

Article

Digital Transformation Strategy in Post-COVID Era: Innovation Performance Determinants and Digital Capabilities in Driving Schools

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Abstract: Businesses affected by the pandemic have realized the importance of incorporating digital transformation into their operations. However, as a result of the market lockdown, they realized that they needed to digitalize their firms immediately and make greater attempts to enhance their economic situation by integrating a greater number of technological components. While there have been numerous studies conducted on the adoption of digital transformation in small–medium enterprises, there has been no research carried out on the implementation of digital transformation in the specific industry of driving schools. This paper investigates the significance of digital transformation, as well as the potential for its application in this industry’s business setting and the ways in which it can be utilized to improve innovation capabilities and performance. The data for this study came from 300 driving instructors in Greece and Cyprus. Multivariate regression analysis was used to analyze the data. The outcomes suggest that driving schools have a generally positive reaction to and acknowledgement of the increasing speed of digital transformation. The results also give driving school owners useful information that helps them show how important digital transformation is to their businesses. Using the findings of this study, driving schools will be able to improve their operational capabilities and accelerate their development in the post-COVID era.

Keywords: digital transformation; innovation performance; digital capabilities; strategy; digitalization



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1. Introduction

Crises can have devastating effects [1–4], including the invalidation of customary activities and rules, massive economic losses, and even humanitarian tragedies [5]. These types of crises result in instability, which forces businesses to adjust their resources and capabilities in order to accommodate or function within the shifting environmental conditions [4]. Small–medium enterprises (SMEs) are much more susceptible to the effects of crises than other types of businesses [6–11].

As a result of the outbreak of the COVID-19 virus, nations all over the world have been forced to respond, despite having limited information and facing significant uncertainty [12–14]. The majority of economic sectors across the globe have been negatively affected by the COVID-19 pandemic [12]. It has been emphasized how agile and adaptable they can be, particularly in terms of policy measure timing, decision centralization, decision autonomy, and the balance between change and stability [13].

The research that has been conducted up to this point has looked at how factors such as corporate social responsibility, production recovery, and community participation can lessen the impact that crises have on SMEs [15–17]. The COVID-19 pandemic, an infectious disease, is having an impact that is causing the digital transformation of work styles all over the world to progress faster than it ever has before [18]. According to Kodama (2020) [18], the digital transformation of work styles has attracted attention as a result of rising demand in societies, and the spread of new technologies is further increasing this

digital transformation [19]. Business strategies all over the world are undergoing significant transformations [18].

Fletcher and Griffiths (2020) [20] argued that a digitally mature organization takes into account the entirety of its operations. They also claimed that the end goal of the process of strategic digital transformation that an organization goes through should be for the organization to become digitally mature. According to Vial (2019) [21], digital transformation is a process that is used to enhance an entity by causing important changes to its attributes via the usage of new technologies. In other words, the goal of this process is to improve the entity. On the other hand, the term “digitalization” can be defined as the implementation of organizational change through the utilization of new technologies [21–23]. Within the context of the COVID-19 epidemic, the inherent utility of digitalization has begun to receive widespread acknowledgement [12].

Understanding the crisis environment in a timely manner, taking advantage of opportunities, and reorganizing resources so that they can be used to better deal with the crisis are essential components of public crisis responses [15,24]. It is believed, on the basis of the fourth Industrial Revolution, that innovation, along with new technologies, can be the mechanism that drives organizations towards improving their effectiveness and competitive advantage [25].

We argue in this study that digitalization and digital transformation have the potential to assist SMEs in effectively responding to crises by activating their dynamic capabilities [21]. Digital transformation in other fields, such as healthcare [26] and gaming [27], have been richly investigated, but not in unique, but equally important contexts, such as the services provided by driving schools, which are traditionally in-person and on-site. The digital transformation of such physical services can offer interesting theoretical insights to the field. Similarly, the study of technology in schools has often focused on technology adoption [28] rather than digital transformation, which further strengthened the need for the present study. Therefore, the goal of this paper is to determine how important digital transformation is, how likely it is to be used in the business world mentioned above, and how valuable it is in terms of improving innovation and performance. The research questions that arise and will be addressed are the following: What is the contribution of digitalization vision, IT flexibility, IT integration, IT agility to process-innovation capability? What is the contribution of process-innovation capability and organization performance?

