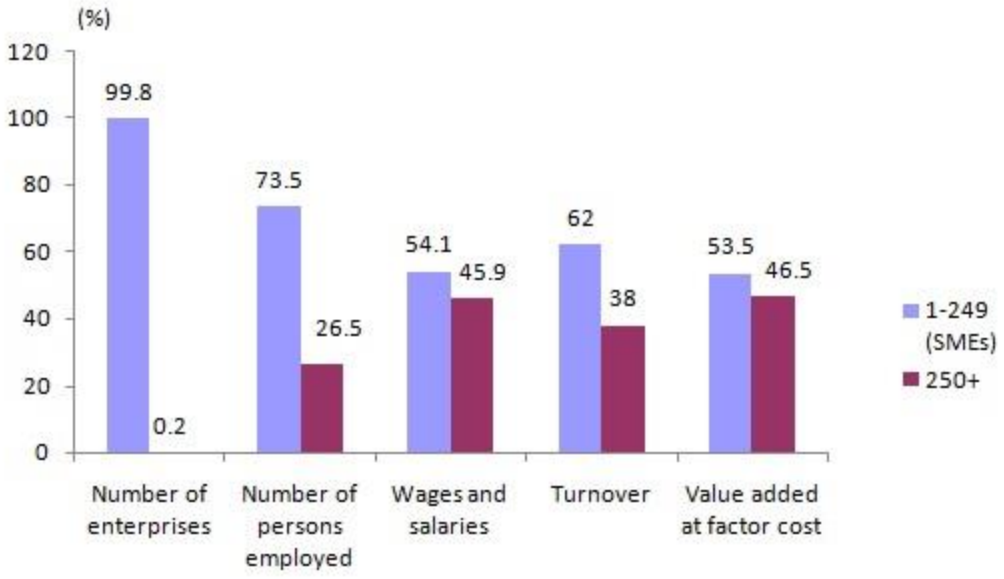

Figure 1. SME statistics for Turkey (TurkStat, 2016)

Figure 2 illustrates more recent data from TurkStat, which point to widespread computer and internet access, while ownership of websites (including social media accounts) indicate an upwards trend in the period between the years 2011 and 2019. However, when enterprises that attempted to recruit a dedicated ICT specialist were questioned regarding this endeavor, nearly half of them (47.3%) expressed that they faced difficulties while doing so. These findings are consistent with the abovementioned research, suggesting that firms are facing skills access problems rather than material access ones. Thus, the question of how well firms can utilize the technologies available to them emerges as a relevant issue in Turkish SMEs.

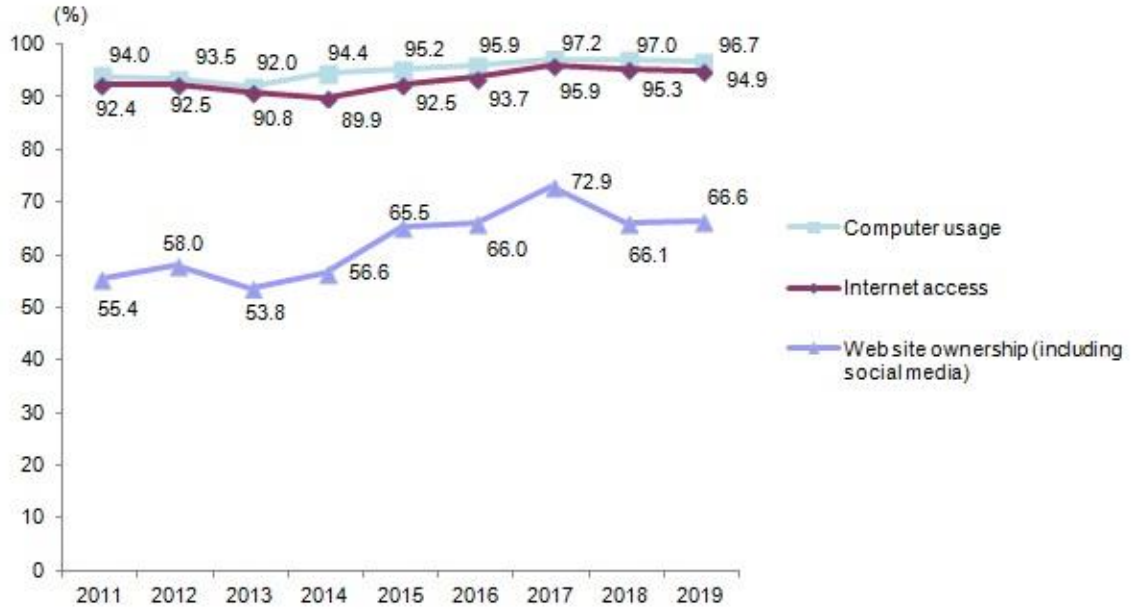

Figure 2. Computer, internet and website use of Turkish SMEs (TurkStat, 2019)

Academic research on the topic also offer valuable insights regarding the situation in Turkey. In a longitudinal study conducted with Turkish SMEs, Kutlu and Özturan (2008) point out that ICT are mostly used for routine tasks, yet their longitudinal findings highlight an increase in the ICT adoption with more sophisticated applications and more ICT personnel. A study by Mardikyan (2010) analyzes the ICT usage of Turkish SMEs in Istanbul and concludes that the companies are aware of the importance of ICT and they mostly focus on functional applications that help them save time and increase their operational efficiency. She also cites the specific fields that companies operate in as a determinant of the ICT usage. Meanwhile, Ozcan (2017) cites a positive relationship between ICT and Turkey's import and export volumes and recommends strategic trade partnerships with countries that has achieved high levels of ICT development.

On the other hand, there is also research on the shortcomings of the Turkish SMEs especially in the context of innovation. In their study investigating competitive intelligence and information technology adoption among Turkish SMEs, Wright, Bisson and Duffy (2013) describe Turkish firms as followers, rather than innovators. They highlight a dependence on specific knowledgeable individuals and cite a lack of reliance on processes and procedures for knowledge management (KM). Indeed, the absence of effective knowledge management approaches comes up in the literature, as Bozbura (2007) concludes that senior managers in Turkish SMEs do not emphasize knowledge flow and even place barriers in an attempt to prevent the outflow of knowledge from their companies. Demirbaş, Hussain and Matlay (2011) offer additional insight on the barriers to innovation experienced by owner-managers in Turkish SMEs. They point out

new technology, high cost of innovation and lack of qualified personnel as the factors hindering the owner-managers' propensity to innovate. In a study conducted with data from Turkish hospitality industry, Durmusoglu et al. (2018) also report that internal barriers such as limited resources, poor employee skills and inadequate training serve as negative influences on firm innovativeness. However, they also point out that transformative leadership may be useful to tackle such negative factors and to decrease their effects.

To sum up, the literature is clear on the significance of SMEs for the overall development of a country. They are the drivers of economic growth and employment. However, the existing research on Turkish SMEs paint a complex picture. Although there is a progression towards more sophisticated ICT applications, they face internal and external barriers to innovation and their deficiencies in knowledge management reduces them to the status of followers rather than innovators. The literature also provides evidence which suggests that Turkish SMEs face barriers related to problems of skills access, making their shortcomings relevant to be analyzed from a digital divide perspective.

2.4 Classification of ICT usage tiers

It would be then helpful to get an understanding of where firms stand in terms of their ICT usage level. The literature presents examples for the use of taxonomies to classify and categorize various groupings of technology strategies (Hung, Liu, & Chang 2003). A straightforward and easily adaptable approach is employed by Cerchione and Esposito (2016). Approaching the issue from a knowledge management (KM) perspective, they

analyze firms according to the KM tools they use as well as the KM practices they utilize those tools in. Combined, these two metrics, namely “differentiation of tools” and “intensity of use” are used to classify firms into four distinct categories: guideposts, exploiters, explorers, and latecomers. Those that use a variety of different tools for a diverse set of applications are the guideposts, those that use a limited set of tools for many different applications are considered exploiters, those that use many different tools for only few applications are the explorers and those that lack in both areas are regarded as latecomers. The researches highlight a reciprocity between their two metrics and point out that one reinforces the other and vice versa.

The same approach can be adapted for ICT utilization of firms. Those that use a wide range of ICT tools and deem these essential for a wide selection of their operations can be classified as guideposts. If the data shows that such firms perform better compared to the others, they can serve as an example to the rest of the industry to explore more diverse and intense utilization of ICT.

CHAPTER 3

THEORETICAL MODEL AND HYPOTHESIS DEVELOPMENT

3.1 Overview of the theoretical model

Having established the significance of ICT for firms, this study aims to further investigate the factors that affect how these technologies are utilized. Although the link between ICT usage and firm performance is well-established as discussed in the previous chapter, it is also critical to pinpoint various influences that govern the capabilities of firms.

It is possible to approach such factors under two main categories; namely as internal and external factors. These factors constitute the independent variables of the model. Internal factors deal with inherent attributes of companies. Existing studies highlight a link between and innovation oriented corporate culture and increased employee performance (Altındağ & Kösedağı, 2015). Similarly, Lee, Chu, and Tseng (2009) cite organizational innovation as one of the components that positively affect technology adoption. The scale “Innovation Orientation” aims to measure such effects.

Another critical internal factor is the skill level of the employees, which is measured with the scale “Skilled Human Capital” as firms with well-educated and skilled personnel appear to be in an advantageous position when it comes to adopting new technologies (Giotopoulos et al., 2017).

External factors focus on the outside forces that influence the firms. Although the subjects in this study are all from the service sector, there will surely be considerable variations between how dynamic the specific field they operate in can be. Not all fields

require constant innovation to keep up with the latest trends and innovations that disrupt a sector occur at different times. Past studies point towards a link between external pressure and ICT adoption (Lee et al., 2009). The scale “Sector Dynamism” deals with such effects.

Finally, the scale “External Resources” focuses on outside funding and support the companies may procure particularly in relation to ICT. As Li, Su, Zhang, and Mao (2017) have demonstrated, external partnerships can be beneficial for achieving success with ICT related undertakings, particularly in developing economies such as Turkey.

Instead of connecting these independent variables directly to the dependent variable, which in this case is the firm performance, an intermediary variable was introduced in the model. This variable measures the ICT utilization capabilities of the businesses, which determine how they leverage such proficiencies to boost their commercial performance. As previously discussed in the literature review, the modern-day question of ICT adoption is not a matter of if, but a matter of how much. How well-equipped a firm is in terms of utilizing, i.e. leveraging, the ICT tools at its disposal is a critical point that warrants a dedicated scale to investigate.

A visual representation of the theoretical model can be seen in Figure 3.

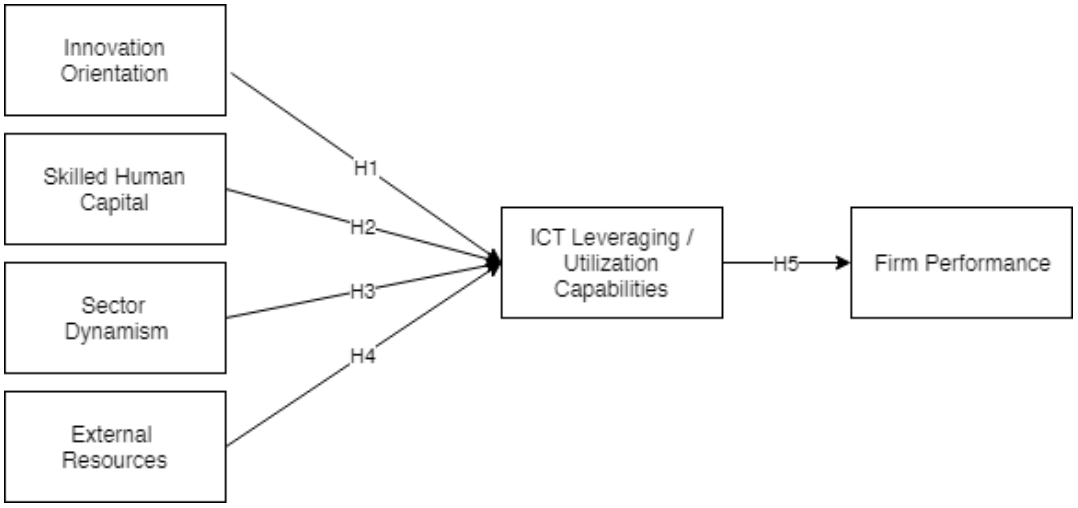

Figure 3. Theoretical model

3.2 Hypothesis development

Alongside the theoretical model outlined, hypotheses were developed to illustrate how these variables interacted with each other. The existing literature served as the basis for the expected outcomes. The internal and external factors influencing the firm performance were taken as the independent variables, ICT utilization capabilities was taken as the intermediary variable and the firm performance was taken as the dependent variable. A positive correlation was expected between all of these variables.

H1: ICT Utilization capabilities are positively associated with innovation orientation. Innovation orientation is a widely researched concept in the literature with varying definitions. Hult et al. (2004) define it as “the capacity to introduce new processes, products or ideas in the organization” and establish a clear positive relationship between innovativeness and business performance.

Siguaw, Simpson, and Enz (2006) offer an extensive review of the existing literature on innovation orientation and offer an overarching framework for this concept. One of the propositions they put forward is that the firms with a strong innovation orientation are more likely to develop and deploy new technologies to stimulate and sustain innovation. Based on this notion, it would be natural to expect organizations that emphasize innovation to be better equipped to leverage any advantages offered by ICT usage.

H2: ICT utilization capabilities are positively associated with skilled human capital.

Human capital has always been instrumental to the success of businesses and the rise of ICT has not diminished this. In fact, in their firm-level analysis Bresnahan, Brynjolfsson, and Hitt (1999) suggests a correlation between ICT use and skilled human capital. Their data indicates an increased demand for a skilled and educated workforce. As information systems become widespread, employees with a new set of skills are sought by the business to be able to operate these systems to their full potential. They need to be able to interpret the data that is presented to them by computers and convert these into useful information to serve their organization's goals. Bresnahan et al. discuss this phenomenon as an "information overload" bottleneck: there have been revolutionary leaps in the processing capacity of information systems, yet the amount of information that can be processed by the human mind can remained stagnant in comparison. Therefore, firms with skilled human capital are expected to leverage ICT better. Indeed, the opposite also holds true according to the literature, since the lack of high-skilled

technology workers is discussed as a limiting factor for the success of ICT innovations (Samoilenko & Ngwenyama, 2011).

Furthermore, based on a study conducted with data from German firms, Hempell (2003) reports a correlation between the demand for ICT and the demand for firm-paid training, meaning ICT incentivizes the businesses to train their employees. In addition, firms that employ a high percentage of university graduates and that invest heavily in ICT enjoyed the highest levels of productivity increase, further highlighting the positive relationship that is expected between, skilled human capital, ICT, and firm performance.

H3: ICT utilization capabilities are positively associated with sector dynamism.

According to the literature, sector dynamism is a composite factor that is made of various components: market pressure, competition intensity, and complexity of industry environment (Lee et al., 2011). Although this study focuses on service-sector SMEs, the firms are subject to varying degrees external pressures depending on their particular field. For example, firms that operate under constant environmental pressure, such as shifting customer demands, stiff competition from rival firms, ongoing technical innovations that disrupt the existing processes, etc. will surely be forced improve their capabilities to avoid lagging behind. On the other hand, firms that are active in fields where the preferences of the customers are not flexible and the technological advancements are relatively stagnant would be less incentivized to invest in ICT. Indeed, past studies demonstrate that a dynamic environment appears to be positively correlated with ICT adoption (Lee et al., 2011) as well as with ICT utilization competencies (Neirotti, Elisabetta, & Paolucci, 2018).

H4: ICT utilization capabilities are positively associated with external resources.

Another critical factor that is crucial for businesses is the amount of resources available at their disposal. Naturally, abundance of resources would be desirable for any organization under any circumstances, yet in this case, the focus is on the external resources. Similar to the case discussed under sector dynamism, all industries are not equal. Some businesses and projects attract a lot more interest from funders. Mature industries with limited room for rapid growth are described as low munificent, whereas industries with high munificence are the ones that have not exhausted their growth opportunities (Stoel & Muhanna, 2009). The latter are expected to present the firms with a wider availability of resources.

In Turkey, there are a few public institutions that are directly responsible for providing funding to businesses that come up with innovative projects. One of them, Ministry of Industry and Technology's Small Industry Development Center (KOSGEB) promotes entrepreneurship and offers grants to SMEs for their R&D and innovation projects. Similarly, Turkey's leading scientific research agency Scientific and Technological Research Council of Turkey (TÜBİTAK) also has a dedicated program to help SMEs with their R&D Projects through grants. Such public backing is seen quite essential and advocated for developing economies (Manochehri, Al-Esmail, & Ashrafi, 2012).

In addition to one sided support that can be provided through public policies and agencies, cooperation opportunities between the actors of the industry can be considered an aspect of environmental munificence. Digital platforms (Li et al., 2017) and inter-organizational (open) innovation processes (Scuotto, Santoro, Bresciani, & Del Giudice,

2017) lead to better performance. As Neirotti et al. (2018) also report a significant and positive relationship between environmental munificence and ICT utilization competencies, a positive correlation is expected between these two variables.

H5: Firm performance is positively associated with ICT utilization capabilities.

Finally, a positive correlation is expected between firm performance and ICT utilization capabilities. Establishing a clear link between ICT and firm performance has been an ongoing goal for past research. In their survey of the empirical evidence in the literature Dedrick, Gurbaxani, and Kraemer (2003) cite many studies that associate ICT investments and productivity growth. Strong evidence is offered by Santhanam and Hartono (2003) who report that the average profit ratio of firms with superior ICT capabilities are higher than others.