The structure of the paper is as follows. The theoretical background on digital transformation is provided in Section 2. The methodology is presented in Section 3, while Section 4 presents the analysis of the results. Section 5 discusses the findings, as well as the limitations and avenues for future studies.

2. Theoretical Background

2.1. Digital Transformation

Many researchers believe that the utilization of digital technologies in crisis response is critical in order to face the challenges of the pandemic [12]. Employees were able to work from home thanks to the adoption of online office software [12]. It has been possible for companies with high levels of digitalization to quickly restructure their businesses during the COVID-19 outbreak so that they can minimize the negative effects or even benefit from the crisis [12].

Digital transformation, according to Guo et al. (2020) [12], has five components: increasing the use of online processes; improving the digitalization of supply chains; implementing digital products or services; and implementing online platforms. It is argued that digital transformation contributes to business performance through the formulation of digital strategies, the adoption of digital technology, and changes in value-creation pathways [21]. In order to achieve digital transformation, according to Heaven and Power (2018) [29], companies must shift to a systemic approach.

2.2. Digital Vision and Innovation

Digitalization affects all aspects of life at the same time. Kuusisto (2017) [30] highlighted that digitalization increases the efficiency of tasks and processes; thus, digitalization's vision is an essential enabler of this means. Establishing a clear digitalization vision is thus critical for implementing digital transformation and increasing innovation [31].

The digitalization vision is critical to the overall success of digital transformation [32]. Despite numerous studies on the specific effects of digitalization on organizations, little documented evidence exists to highlight the overall effects [30].

The usage of digital technologies to promote organizational changes is referred to as digitalization [21–23]. Digital technologies are traceable, addressable, programmable, sensible, memorable, communicable, and associable [33]. Therefore, digitalization and/or digital transformation can assist companies in improving their competitive advantages by increasing organizational flexibility and resilience [34] and improving their dynamic capabilities [21,35].

In general, Guo et al. (2020) [12] proposed that digitalization benefits companies' dynamic capabilities. According to Vial (2019) [21], Warner, and Maximilian (2018) [36] and Yoo (2010) [33], digitalization supports companies to notice changes in the environment. Because of the high velocity, variety, volume, and value of digital resources, firms can collect information at a low cost [37]. Moreover, the use of new technologies allows businesses to retrieve information and to predict environmental changes to some extent [35,38]. Finally, Guo et al. (2020) [12] argued that with the support of new technologies, businesses can capitalize on opportunities in crisis environments.

Digitalization has created a plethora of new opportunities in the COVID-19 outbreak [26] in fields such as e-working, e-education, and e-delivery [12]. Furthermore, the decentralized aspect of new technologies removes time and space barriers and encourages collaboration among focal companies [39]. Furthermore, new technologies have greatly improved business analysis accuracy, allowing firms to define future opportunities in complex environments [34]. Moreover, digital technology has altered how new opportunities are evaluated in novel ways rather than predefined ways [26]. Finally, digitalization allows companies to identify their resources in response to crises [12]. Digitalization improves the scale, flexibility, and scope of firms' available resources [12]. IT technologies, for example, minimize the cost of coordinating processes within companies and encourage the allocation of resources [40].

Fossen and Sorgner (2021) [32] identify IT flexibility as the ability to quickly and easily launch new IT resources to support organizational policies. They contend that the definition of IT flexibility is the ease with which a new technology system or environment can be changed, as well as the degree to which IT architecture can be repeatedly shared and used. Organizations can improve their competitive advantage and innovation by leveraging IT flexibility. IT flexibility enables organizations to respond quickly to unexpected changes [41,42].

Cui et al. (2015) [43] concluded that IT integration is an organization's ability to integrate communication technologies, data, and applications for collaboration with its external collaborative partners. According to Fossen and Sorgner (2021) [32], IT integration has been extensively studied in several areas. In their research, Natsis et al. (2018) [44] and Vongkulluksn et al. (2018) [45] argued that IT integration can be easily applied in the education field.