Moving on to SMEs, Barba-Sanchez, Martinez-Ruiz, and Jimenez-Zarco (2007) offer a literature review on the drivers and benefits of ICT adoption in SMEs and conclude that they may offer various benefits including enhanced productivity, increased efficiency, access to new environments, new organizational models. Similarly, in an SME context, Saarenketo, Puumalainen, Kyläheiko, and Jantunen (2011) highlight the parallels between technological capabilities of firms and their performance.

In light of the body of work in the literature linking ICT adoption and capabilities to improved performance, a similar outcome is predicted for Turkish SMEs as well.

CHAPTER 4

RESEARCH METHODOLOGY

This chapter discusses the research design, components of the questionnaire and data collection methodology used in the study to test the hypotheses that were outlined in the previous chapter.

4.1 Research design

In order to test the hypotheses of the theoretical model, a questionnaire was developed using Google Forms. For each variable in the theoretical model, multi-item scales containing six to seven items each were constructed and they were presented in the questionnaire with a 5-point Likert Scale ranging between “Strongly Disagree” and “Strongly Agree”. The questions and scale items were derived from past studies that were using similar scales (Calantone, Cavusgil, & Zhao, 2002; Joshi & Campbell, 2003; Ravichandran & Lertwongsatien, 2005; Manochehri et al., 2012; Calik, Calisir, & Cetinguc, 2017). They were finalized in consultation with the thesis advisor. The items were initially prepared in English and then translated into Turkish considering the target audience of the study.

4.2 Questionnaire components

Firstly, the respondents were asked to provide their specific field in the service sector and the size of their company based on their number of employees. They were categorized under four distinct groups according to their size: Micro enterprises (1-9

employees), small enterprises (10-50 employees), and two groups of mid-sized enterprises (50-100 employees and over 100 employees).

A definition of the information and communication technologies (ICT) was provided and the respondents were asked whether or not they utilized ICT in their operations. Those who responded positively were presented with specific questions and statements that apply to ICT usage such as the types of technologies they utilized, the activities that these technologies were used for and the percentage of ICT related spending. Scale items that specifically addressed ICT usage were only shown to those who have stated that they employed ICT in their operations. This way, SMEs that did not use ICT were prevented from providing irrelevant answers to issues they were unfamiliar with.

Those that did not report ICT utilization were only shown items that did not address these technologies. These more general items, including the ones dealing with sector dynamism, external resources and firm performance were shown to all respondents. The entire questionnaire (English and Turkish) can be found in the Appendices.

4.3 Data collection and preparation

The data was collected over a period of eight months between April 2019 and November 2019. Convenience sampling was used to reach out as many participants as possible that fit the two criteria of the study: SMEs in the service sector. Mails were sent to 793 businesses operating in various fields of the service sector, including tourism agencies, advertising agencies, insurance agencies, translation companies, software development

companies, consultancy firms, etc. In addition, the questionnaire link was shared on social media platforms such as LinkedIn and ekşisözlük to further boost the number of respondents.

In total 129 responses were collected. These were examined and cleared up before moving on the next stage. The respondents who reported to be in manufacturing sector were removed from the scope of the analysis as the study aims to deal with the service sector exclusively. Two questionnaires were removed as the respondent marked the same option for all questions, putting the legitimacy of these responses in question. Finally, the respondents that reportedly did not utilize ICT in their operations were not included for hypothesis testing to keep the focus of the study on ICT utilization capabilities of firms.

Therefore, out of the 129 total responses, after unreliable and non-service-sector questionnaires were removed, 118 responses were considered valid. Out of these 118 responses, 103 have reported that they utilize ICT in their operations (87.3%) and they constituted the sample of the study.

CHAPTER 5

ANALYSIS OF FINDINGS

This chapter lays out the findings of the study. First, the descriptive statistics regarding the data set will be shared. Then the reliability analysis of the multi-item scales will be presented and finally the test results of the hypotheses will be given. IBM SPSS Statistics Software was used to carry out the analyses in the study.

5.1 Descriptive statistics

Aforementioned 103 respondents constituted the sample of the study after non-valid responses and firms that reportedly do not utilize ICT in their operations were removed. The categorical breakdown of the businesses revealed language & translation (20.4%), IT (14.6%), consultancy (11.7%), finance & insurance (10.7%) and media & advertisement (10.7%) as the service-sector categories with the highest proportion of representation in the sample. A detailed breakdown of all valid respondents can be seen in Table 1.

Table 1. Categorical Breakdown of the Sample

Categories	Number	Percentage
Language & Translation	21	20.4%
IT	15	14.6%
Consultancy	12	11.7%
Finance & Insurance	11	10.7%
Media & Advertisement	11	10.7%
Food Service	7	6.8%
Tourism	6	5.8%
Education	5	4.9%
Other (Energy, Logistics, Engineering Services, etc.)	15	14.6%
Total (n)	103	100.0%

The respondents were asked to share the number of full-time employees in their organization as a measurement of company size. The sample predominantly featured micro and small enterprises. As seen in Table 2, the findings regarding size revealed that micro enterprises (less than 10 full-time employees) constituted the majority of the sample with 51.5% (n=53). These were followed by small enterprises (between 10 to 50 full-time employees) with 35.9% (n=37). For data collection, mid-sized enterprises were divided into two groups (between 50 to 100 full-time employees and more than 100 full-times employees) and these made up 5.8% (n=6) and 6.8% (n=7) of the total sample respectively. Considering their relatively low numbers, for further analysis, they were combined and evaluated as a single group.

Table 2. Size Breakdown of the Sample

Size	Number	Percentage
Micro (<10 Employees)	53	51.5%
Small (10 - 50 Employees)	37	35.9%
Mid-Sized 1 (50-100 Employees)	6	5.8%
Mid-Sized 2 (>100 Employees)	7	6.8%

One of the questions posed to respondents that replied positively to ICT usage in their operations was the portion of their annual budget they allocated to ICT related spending. Computers, web hosting, information security costs as well as expenses related to IT personnel were provided as exemplary ICT related spending. As seen in Table 3, those that reported their ICT spending to be less than 10% of their total annual budget were the biggest group with 38.8% (n=40) followed closely by those that had 10-20% ICT spending in their annual budget with 36.9% (n=38). Firms with 20-40% ICT spending in their annual budget constituted 15.5% (n=16) of the sample while those who spend over 40% of their annual budget for ICT related expenses were the smallest group with only 8.7% (n=9). Therefore, it can be said that ICT related spending was not a priority for the majority of the firms in the sample.

Table 3. ICT Spending Breakdown of the Sample

ICT Spending in Annual Budget	Number	Percentage
Less than 10%	40	38.8%
10 - 20%	38	36.9%
20 - 40%	16	15.5%
More than 40%	9	8.7%

In order to see how size and ICT spending relates to ICT utilization and firm performance. One-way ANOVA analyses were performed, comparing the mean ICT utilization and firm performance scores of the firms in each of these categories. As seen in Table 4, there was no statistically significant difference between three groups of firms based on their size (micro, small and mid-sized) in terms of ICT utilization ($p = 0.892$) and firm performance ($p = 0.341$).

Table 4. Size and ICT Utilization & Firm Performance

Descriptives						
						95% Confidence Interval for Mean
	Firm Size	N	Mean	Std. Deviation	Std. Error	Lower Bound
ICT Utilization Capabilities	Micro	53	4.3333	.74679	.10258	4.1275
	Small	37	4.3514	.61837	.10166	4.1452
	Mid-Sized	13	4.4615	.50987	.14141	4.1534
	Total	103	4.3560	.67198	.06621	4.2247
Firm Performance	Micro	53	3.8711	.71734	.09853	3.6733
	Small	37	4.0766	.58741	.09657	3.8807
	Mid-Sized	13	3.9103	.59557	.16518	3.5504
	Total	103	3.9498	.65962	.06499	3.8209

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
ICT Utilization Capabilities	Between Groups	.173	2	.086	.188	.829
	Within Groups	45.885	100	.459		
	Total	46.058	102			
Firm Performance	Between Groups	.944	2	.472	1.086	.341
	Within Groups	43.436	100	.434		
	Total	44.380	102			

On the other hand, as seen in Table 5, there is a statistically significant difference between four groups of firms categorized based on their ICT spending. Expectedly, those that allocate a bigger portion of their budget to ICT also perform better when it comes to ICT utilization ($p = 0.025$). However, it is worth nothing that higher ICT spending does not automatically mean better firm performance as there is no statistically significant relationship between firm performance and ICT spending ($p = 0.827$).

Table 5. ICT Spending and ICT Utilization & Firm Performance

Descriptives						
	ICT Spending in Annual Budget	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
						Lower Bound
ICT Utilization Capabilities	Below 10%	40	4.1417	.80556	.12737	3.8840
	10-20%	38	4.4079	.49577	.08043	4.2449
	20-40%	16	4.5208	.69088	.17272	4.1527
	Above 40%	9	4.7963	.21695	.07232	4.6295
	Total	103	4.3560	.67198	.06621	4.2247
Firm Performance	Below 10%	40	3.8833	.77460	.12247	3.6356
	10-20%	38	4.0219	.57235	.09285	3.8338
	20-40%	16	3.9688	.53479	.13370	3.6838
	Above 40%	9	3.9074	.72222	.24074	3.3523
	Total	103	3.9498	.65962	.06499	3.8209

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
ICT Utilization Capabilities	Between Groups	4.119	3	1.373	3.241	.025
	Within Groups	41.939	99	.424		
	Total	46.058	102			
Firm Performance	Between Groups	.396	3	.132	.297	.827
	Within Groups	43.983	99	.444		
	Total	44.380	102			

5.2 Technologies used and essential practices

SMEs that reported ICT use in their operations were also asked to select which specific technologies or tools they employed as well as the practices where they deemed ICT essential. They were provided with a list of 11 technologies and 9 practices, most of which were selected to be quite general and applicable to a diverse set of fields.

Figure 4 lists these technologies from most frequently used to least. Email (96.1%), websites (91.3%), and social media (84.5%) emerge as the most widely used technologies that SMEs rely on, which is expected considering the simplicity and availability of these technologies. At the other end of the spectrum, more complex and advanced technologies such as cloud computing (26.2%), ERP systems (19.4%), internet of things (12.6%) and data mining tools (9.7%) are least frequently used.

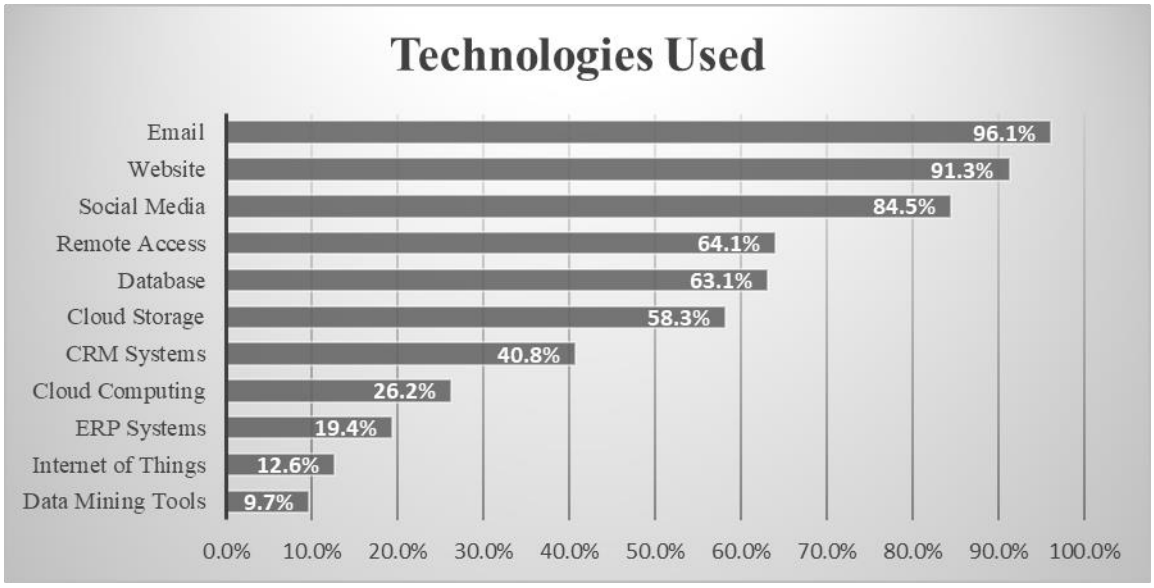

Figure 4. ICTs used by SMEs

As outlined in Figure 5, when SMEs were asked to select practices where they deem ICT essential, marketing (76.7%) and accounting (68.9%) activities were the leading responses, followed closely by project coordination (65%) and customer relationship management (65%) activities. On the other hand, SMEs reporting ICT essential for training (34%) and supply chain management (28.2%) activities were the least frequent.

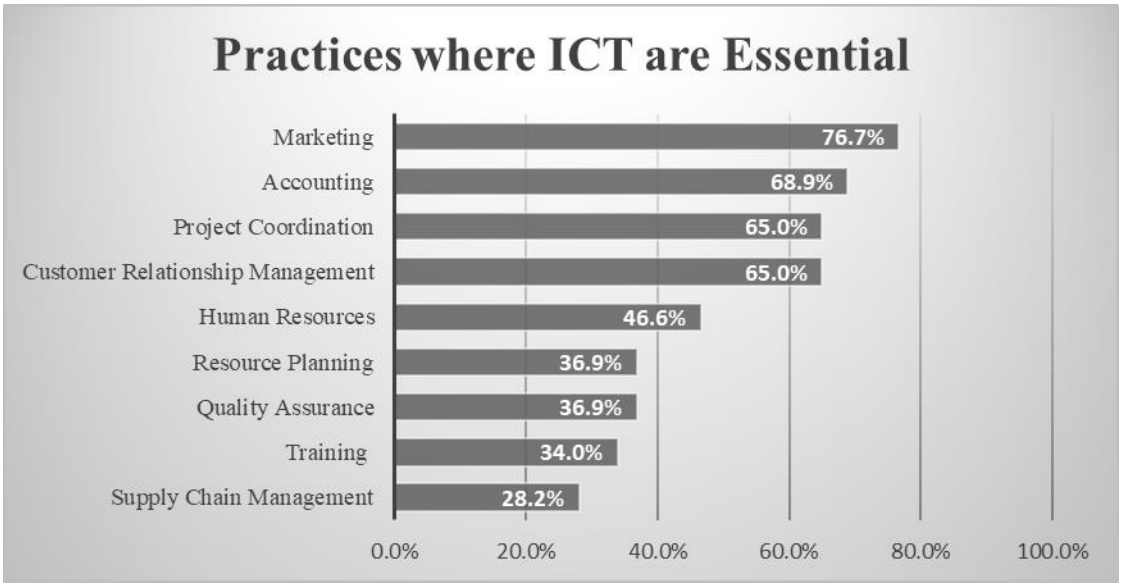

Figure 5. Practices where ICT are deemed essential

As can be seen in Table 6, considering the diverse breakdown of the sample, these distributions are not surprising. In particular, there is a wide variance among enterprises in terms of the differentiation of the ICT tools they employ. for example, the average number of tools used by firms in the IT category is 8.67, which is the highest mark by wide margin. On the other hand, other fields appear closer together, with the

average number of tools ranging between 6.2 for education and 4.29 for food service sector. Table 6 offers a breakdown of different categories of firms in terms of the ICT tools they use and the practices where they consider ICT essential for their operations.

Table 6. Technology Use and Essential Practices per Sector

Categories	Average number of technologies used (out of 11)	Average number of practices where ICT are deemed essential (out of 9)
IT	8.67	5.13
Education	6.20	4.60
Other	5.80	4.67
Language & Translation	5.76	5.04
Tourism	4.83	4.00
Media & Advertisement	4.73	4.27
Consultancy	4.58	4.50
Finance & Insurance	4.55	3.27
Food Service	4.29	5.14

Furthermore, when the number of technologies used and practices where ICT are considered essential are mapped to a plot, it is seen that there is a positive correlation between the two. As seen in Figure 6, the more tools a firm uses, the more they integrate these into their operations and deem them essential for their business practices. This correlation was found to be significant at 1 percent level. Regression analysis of the model yielded an R-square value of 0.095.