IT agility is not an emerging concept. It has been researched for more than twenty years. IT agility is critical to a digital transformation strategy and a company's digitalization. It allows companies to respond to business opportunities and define and evaluate opportunities in real time [32]. In agile IT environments, applications, systems, security, and telecommunications infrastructure are set up to adapt and respond to business needs in real time or milliseconds rather than days or weeks. According to Leonhardt et al. (2017) [46], many studies have shown that IT agility helps organizations make continuous improvements and find and take advantage of business opportunities quickly and effectively. However,

Panda and Rath (2017) [47] state that the term “IT agility” is a misnomer. The two most significant characteristics of IT agility are rapidity and innovation.

The development of new or significantly improved production or delivery methods is referred to as process innovation [32]. According Fossen and Sorgner (2021) [32], since companies operate in highly uncertain and complex environments, agile methods are critical for success. Businesses should realize that digital transformation is the only way to gain competitive advantage and stand out. Nonetheless, the status of digital transformation efforts in terms of innovation capabilities and performance is unknown [48].

Over the years, many studies have been conducted on a wide range of organizations and businesses to determine how process innovation and performance affect them. For example, Zulfikar et al. (2017) [49] analyzed the relationship between marketing performance, value creation, and innovation capability in SMEs around the world. Al-Kalouti et al. (2020) [50] state that many people see the ability to innovate as a key source of long-term competitive advantage. They also examined the factors that affect the ability to be innovative and how those factors affect the performance of an organization. Finally, Saunila (2014) [51] argued that previous studies had examined other sectors in general, but not the service sector. Based on the existing literature, the following hypotheses were defined:

Hypotheses 1 (H1). *The relationship between digitalization vision and an organization’s process-innovation capability is significant.*

Hypotheses 2 (H2). *The relationship between IT flexibility and an organization’s process-innovation capability is significant.*

Hypotheses 3 (H3). *The relationship between IT integration and an organization’s process-innovation capability is significant.*

Hypotheses 4 (H4). *The relationship between IT agility and an organization’s process-innovation capability is significant.*

Hypotheses 5 (H5). *The relationship between process-innovation capability and an organization’s innovation performance is significant.*

Figure 1 presents the research model of this paper.

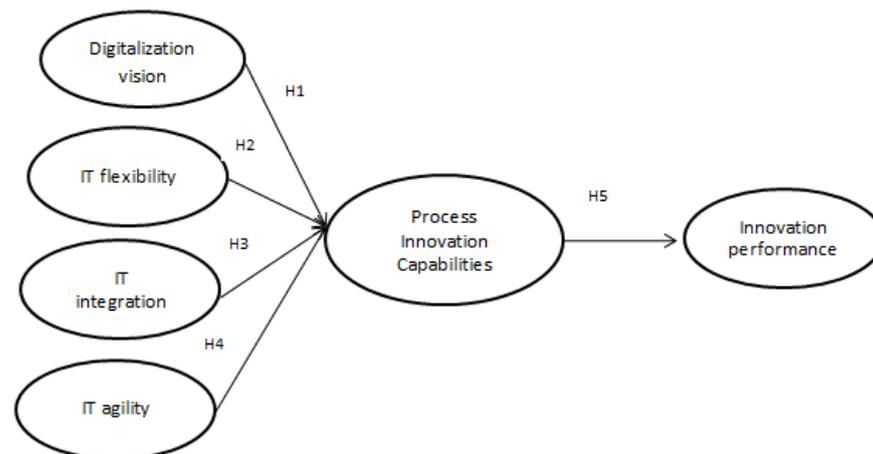


Figure 1. Research model.

3. Methodology

The digitalization vision was measured using five items, which were based on the work of Niemand et al. (2017) [52]. The IT flexibility was measured using four items, which were based on the work of Fichman (2004) [53,54], Saraf et al. (2007) [55], and Cui et al. (2015) [43]. The IT integration was measured using four items, which were based on the work of Barua et al. (2004) [56], Rai and Tang (2010) [57], and Cui et al. (2015) [43].

IT agility was measured using items that were based on the work of Fichman (2004) [53,54], Lu and Ramamurthy (2011) [58], Weill et al. (2002) [59], and Leonhardt et al. (2017) [46]. Process-innovation capability was measured using 11 items, which were based on the work of Tuominen and Hyvönen (2004) [60], Camison and Lopez (2010) [61], and Camisón and Villar-López (2014) [62]. Innovation performance was measured using six items, which were based on the work of Jiménez-Jiménez and Sanz-Valle (2011) [63], and Rangus and Slavec (2017) [64]. A 5-point Likert-scale was used to measure these variables. The questionnaire is presented in Appendix A.