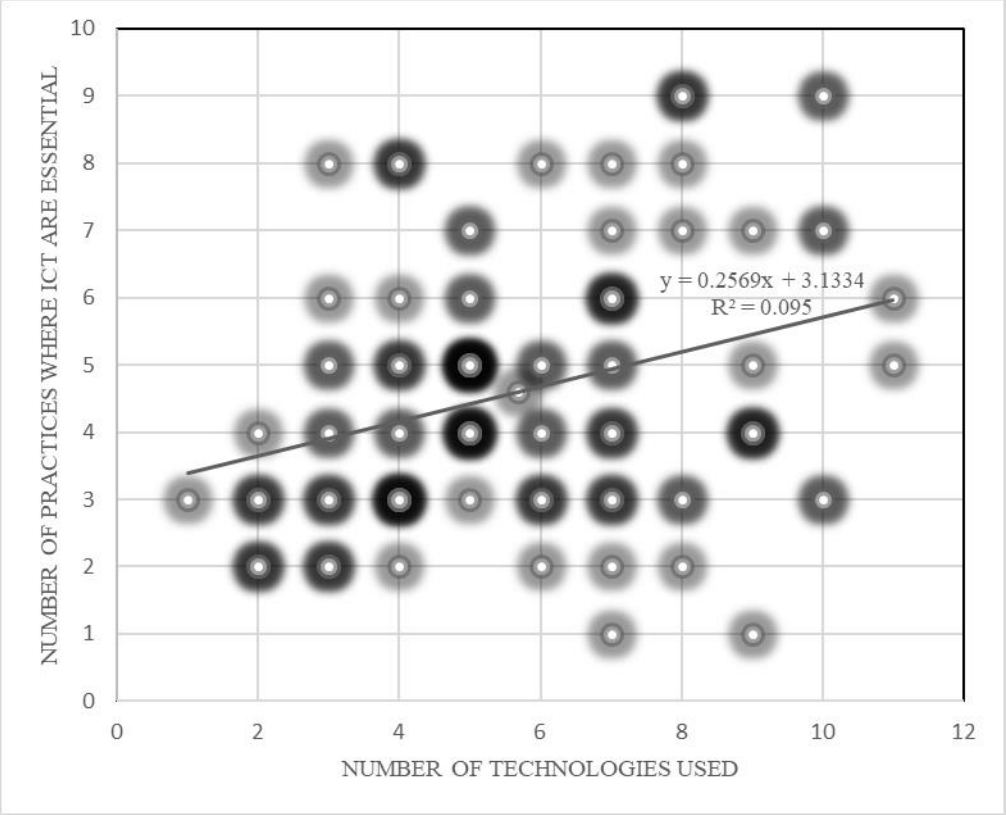

Figure 6. Number of technologies and number of practices where ICT are essential

At this point, adapting the approach employed by Cerchione and Esposito (2016), firms that are in the top right-hand quadrant of the plot, i.e. those with above average values in terms of the number of technologies they use and the number of practices where they deem ICT essential are especially significant as they can be viewed as guideposts. There were 24 such firms in the sample and they had higher mean scores for the items in ICT utilization capabilities and firm performance (Table 7), which was a statistically significant difference ($p < 0.01$ and $p < 0.05$) confirmed by an independent samples T-test (Table 8).

Table 7. Comparison of Means Between Guideposts and Others

Comparison of Means					
	Guidepost?	N	Mean	Std. Deviation	Std. Error Mean
Firm Performance	Yes	24	4.2153	.46490	.09490
	No	79	3.8692	.69063	.07770
ICT Utilization	Yes	24	4.7292	.32900	.06716
	No	79	4.2426	.70902	.07977

Table 8. Independent Samples t-Test

Independent Samples t-Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Firm Performance	Equal variances assumed	3.357	.070	2.298	101	.024	.34608	.15061	.04730	.64486
	Equal variances not assumed			2.822	56.667	.007	.34608	.12265	.10044	.59171
ICT Utilization	Equal variances assumed	11.477	.001	3.249	101	.002	.48655	.14976	.18946	.78364
	Equal variances not assumed			4.666	84.239	.000	.48655	.10428	.27920	.69391

5.3 Multi-item scales and reliability

After the analysis of descriptive statistics and ICT usage approaches of firms were examined, a reliability analysis was conducted for the multi-item scales, which served as the independent and dependent variables of the study. To this end, Cronbach's alpha values were calculated for each scale. Ideally, a Cronbach's alpha value above 0.70 is sought to accept the scales as reliable. The following sections will go over each scale in detail and provide insight into prominent discoveries regarding the responses.

5.3.1 Innovation orientation

Innovation orientation scale featured 7 items. The reliability analysis returned a Cronbach's Alpha value of 0.870 and the scale was accepted without any changes. These items aim to shed light on an organization's culture, not only in terms of their ICT related approaches but also in terms of how open they are to new ideas and technologies. The respondents generally agreed with the statements in this scale and among the independent variables it had the highest overall score. The statement with the highest mean score within the scale was "Our firm actively seeks to implement new technologies" with 4.34. This high score lends credence to the notion that the firms are enthusiastic about new technologies. The statements with relatively low scores were "Our firm cleverly transforms data from external sources into valuable knowledge" and "Our firm encourages employees to suggest ideas for new opportunities" which respectively had scores of 3.84 and 3.86. These can be considered areas of improvement to further boost the innovation orientation of the firms. Table 9 provides detailed statistics regarding all items in the scale.

Table 9. Innovation Orientation Scale Item Statistics

Item	Mean	Std. Deviation	N
Our firm's ICT related planning activities are continuous and not limited to certain periods.	4.12	.921	103
Our firm encourages employees to suggest ideas for new opportunities.	3.86	1.085	103
Our firm encourages employees to find new methods to complete their tasks.	3.94	.968	103
Our firm encourages collaboration between different units and departments to produce new approaches.	3.93	1.022	103
Our firm actively seeks to implement new technologies.	4.34	.811	103
Our firm cleverly transforms data from internal sources into valuable knowledge.	4.01	.944	103
Our firm cleverly transforms data from external sources into valuable knowledge.	3.84	.947	103

5.3.2 Skilled human capital

Skilled human capital scale featured 6 items. Cronbach's Alpha score for this scale was 0.675, which was below the desired value of 0.7, yet reliability analysis revealed that removing any of the items would not yield improvements in the alpha value. Therefore, considering the small difference between the achieved value and the target level, the scale was accepted without further changes. Overall, this scale had the second highest agreement scores from the respondents. The highest mean value belonged to the item "The majority of our workforce has a higher education degree" suggesting the emphasis placed on higher education degrees by employers while the lowest score belonged to "Our firm provides learning opportunities to its employees through regular training

sessions" highlighting employee training as possible improvement area. Considering that merely 34% of the respondents view ICT tools essential for training activities, it can be argued that there is a significant untapped potential in this area. Detailed statistics regarding this scale can be found in Table 10.

Table 10. Skilled Human Capital Scale Item Statistics

Item	Mean	Std. Deviation	N
Employees in our firm have a good command of the ICT tools we use.	3.94	.938	103
Our firm attempts to internally solve ICT related problems before outsourcing them.	3.80	1.141	103
Our firm considers employee learning as an investment rather than an expense.	4.02	1.048	103
Our firm provides learning opportunities to its employees through regular training sessions.	3.68	1.122	103
The majority of our workforce has a higher education degree.	4.15	.994	103
Our firm usually hires people with experience in their field.	3.89	.969	103

5.3.3 Sector dynamism

Sector dynamism scale featured 6 items with a Cronbach's Alpha value of 0.700. As it was right at the desired level and no further improvement were possible even if some items were to be deleted, it was accepted without any changes. The mean values of this scale ranked third behind innovation orientation and skilled human capital scales. The respondents generally agreed with the statement "Our firm often serves first-time customers" indicating flexibility among the preferences of customers in the service

sector. Furthermore, the results point towards disruptive technological developments that has forced businesses to change in the past few years. Table 11 offers a detailed overview of the item statistics for this scale.

Table 11. Sector Dynamism Scale Item Statistics

Item	Mean	Std. Deviation	N
Customers' preferences change rapidly in our business.	3.74	1.137	103
Our firm often serves first-time customers.	4.00	.980	103
It is easy for new firms to enter into our sector.	3.21	1.226	103
Our competitors in our sector continuously offer new services.	3.29	1.090	103
In the past few years, there has been major technological changes that has affected our sector.	3.76	1.150	103
In the past few years, the way our firm conducted its business changed excessively.	3.80	.964	103

5.3.4 External resources

As seen in Table 12, external resources scale contained 6 items. It had a Cronbach's Alpha value of 0.772, which was above the targeted value and it was accepted without any amendments. Among the independent variables, this scale featured the lowest agreement scores, especially with respect to items that directly dealt with public support. The respondents generally disagreed with statements such as "Government provides appropriate conditions for innovation in our sector" and "Our firm finds it easy to obtain resources from governmental sources to finance our ICT investments." Considering the

critical role governments play in enabling and facilitation innovation, public support should be viewed as a critical improvement area.

Table 12. External Resources Scale Item Statistics

Item	Mean	Std. Deviation	N
There are collaboration opportunities in our sector to develop ICT solutions.	3.74	1.093	103
There are open-source solutions that our firm can use for its technological needs.	3.48	1.153	103
Government provides appropriate conditions for innovation in our sector.	2.49	1.220	103
Our firm closely follows government grants and opportunities provided for technological innovations (like KOSGEB, Tübitak).	3.05	1.263	103
Our firm finds it easy to obtain resources from governmental sources to finance our ICT investments.	2.51	1.195	103
Our firm finds it easy to obtain resources from non-governmental sources to finance our ICT investments	2.69	1.155	103

5.3.5 ICT utilization capabilities

ICT utilization capabilities scale serves as the intermediary variable in the model. It features 6 items and its Cronbach's Alpha value of 0.888 meant that it was accepted without any changes. In general, the respondents displayed high levels of agreements with the statements presented in the scale. They do not hesitate to credit ICT tools for improvements in productivity, service speed and service quality. The statement "Our business decisions rely on ICT tools" is the only item with a mean score slightly below 4 with the relatively low value of 3.91. However, it can be argued that over time, as businesses continue to enjoy improvement opportunities provided to them by ICT tools

as suggested by the high scores on other items, they may trust these technologies more and rely on them more heavily for their strategic decisions as well. Detailed item statistics for the scale are presented in Table 13.

Table 13. ICT Utilization Capabilities Scale Item Statistics

Item	Mean	Std. Deviation	N
Our firm relies on ICT tools to ensure good communication between different units.	4.36	.838	103
Our business decisions rely on ICT tools.	3.91	.971	103
Our firm's productivity has increased thanks to our use of ICT tools.	4.55	.776	103
Our firm's service delivery speed has increased thanks to our use of ICT tools.	4.45	.801	103
Our firm's service quality has increased thanks to our use of ICT tools.	4.49	.765	103
ICT tools are seen as crucial assets for our firm's growth.	4.38	.865	103

5.3.6 Firm performance

Finally, firm performance was the dependent variable of the model. Since it was not possible to obtain actual sales and profitability data from the firms, a 6-item scale was used with self-reported metrics that measure performance. The scale was found reliable thanks to a Cronbach's Alpha value of 0.843. The results revealed relatively lower scores for current economic performance in terms of profitability and growth yet they indicated a positive outlook for the future. The item with the highest agreement score was "Our customers report a high level of satisfaction with our services." Table 14 presents a detailed overview of the mean scores of the items in this scale.

Table 14. Firm Performance Scale Item Statistics

Item	Mean	Std. Deviation	N
Our firm's current economic performance is at an acceptable level in terms of profitability.	3.69	.940	103
Our firm's current economic performance is at an acceptable level in terms of growth.	3.65	.957	103
Our firm's current economic performance fares better compared to our competitors in our sector.	3.74	.907	103
Our firm's expectations regarding our future current economic performance are high.	3.96	.939	103
Our firm is able to deliver its services without delay.	4.23	.795	103
Our customers report a high level of satisfaction with our services.	4.43	.722	103

5.4 Hypothesis testing

In order to test the hypotheses that were developed previously, correlation and regression analyses were conducted. The details of these will be discussed in the following sections.

5.4.1 Correlation analysis

After all the scales were found to be valid and reliable with Cronbach's Alpha scores, most of which were above the 0.70 threshold with a single exception at 0.68, correlation analysis was performed. According to the hypotheses H1 through H4, a positive correlation was expected between ICT utilization capabilities and the independent

variables, which were innovation orientation, skilled human capital, sector dynamism, and external resources. Table 15 illustrates the results of the correlation analysis.

Table 15. Correlation of Independent Variables and ICT Utilization Capabilities

Correlations					
		Innovation Orientation	Skilled Human Capital	Sector Dynamism	External Resources
ICT Utilization Capabilities	Pearson Correlation	.695**	.508**	.269**	.313**
	Sig. (2-tailed)	.000	.000	.006	.001
	N	103	103	103	103

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

In addition, a correlation analysis was performed for H5, which expects a positive correlation between firm performance and ICT utilization capabilities of firms. The results of this correlation can be found in Table 16.

Table 16. Correlation of Firm Performance and ICT Utilization Capabilities

Correlation		
		ICT Utilization Capabilities
Firm Performance	Pearson Correlation	.332**
	Sig. (2-tailed)	.001
	N	103

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

All correlations were found to be statistically significant at 1 percent level and as expected, they were all positive. Therefore, all hypotheses in the study were supported.

Further examination of the correlations indicated innovation orientation and skilled human capital as the most impactful factors influencing the ICT utilization capabilities of the firms with correlation coefficients of 0.695 and 0.508 respectively. They were trailed by external resources (0.313) and sector dynamism (0.269).

5.4.2 Regression analysis

Once it was established that there is statistically significant positive correlation between independent variables and the intermediary variable as well as between the intermediary variable and the dependent variable, linear regression analyses were performed to determine how much of the variance in the dependent variable can be attributed to the model. The following sections provide the details regarding the results of individual regression analyses.

5.4.2.1 ICT utilization capabilities & innovation orientation

Regression results between ICT utilization capabilities & innovation orientation also provide a statistically significant positive relationship between the two variables ($p < 0.01$). The R-square value for this regression is 0.484, which is noteworthy. It has the highest R-square value in the model suggesting that innovation orientation is not only the highest coefficient but it also explains the highest amount of variance in ICT utilization capabilities. Detailed results of the analysis are given in Table 17.

Table 17. ICT Utilization Capabilities & Innovation Orientation Regression Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.695[a]	.484	.478	.48527
a. Predictors: (Constant), Innovation Orientation				

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.755	.272		6.461	.000
	Innovation Orientation	.649	.067	.695	9.725	.000
a. Dependent Variable: ICT Utilization Capabilities						

5.4.2.2 ICT utilization capabilities & skilled human capital

According to the regression results between ICT utilization capabilities and skilled human capital. There is a statistically significant positive relationship between the two variables ($p < 0.01$). It has the second largest coefficient and R-square among independent variables. The R-square value was calculated as 0.258. Therefore, it can be said that skilled human capital explains a significant amount of the variance in the model. Detailed information regarding the regression are provided in Table 18.

Table 18. ICT Utilization Capabilities & Skilled Human Capital Regression Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.508[a]	.258	.251	.58163
a. Predictors: (Constant), Skilled Human Capital				

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.271	.356		6.375	.000
	Skilled Human Capital	.533	.090	.508	5.928	.000
a. Dependent Variable: ICT Utilization Capabilities						

5.4.2.3 ICT utilization capabilities & sector dynamism

Sector Dynamism was the first of the external factors included in the model to explain ICT utilization capabilities. The regression analysis yielded a positive coefficient that was weaker than those in the internal factors ($p < 0.01$). The R-square value is also only 0.072, which is quite low (Table 19). Thus, sector dynamism stands out in the model as the independent variable with the weakest explanatory power.

Table 19. ICT Utilization Capabilities & Sector Dynamism Regression Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.269[a]	.072	.063	.65049
a. Predictors: (Constant), Sector Dynamism				

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.409	.344		9.913	.000
	Sector Dynamism	.261	.093	.269	2.802	.006
a. Dependent Variable: ICT Utilization Capabilities						

5.4.2.4 ICT utilization capabilities & external resources

The external resources scale was the final independent variable tested in a regression analysis with ICT utilization capabilities. It had a statistically significant positive coefficient that was on the same level as the sector dynamism ($p < 0.01$). The regression has an R-square value of 0.098, which ranks in the third place among independent variables (Table 20).

Table 20. ICT Utilization Capabilities & External Resources Regression Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.313[a]	.098	.089	.64128
a. Predictors: (Constant), External Resources				

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.576	.243		14.687	.000
	External Resources	.261	.079	.313	3.316	.001
a. Dependent Variable: ICT Utilization Capabilities						

5.4.2.5 Firm performance & ICT utilization capabilities

Finally, a regression analysis was performed for firm performance and ICT utilization capabilities. As the intermediary variable, ICT utilization capabilities was found to be in a statistically significant positive relationship with the dependent variable firm performance ($p < 0.01$). The R-square value for the regression was 0.110 (Table 21). Although it is not a high value, considering the myriad of factors that affect firm performance, it is worth nothing that ICT utilization capabilities can explain more than 10 percent of the variance in firm performance.

Table 21. Firm Performance & ICT Utilization Capabilities Regression Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.332[a]	.110	.101	.62530
a. Predictors: (Constant), ICT Utilization Capabilities				

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.531	.406		6.232	.000
	ICT Utilization Capabilities	.326	.092	.332	3.536	.001
a. Dependent Variable: Firm Performance						

CHAPTER 6

CONCLUSION

This chapter discusses the results obtained in the study, points out the managerial implications of these results, explains the limitations faced and finally, offers suggestions for future research.

6.1 Discussion of results

This study set out to present an up-to-date picture of the ICT adoption and digitalization approaches of Turkish service-sector SMEs. As highlighted in the literature review section, in the age of connectivity, the digital divide that separates businesses has turned material access problems into skills and usage access issues. Thus, believing that the question of ICT adoption should be a matter of "how much" rather than "whether or not," the research focused on the ICT utilization capabilities of firms and the internal and external factors that contributed to these. It was argued that firms, which are better equipped to make use of the ICT tools at their disposal, would have the upper hand in terms business performance. This was found to be the case based on the analysis of the dataset that was collected. Furthermore, internal factors such as innovation orientation and skilled human capital and external factors such as sector dynamism and external resources were identified to be positively correlated with ICT utilization capabilities.

Based on the correlation results and the R-square values of the regression analyses, it was seen that the internal factors that affect the ICT utilization capabilities of firms outweigh the external ones. Among the independent variables in the model, the

most impactful and the most significant one is the innovation orientation, followed by the skilled human capital. These internal factors were considerably more significant compared to external factors.

The external factors, namely sector dynamism and external resources were positively correlated with ICT utilization capabilities yet their ability to explain the variance in the latter was not very strong. However, it is worth noting that the external resources scale, which aims to measure how outside funding influences the capabilities of firms, received very low scores. The respondents reported that public support and public funding was poor for ICT related investments. Considering the critical role the governments play to help boost innovation in developing economies, this stands out as a crucial improvement area.