The questionnaire was forwarded via email to 1300 educators from driving schools in Greece and Cyprus. Contact details were found with the support of the association of driving instructors. Finally, 300 educators from driving schools completed the questionnaire. Data analysis was performed using multivariate regression analysis.

The sample included educators from driving schools. Driving schools are either micro companies, including fewer than 10 employees, or small–medium enterprises, including fewer than 50 employees. The participants had many years of work experience. In total, 61.2% of respondents were 41 years old and older. Regarding their education level, 86.3% had a bachelor’s degree. The average number of employees was 1–2 and the majority of driving schools had a turnover of less than EUR 20,000. Table 1 contains information about the respondents and the driving schools.

Table 1. Demographic characteristics.

Education Level	Respondents	Percentage
Male	249	82.7
Female	51	17.3
Total	300	100.00
Education level	Respondents	Percentage
4-year college graduate	260	86.3
Post-graduate degree	20	6.5
Other	20	7.2
Total	300	100.00
Age	Respondents	Percentage
20–30 years	20	6.6
31–40 years	88	29.2
41–50 years	126	41.9
51–60 years	57	19.3
>60 years	9	3
Total	300	100.00
Number of employees	Respondents	Percentage
1	112	37.5
2	67	22.3
3–4	40	13.3
5–6	15	5
7–9	28	9.3
10–19	1	0.3
Total	300	100.00
Turnover	Respondents	Percentage
<20.000	162	53.8
21.000–30.0000	50	16.9
31.000–50.000	27	9
>51.000	61	20.3
Total	300	100.00

4. Results

Harman’s single-factor test was performed to examine the common method bias. The percentage of the variance of the first factor was less than 50 percent. Thus, there was no common method bias. The values of Cronbach’s alpha coefficient for all the variables were above 0.7 [65] and are presented at Table 2. Table 3 indicates that the descriptive

statistics results for digital vision, IT flexibility, IT integration, IT agility, process-innovation capabilities, and innovation performance had an overall mean of 2.870, 3.054, 2.873, 2.954, 2.982, and 3.065, respectively, with a standard deviation of 1.080, 1.111, 1.182, 1.194, 1.074, and 1.106, respectively.

Table 2. Cronbach a.

Variables	Cronbach a
Digital vision	0.805
IT flexibility	0.842
IT integration	0.816
IT agility	0.912
Process-innovation capabilities	0.829
Innovation performance	0.936

Table 3. Descriptive statistics.

Variables	Mean	Std. Deviation
Digital vision	2.870	1.080
IT flexibility	3.054	1.111
IT integration	2.873	1.182
IT agility	2.954	1.194
Process-innovation capabilities	2.982	1.074
Innovation performance	3.065	1.106

Based on the findings represented at Table 4:

- The beta value of digital vision was 0.057, with a significance level of $p > 0.05$ ($p = 0.254$). Thus, the relationship between digital vision and process-innovation capabilities is non-significant, and H1 was not supported.
- The beta value of IT flexibility was 0.201, with a significance level of $p < 0.0001$ ($p = 0.001$). Thus, the relationship between IT flexibility and process-innovation capabilities is significant, and H2 was supported.
- The beta value of IT integration was 0.062, with a significance level of $p > 0.05$ ($p = 0.275$). Thus, the relationship between IT integration and process-innovation capabilities is non-significant, and H3 was not supported.
- The beta value of IT agility was 0.619, with a significance level of $p < 0.001$ ($p = 0.000$). Thus, the relationship between IT agility and process-innovation capabilities is significant, and H4 was supported.
- The beta value of process-innovation capabilities was 0.709, with a significance level of $p < 0.001$ ($p = 0.000$). Thus, the relationship between process-innovation capabilities and innovation performance is significant, and H5 was supported.

Table 4. Regression results.