In terms of descriptive statistics, the sample mostly featured micro (less than 10 employees) and small-sized (between 10 and 50 employees) enterprises, although size was not found to be a significant determinant for neither ICT utilization capabilities nor for performance. On the other hand, one-way ANOVA analysis revealed that ICT related spending was a significant factor for ICT utilization capabilities as firms that reportedly allocate more resources to ICT also fare batter when it comes to utilizing these tools. However, spending more on ICT did not directly mean better economic results as there was no significant difference between different levels of ICT spending in terms of firm performance.

Finally, based on the available data, firms that use a wider selection of ICT tools (diversity) and consider these tools essential for a higher number of their operations (intensity) were labeled as guideposts. When compared to the rest of the sample, these

firms had better performance and higher scores for ICT utilization. Therefore, it can be argued that such firms do represent a higher tier of ICT adoption and set an example for the rest of their industry.

6.2 Managerial implications

The findings of the study suggest a clear link between ICT utilization capabilities and firm performance. In addition, the model developed to explain the factors that are positively related to ICT utilization capabilities is found to be significant. According to the analysis of the model, the most important takeaway from the model is that internal factors are the most important ones when it comes to expecting a high performance with regards to ICT utilization capabilities. In particular, innovation orientation was the independent variable with the highest correlation coefficient and the highest R-square value, indicating that a corporate culture, where new technologies are actively sought, employee suggestions are encouraged and ICT related planning is made part of the ongoing planning activities, presents favorable conditions to utilize the opportunities provided by ICT tools to their full potential.

Another major takeaway from the study is that simply ramping up ICT related spending does not directly result in better business outcomes. However, it does help with ICT utilization capabilities. Therefore, firms should focus their resources on better utilizing the tools at their disposal through training their employees and creating an innovation friendly corporate environment to boost their performance. Better financial performance can be achieved as an extension of the improvements they make in their ICT utilization capabilities. Considering that innovation orientation and skilled human

capital are the most significant factors in the theoretical model of this study, they emerge as the key areas to focus on.

6.3 Limitations and suggestions for future research

This study aimed to present a broad overview of the digitalization approaches for Turkish service-sector SMEs at the end of the decade. However, the service sector is very diverse and firms operating in various branches of this sector face very different challenges. The technologies they deal with in their daily operations as well as the market pressures they are under are very different. Due to the limited sample size, this study could not isolate specific industries in the service sector to investigate their specific conditions. Therefore, studies that can focus on specific industries in detail such as IT, media, healthcare, education, etc. would push the understanding of their digitalization approaches even further.

This study also relied on self-reported measures for firm performance in order to reach a high number of respondents as asking for quantitative performance data would severely hinder the participation in the study. Future studies that can be planned in close cooperation with appropriate bodies may receive quantitative performance data such as sales figures, profitability, return on investment, etc. and present a more precise link between ICT utilization and performance.

APPENDIX A

QUESTIONNAIRE

Information and Communication Technology (ICT) Approaches of Service Sector SMEs

Dear Participant,

This questionnaire was prepared to be used for an academic study by Boğaziçi University Management Information Systems Department Master's Degree student Rafet Karaoğlu, under Professor Meltem Özturan, PhD.

The objective of the study is to investigate how small and mid-sized enterprises (SMEs) in the service sector in Turkey use information and communication technologies (ICT) and digitalize their business processes. We kindly requested that you fill out this questionnaire, which will approxiamately take 10 minutes and share your valuable opinions.

The results will be only be used for academic research purposes and will be reviewed anonymously. No personal information is required to participate. If you wish, you may share your email address to receive updates about the findings of the study and you may contact rafetkaraoglu@gmail.com for any questions.

* Required

1. **email address (optional):**

2. **Please select the field your company operates in:** *
Mark only one oval.

- ◯ Education
- ◯ Healthcare
- ◯ Tourism
- ◯ Consultancy
- ◯ Advertisement
- ◯ Media
- ◯ IT
- ◯ Language and Translation
- ◯ Food Services
- ◯ Energy
- ◯ Finance/Insurance
- ◯ Other: _____

3. **How many full time employees does your company have?** *
Mark only one oval.

- ◯ Less than 10
- ◯ Between 10-50
- ◯ Between 50-100
- ◯ More than 100

Information and Communication Technologies (ICT): refer to computer and communication techologies that allow information to be collected, proccessed, stored and conveyed in a digital format.

4. **Does your company utilize ICT its activities?** *
Mark only one oval.

- ◯ Yes *Skip to question 5.*
- ◯ No *Skip to question 17.*

5. **Please select the ICT technologies that you use (please select all that applies):** *
Check all that apply.

- ☐ Website
- ☐ Email
- ☐ Social Media
- ☐ Remote Access
- ☐ Database
- ☐ CRM Systems
- ☐ ERP Systems
- ☐ Data Mining
- ☐ Cloud Storage
- ☐ Cloud Computing
- ☐ Internet of Things
- ☐ Other: _____

6. **Which activities do you consider ICT essential for (please select all that applies):** *
Check all that apply.

- ☐ Accounting
- ☐ Human Resources
- ☐ Marketing
- ☐ Project Coordination
- ☐ Customer Relationship Management
- ☐ Supply Chain Management
- ☐ Resource Planning
- ☐ Quality Assurance
- ☐ Training
- ☐ Other: _____

7. **What is the share of ICT related expenses (computers, web hosting, security, IT personnel expenses, etc.) in your budget?** *
Mark only one oval.

- ◯ Less than 10%
- ◯ Between 10-20%
- ◯ Between 20-40%
- ◯ More than 40%

Please state how much you agree with the ICT related statements below on a scale from 1 (strongly disagree) to 5 (strongly agree):

8. **Our firm relies on ICT tools to ensure good communication between different units.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

9. **Our business decisions rely on ICT tools.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

10. **Our firm's ICT related planning activities are continuous and not limited to certain periods.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

11. **Employees in our firm have a good command of the ICT tools we use.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

12. **Our firm attempts to internally solve ICT related problems before outsourcing them.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

13. **Our firm's productivity has increased thanks to our use of ICT tools.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

14. **Our firm's service delivery speed has increased thanks to our use of ICT tools.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

15. **Our firm's service quality has increased thanks to our use of ICT tools.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

16. **ICT tools are seen as crucial assets for our firm's growth.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

Please state how much you agree with the statements below on a scale from 1 (strongly disagree) to 5 (strongly agree):

17. **Our firm encourages employees to suggest ideas for new opportunities.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

18. **Our firm encourages employees to find new methods to complete their tasks.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

19. **Our firm encourages collaboration between different units and departments to produce new approaches.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

20. **Our firm actively seeks to implement new technologies.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

21. **Our firm cleverly transforms data from internal sources into valuable knowledge.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

22. **Our firm cleverly transforms data from external sources into valuable knowledge.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

23. **Our firm considers employee learning as an investment rather than an expense.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

24. **Our firm provides learning opportunities to its employees through regular training sessions.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

25. **The majority of our workforce has a higher education degree.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

26. **Our firm usually hires people with experience in their field.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

27. **Customers' preferences change rapidly in our business.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

28. **Our firm often serves first-time customers.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

29. **It is easy for new firms to enter into our sector.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

30. **Our competitors in our sector continuously offer new services.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

31. **In the past few years, there has been major technological changes that has affected our sector.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

32. **In the past few years, the way our firm conducted its business changed excessively.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

Please state how much you agree with the statements below on a scale from 1 (strongly disagree) to 5 (strongly agree):

33. **There are collaboration opportunities in our sector to develop ICT solutions.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

34. **There are open-source solutions that our firm can use for its technological needs.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

35. **Government provides appropriate conditions for innovation in our sector.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

36. **Our firm closely follows government grants and opportunities provided for technological innovations (like KOSGEB, Tübitak).** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

37. **Our firm finds it easy to obtain resources from governmental sources to finance our ICT investments.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

38. **Our firm finds it easy to obtain resources from non-governmental sources to finance our ICT investments.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

39. **Our firm's current economic performance is at an acceptable level in terms of profitability.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

40. **Our firm's current economic performance is at an acceptable level in terms of growth.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

41. **Our firm's current economic performance fares better compared to our competitors in our sector.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

42. **Our firm's expectations regarding our future current economic performance are high.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

43. **Our firm is able to deliver its services without delay.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

44. **Our customers report a high level of satisfaction with our services.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

APPENDIX B

QUESTIONNAIRE (TURKISH)

Hizmet Sektörü KOBİ'lerinin Bilgi ve İletişim Teknolojisi (BİT) Yaklaşımları

Değerli Katılımcı,

Bu anket, Boğaziçi Üniversitesi Yönetim Bilişim Sistemleri Bölümü Yüksek Lisans programı öğrencisi Rafet Karaoğlu'nun Prof. Dr. Meltem Özturan danışmanlığında gerçekleştirdiği akademik araştırmada kullanılmak üzere hazırlanmıştır.