Model	Independent Variables	β	Adjusted R ²	F
1: Dependent variable (process-innovation capabilities)			0.745	189.085 ***
	Digital vision	0.057		
	IT flexibility	0.201 ***		
	IT integration	0.062		
	IT agility	0.619 ***		
2: Dependent variable (innovation performance)			0.500	258.395 ***
	Process-innovation capabilities	0.709 ***		

*** Significant at 0.001.

5. Discussion

Tajudeen et al. (2019) [31] discovered a positive effect of digitalization vision on innovation performance, whereas Niemand et al. (2017) [52] discovered a non-significant relationship between digitalization vision and firm performance. Nonetheless, Marcon et al. (2019) [66] stated that new technologies can increase performance through the use of innovation capabilities. Similarly, this paper discovered important outcomes indicating that an organization's strategic vision for digitalization influences its innovation capabilities. This suggests the significance of organizations formulating a digitalization vision as part of their investment strategy. In addition, the usage of new technologies can help organizations improve their capacity for process innovation and development.

Cui et al. (2015) [43] discovered that IT flexibility significantly affects innovation regarding radicality and volume. Nevertheless, their research did not examine the effect of IT flexibility on process-innovation capability. Similarly, Mikalef et al. (2016) [67] discovered that IT flexibility significantly affects IT-enabled dynamic capabilities but not process-innovation capabilities. This paper analyzed the effect of IT flexibility on process-innovation capability, and it found important outcomes. An organization's IT flexibility has a direct effect on its process-innovation capability.

Any organization must integrate systems and technologies. These technologies provide accurate information, improving knowledge sharing among organizational members and external collaborative partners. As a result, innovative ideas are increased and the organization's ability to develop innovative processes is improved. Cui et al. (2015) [43] discovered that IT integration boosts organizational innovation and allows the development of new products and services.

Previous research by Leonhardt et al. (2017) [46] argued that IT agility, which includes IT sensing and IT responding, positively affects IT functions' digitalization support for digital innovation and strategic decision making. IT agility seems to have helped businesses find new market opportunities and respond quickly to them. Several surveys have shown that IT agility helps organizations improve continuously [46]. These improvements could influence the development of new processes, new products, or better services. In line with previous research, this paper argued that IT agility has a significant effect on how well organizations can innovate their processes, which in turn has an effect on how well organizations innovate.

Based on the results in this paper, organizations' ability to use information technologies supports the development of digital products and services, increasing innovation performance. The paper's outcomes are similar to those of previous papers [68], which found that process-innovation capability positively affects performance in terms of new products.

In Greece, the majority of driving schools are micro-companies with limited resources that face a high degree of bureaucracy. During the COVID-19 pandemic, many activities were implemented by the government to digitalize processes and reduce bureaucracy. The owners of driving schools must face several challenges regarding digitization, such as e-learning, electrification, and digital signatures. Therefore, they must be prepared for these technological changes. They can develop a digital vision and capabilities to adopt new technologies that increase flexibility and agility in work as well as organizational performance.

6. Conclusions

The goal of this paper was to determine how important digital transformation is, how likely it is to be used in the business world mentioned above, and how valuable it is in terms of improving innovation and performance. The results support the significant effect of IT flexibility and IT agility on process-innovation capabilities, as well as the significant effect of process-innovation capabilities on innovation performance. The results show that driving schools have a generally positive reaction to and acknowledgement of increasing the speed of digital transformation. The results also give driving-school owners useful information that can help them to show how important digital transformation is to their

businesses. Using the findings of this study, driving schools will be able to improve their operational capabilities and accelerate their development in the post-COVID era.

6.1. Theoretical Contribution

Digital transformation is vital to the survival of driving schools in the age of Industry 4.0. However, so far, only limited surveys have been conducted to capture the role of the digitalization vision in the adoption of digital transformation. The current study fills this gap and examines the critical implementation parameters. The findings of this paper provide valuable information for driving school owners to understand the importance of digitalization and digital transformation. This knowledge can be used to improve the processing capacity of driving schools and their rapid development in the post-COVID era.

Thus, this paper developed an integrated model that contributes to the existing knowledge in the discipline of innovation. The model was utilized to investigate the connection between process-innovation capabilities and innovation performance, in addition to digitalization and information-technology-strategy-related variables. In addition to confirming that the existing literature in general is lacking in quantitative empirical evidence, we discovered that the theoretical foundations that were drawn upon exhibited a certain degree of diversity. We hope that by conducting this study, we can both contribute to the ongoing conversations about digital transformation by laying a comprehensive and sound foundation for those conversations, and stimulate future research on this fascinating topic.

6.2. Practical Contribution

This article offers managers some useful insights that can help them to better understand the significance of the role that digitalization and information technology strategies play in improving the process-innovation capabilities and innovation of organizations. In this era of increasing digital transformation, businesses are reliant on their IT functions to both enhance their existing procedures and provide support for their innovative endeavors [46]. According to the findings of this paper, the agility of new technologies in terms of firms' ability to sense rapidly shifting market conditions and technological landscapes and its capacity to respond in a timely manner can influence the process innovation of organizations. Innovation and digital transformation need to be the primary focuses of organizations if they are to contribute to an improvement in their country's socioeconomic standing. In this regard, the managers in this study were provided with the necessary guidance. This guidance can help to establish a clear digitalization vision and to focus on information technology strategies, such as IT integration and IT agility, both of which can improve the process-innovation capabilities of organizations. All of these features combine to enhance the innovative capabilities of the respective organizations' concerns, as well as recommendations for further study.

6.3. Limitations and Future Research

The following are some of the limitations of the research, as well as some recommendations we have for additional research. It was very challenging to precisely capture the innovation capability and performance of the process. In the future, researchers should use the longitudinal method to gather data and identify the capability of innovation. There are objective as well as subjective indicators that can be used to evaluate the performance of organizations. It is possible that future researchers will use both subjective and objective indicators in order to obtain more precise findings. Possible topics for investigation in subsequent studies include collaborative innovation and marketing, among others.

This study used a synchronous design for its data collection, and the study successfully identified the relationship between SMEs and driving-school companies. Innovation, however, is a dynamic and ongoing process. Because of this, it can be difficult to accurately record both the ability of a process to innovate and the performance of a business in an area of innovation in the same set of data collected at the same time. Therefore, it is likely that in the future, researchers will have to use the timeless method of data collection to

measure the innovation potential and innovation performance of these businesses over time. Due to the fact that the data for this survey were gathered through the use of a single survey at a single point in time, there is a possibility that the results were affected by the common method bias. Multivariate regression analysis was used in order to investigate the contribution of independent variables to the dependent variable. However, future researchers can use other methods, such as structural equation modeling, to investigate the relationships between variables.

By contrast, a company's performance can be judged by both objective and subjective measures. Within the scope of this paper, subjective indicators were used to measure how well innovation was implemented. Previous studies [69,70] have reliably highlighted the effect of the use of subjective performance on outcomes. To increase firm performance, companies should be able to develop cutting-edge products and services, in addition to ensuring that both their customers and their employees are completely satisfied with the work that they perform. As a result, measurements of performance should be based on functional indicators that are subject to interpretation [69]. However, since objective measurements are so important, it is possible that future researchers use both subjective and objective measurements to obtain more accurate outcomes. This paper analyzed the various opportunities for innovation within business processes. However, according to the theory of potential competencies, there are other ways for businesses to improve their ability to develop new ideas. Therefore, it is suggested that future researchers examine the possibility of studying other skills that compete with innovation performance, such as the ability to work with others to innovate, the ability to market, and so on.

In conclusion, the present work aimed to study and empirically examine the results of the adoption of digitization and the implementation of the digital transformation of SMEs in driver education. Therefore, as other researchers suggest, more country-wide research should be performed on SMEs [71–75]. The present work formulates suggestions for future research in Greece, but also in other countries. It is therefore proposed to conduct the same research, or similar research with adaptations, in sectors other than driver education. This would increase the accuracy of the outcomes. Another suggestion for future research could be to investigate the same hypotheses and variables at regional levels, such as in the Balkans, with the aim of comparing the results between these countries. At the same time, research aimed at comparing the digital transformation actions of SMEs with those of large companies would be interesting.

Finally, the factors that influence Greek companies to adopt the digital transformation, as well as those that hinder them, could be investigated. It is also necessary to emphasize that any future research should be conducted in such a way as to highlight the positive effect of digital transformation on companies and push them to expand their boundaries and turn their strategy to “more open” approaches in order to increase their digital maturity and, consequently, their profits.

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Appendix A

In the space below, please tell us how you think the following statements relate to your company's digitalization vision.