Araştırmanın amacı, Türkiye'de hizmet sektöründe faaliyet gösteren küçük ve orta büyüklükteki işletmelerin (KOBİ) bilgi ve iletişim teknolojilerini (BİT) kullanma ve iş süreçlerini dijitalleştirme yaklaşımlarını incelemektir. Yaklaşık 10 dakika sürecek bu anketi doldurarak değerli görüşlerinizi paylaşmanızı rica ederiz.

Anket sonuçları yalnız bilimsel araştırma maksatlı kullanılacağından verilen yanıtlar anonim olarak ele alınacak, herhangi bir kişisel bilgi talep edilmeyecektir. Dilediğiniz takdirde, araştırmanın sonuçları hakkında bilgi almak için e-posta adresinizi paylaşabilir, sorularınız için rafetkaraoglu@gmail.com adresiyle irtibata geçebilirsiniz.

* Gerekli

1. **e-posta adresi (opsiyonel):**

2. **Şirketinizin faaliyet gösterdiği sektörü seçiniz:** *
   Yalnızca bir şıkkı işaretleyin.
   - ◯ Eğitim
   - ◯ Sağlık
   - ◯ Turizm
   - ◯ Danışmanlık
   - ◯ Reklam
   - ◯ Medya
   - ◯ Bilgi İşlem
   - ◯ Dil ve Çeviri
   - ◯ Yeme/İçme
   - ◯ Enerji
   - ◯ Finans/Sigorta
   - ◯ Diğer: _____

3. **Şirketinizdeki tam zamanlı çalışanların sayısı kaçtır?** *
   Yalnızca bir şıkkı işaretleyin.
   - ◯ 10'dan az
   - ◯ 10-50 arası
   - ◯ 50-100 arası
   - ◯ 100'den fazla

4. soruya geçin.

Bilgi ve İletişim Teknolojileri (BİT): Bilginin dijital formatta toplanmasını, işlenmesini, depolanmasını ve iletilmesini sağlayan bilgisayar ve iletişim teknolojilerini ifade eder.

4. **Şirket olarak faaliyetlerinizde BİT'ten faydalanıyor musunuz?** *
   Yalnızca bir şıkkı işaretleyin.

   ◯ Evet *5. soruya geçin.*
   ◯ Hayır *17. soruya geçin.*

5. **Aşağıdaki bilgi ve iletişim teknolojilerinden (BİT) şirketinizde kullanmakta olduklarınızı işaretleyiniz (geçerli olan seçeneklerin hepsini işaretleyiniz):** *
   Uygun olanların tümünü işaretleyin.

   ☐ Web sitesi
   ☐ E-Posta
   ☐ Sosyal Medya
   ☐ Uzaktan Erişim
   ☐ Veri Tabanı
   ☐ CRM (Müşteri İlişkileri Yönetimi) Sistemleri
   ☐ ERP (Kurumsal Kaynak Planlama) Sistemleri
   ☐ Veri Madenciliği
   ☐ Bulut Depolama
   ☐ Bulut Bilgi İşlem
   ☐ Nesnelerin İnterneti
   ☐ Diğer: _____

6. **Bilgi ve iletişim teknolojilerini (BİT) şirketinizin hangi faaliyetleri için vazgeçilmez olarak nitelendirebilirsiniz (geçerli olan seçeneklerin hepsini işaretleyiniz):** *
   Uygun olanların tümünü işaretleyin.

   ☐ Muhasebe
   ☐ İnsan Kaynakları
   ☐ Pazarlama
   ☐ Proje Koordinasyonu
   ☐ Müşteri İlişkileri Yönetimi
   ☐ Tedarik Zinciri Yönetimi
   ☐ Kaynak Planlama
   ☐ Kalite Güvence
   ☐ Eğitim
   ☐ Diğer: _____

7. **Bilgi işlem harcamaları (bilgisayarlar, web barındırma, güvenlik, bilgi işlem personeli masrafları vb.) bütçenizin yüzde kaçını oluşturmaktadır?** *
   Yalnızca bir şıkkı işaretleyin.

   ◯ %10'dan az
   ◯ %10-20 arası
   ◯ %20-40 arası
   ◯ %40'tan fazla

BİT ile ilgili aşağıda yer alan ifadelere ne ölçüde katıldığınızı 1 (kesinlikle katılmıyorum) ve 5 (kesinlikle katılıyorum) arası bir ölçekte değerlendiriniz:

8. **Şirketimiz farklı birimler arası iletişimin sağlanmasında BİT araçlarından faydalanır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

9. **BİT araçları şirketimizde alınan kararlar için dayanak teşkil eder.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

10. **Şirketimizde BİT ile bağlantılı planlama faaliyetleri süreklilik arz eder, belirli dönemlerle sınırlı değildir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

11. **Şirketimizdeki çalışanlar, kullandığımız BİT araçlarına hakimdir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

12. **Şirketimiz BİT konusunda karşılaştığı sorunları dışarıdan yardım almadan önce kendi içinde çözmeyi dener.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

13. **BİT araçlarının kullanımı şirketimizin verimliliğini arttırmıştır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

14. **BİT araçlarının kullanımı şirketimizin hizmet sunma hızını arttırmıştır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

15. **BİT araçlarının kullanımı şirketimizin hizmet kalitesini arttırmıştır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

16. **BİT şirketimizin büyümesi için vazgeçilmez bir unsur olmuştur.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

Aşağıda yer alan ifadelere ne ölçüde katıldığınızı 1 (kesinlikle katılmıyorum) ve 5 (kesinlikle katılıyorum) arası bir ölçekte değerlendiriniz:

17. **Şirketimiz çalışanların yeni fırsatlara ilişkin fikirler beyan etmesini teşvik eder.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

18. **Şirketimiz çalışanların işlerini tamamlamak üzere yeni yöntemler geliştirmesini teşvik eder.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

19. **Şirketimiz yeni yaklaşımlar geliştirmek üzere farklı birimler ve departmanlar arası iş birliklerini teşvik eder.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

20. **Şirketimiz yeni teknolojileri aktif biçimde kullanmayı hedefler.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

21. **Şirketimiz iç kaynaklardan elde ettiği verileri anlamlı bilgilere dönüştürür.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

22. **Şirketimiz dış kaynaklardan elde ettiği verileri anlamlı bilgilere dönüştürür.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

23. **Şirketimiz çalışan eğitimi için ayrılan kaynakları masraf olarak değil yatırım olarak görür.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

24. **Şirketimiz düzenli eğitimlerle çalışanlara öğrenme fırsatları sunar.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

25. **Şirketimizdeki iş gücünün büyük çoğunluğu yüksek öğrenim derecesi sahibidir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

26. **Şirketimiz çoğunlukla alanında tecrübe sahibi çalışanları işe alır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

27. **Şirketimizin faaliyet gösterdiği sektörde müşterilerin tercihleri hızlı şekilde değişmektedir.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

28. **Şirketimiz sık sık yeni müşterilere hizmet vermektedir.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

29. **Yeni şirketlerin sektörümüze girmesi kolaydır.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

30. **Sektördeki rakiplerimiz sürekli yeni hizmetler geliştirmektedir.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

31. **Geçtiğimiz birkaç yılda sektörümüzü derinden etkileyen önemli teknolojik değişimler yaşanmıştır.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

32. **Geçtiğimiz birkaç yılda şirketimizin faaliyetlerini yürütme şekli önemli değişimlere uğramıştır.** *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

Aşağıda yer alan ifadelere ne ölçüde katıldığınızı 1 (kesinlikle katılmıyorum) ve 5 (kesinlikle katılıyorum) arası bir ölçekte değerlendiriniz:

33. **Şirketimizin faaliyet gösterdiği sektörde BİT çözümleri geliştirmek üzere iş birliği imkanları mevcuttur.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

34. **Şirketimizin teknoloji ihtiyaçları için kullanabileceğimiz açık kaynak kodlu çözümler mevcuttur.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

35. **Devlet, faaliyet gösterdiğimiz sektörde yenilikler için uygun ortamı sağlamaktadır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

36. **Şirketimiz devlet tarafından teknolojik yeniliklerin geliştirilmesi için sağlanan hibe ve yardımları yakından takip eder (KOSGEB, Tübitak gibi).** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

37. **Şirketimiz BİT yatırımları için kamu kaynaklarından destek almakta güçlük çekmez.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

38. **Şirketimiz BİT yatırımları için kamu dışı kaynaklardan destek almakta güçlük çekmez.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

39. **Şirketimizin mevcut ekonomik performansı karlılık açısından kabul edilebilir bir seviyededir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

40. **Şirketimizin mevcut ekonomik performansı büyüme açısından kabul edilebilir bir seviyededir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

41. **Şirketimizin mevcut ekonomik performansı sektördeki rakiplerimize kıyasla daha iyi durumdadır.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

42. **Şirketimizin gelecekteki ekonomik performansına ilişkin beklentileri yüksektir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

43. **Şirketimiz hizmetlerini gecikmeler yaşanmadan sunabilmektedir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

44. **Müşterilerimiz hizmetlerimizden yüksek oranda memnun kaldıklarını ifade etmektedir.** *
Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

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