Digitalization Vision	<p>DV1. Your company possesses a distinct plan to maintain its competitive edge in the digital strategy space within the next five to ten years.</p> <p>DV2. Your company possesses a digital strategy that is well-defined.</p> <p>DV3. Your company has a digital strategy implemented in all business units.</p> <p>DV4. Your company has continuously assessed and adapted its digital strategy.</p> <p>DV5. Your company has new business models established that are based on new technologies.</p>	5-point Likert scale. Niemand et al. (2017) [52].
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Please indicate your response as to how you feel your company's technologies and its contribution for innovation activities compare to other businesses.
Your organization's IT systems

IT flexibility	<p>ITF1—are organized and integrated in a way that makes it rapid changes possible.</p> <p>ITF2—are very amenable to scaling.</p> <p>ITF3—are developed specifically to facilitate the formation of new collaborative innovation relationships.</p> <p>ITF4—are easy to change to add new applications or functions, and it does not require significant work to do so.</p>	5-point Likert scale. Fichman (2004) [53,54]; Saraf et al. (2007) [55]; Cui et al. (2015) [43].
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Your organization's IT system

IT integration	<p>ITI1—provides easy access to the data that innovation partners store on their systems.</p> <p>ITI2—can connect to the systems that innovation collaborators use in a way that does not cause any problems.</p> <p>ITI3—can help people who work together on innovation share information in real time.</p> <p>ITI4—can easily put together innovation-related information from the databases of its partners.</p>	5-point Likert scale. Barua et al. (2004) [56]; Rai and Tang (2010) [57]; Cui et al. (2015) [43].
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Your company's IT staff

IT agility	<p>ITA1—stay abreast of all the latest developments and trends in information technology.</p> <p>ITA2—are always looking for new ways to increase the efficiency with which the organization makes use of information technology.</p> <p>ITA3—make predictions about possible changes and new developments in IT that could affect your business.</p> <p>ITA4—spend time and money trying to find new ways that information technology can be used creatively in business settings.</p> <p>ITA5—can and will keep looking into new IT in an active and forward-looking way.</p> <p>ITA6—are able to quickly scale up or down the information technology infrastructure.</p> <p>ITA7—are able to implement the necessary tools to cooperate with ecosystem partners in a very short amount of time.</p> <p>ITA8—are able to respond quickly to new opportunities in customer needs, markets, and the environment.</p>	5-point Likert scale. Fichman (2004) [53,54]; Lu and Ramamurthy (2011) [58]; Weill et al. (2002) [59]; Leonhardt et al. (2017) [46].
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Evaluate the innovation capabilities of your company in comparison to those of your competitors		
Your company		
Process-innovation capabilities	PIC1—can make and manage new technologies that are connected to each other.	5-point Likert scale. Tuominen and Hyvönen (2004) [60]; Camison and Lopez (2010) [61]; Camisón and Villar-López (2014) [62].
	PIC2—has the ability to master and assimilate the fundamental and essential technology.	
	PIC3—is constantly developing programs to reduce the cost of production and services.	
	PIC4—possesses knowledge that is extremely useful for the creative and technological processes.	
	PIC5—knows a lot about the best ways to organize work and the best procedures and frameworks for doing so.	
	PIC6—ensures the effective organization and development of products and services.	
	PIC7—designates certain amounts of resources for the creation of a department of products and services working effectively.	
	PIC8—is able to maintain a low stock level while maintaining a high degree of service quality.	
	PIC9—is able to provide procedures that are less harmful to the environment.	
	PIC10—is an effective tool for managing the product or service development process.	
	PIC11—can align the management of product- and service-development activities.	
During the past three years, your company's performance relative to that of competitors has been either worse or better in the areas of		
Innovation performance	IP1—the number of new products or services that have been introduced.	5-point Likert scale Jiménez-Jiménez and Sanz-Valle (2011) [63]; Rangus and Slavec (2017) [64].
	IP2—being a pioneer in the development of new products or services (you were one of the first people to bring a new product or service to market).	
	IP3—the amount of work that was put into the creation of new products or services, taking into account the total number of hours worked by individuals, groups, and training.	
	IP4—the total number of new changes introduced into processes.	
	IP5—the introduction of new, innovative processes (one of the leaders in the industry when it comes to introducing new processes).	
	IP6—new processes that your competitors in your field have devised.	

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