

# The Role of Digital Transformation for SMEs During a Health Crisis: Lessons Learnt from Covid-19 Epidemic

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## Abstract

The global outbreak of COVID-19 posed significant challenges for small and medium-sized enterprises (SMEs) across the globe, compelling them to swiftly adapt to ensure business continuity and resilience. Considering this issue, this research investigates the role of digital transformation in enabling small and medium-sized enterprises (SMEs) to navigate the challenges posed by the COVID-19 pandemic and maintain business continuity. Through a qualitative study involving 50 case studies of SMEs, primarily micro-enterprises, from Bulgaria, Belgium, Cyprus, Greece, and Turkey, the findings reveal that digital transformation strategies such as increased ICT usage, new distribution channels, remote work implementation, and product diversification were crucial for SME resilience during the crisis. The study highlights the significance of digital transformation in crisis management and provides practical recommendations for SMEs and policymakers to enhance crisis preparedness through continuous digital transformation efforts.

## Keywords

Digital transformation, crisis management, SMEs

## 1. Introduction

The global outbreak of COVID-19 posed significant challenges for small and medium-sized enterprises (SMEs) across the globe, compelling them to swiftly adapt to ensure business continuity and resilience. While SMEs are vital drivers of economic growth and

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employment, their relatively smaller scale and limited resources make them particularly vulnerable to disruptive events like pandemics [1], [2]. In the face of lockdowns, supply chain disruptions, and changing consumer behavior, SMEs were forced to rethink their operations, business models, and strategies for survival.

Within this context, digital transformation has emerged as a pivotal approach for SMEs to effectively navigate crises, adjust to new situations, and bolster their ability to withstand challenges while maintaining a competitive edge [3], [4]. However, despite the recognized importance of digital transformation for crisis management and resilience, there is a gap in the literature regarding empirical investigations into the specific digital transformation strategies adopted by SMEs and how these strategies directly contributed to their resilience and business continuity during the COVID-19 pandemic.

Most prior research has taken a theoretical or conceptual approach, lacking de-tailed case study evidence on the actual implementation and impact of digital transformation initiatives by SMEs in the context of the pandemic [5], [6]. While studies have emphasized the pivotal role of digital technologies in crisis responses [7], [8] and the importance of digital transformation for crisis recovery strategies [9], there is a need for empirical research that delves into the actual strategies employed by SMEs and their direct influence on resilience and business continuity amidst the unique challenges posed by COVID-19.

To address this gap, the primary objective of this research is to investigate, through a qualitative case study approach, how digital transformation strategies contributed to the resilience and business continuity of SMEs during the COVID-19 pandemic. By leveraging empirical evidence from multiple case studies of SMEs across various regions and industries, this study aims to provide practical insights and a subtle understanding of the interplay between digital transformation initiatives, crisis management, and SME resilience in the face of the pandemic-induced disruptions.

The findings of this research will contribute to the growing body of knowledge on digital transformation and its role in enhancing SME resilience during crises. Additionally, it will offer practical recommendations for SMEs, policymakers, and researchers to better prepare for future crises through continuous digital transformation efforts and tailored support mechanisms.

The study continues as followed: in the second section, the authors present the concept of digital transformation; its role for SMEs; the enablers that SMEs can utilize towards digital transformation; what are the challenges of digital transformation for SMEs and the strategies for SMEs digital transformation success. The third section continues with the presentation of the research methodology on the data collection from the case studies; the fourth section presents the results of the data analysis; and it ends with the conclusions part.

## **2. Digital Transformation**

### **2.1. Components and Definition**

Digital transformation encompasses the incorporation and assimilation of digital technology and procedures into all facets of an organization, including operations, marketing, customer service, innovation, and human resources [4]. Studies have shown

that digital transformation has a substantial influence on the creation of business models [10]. Organizations must comprehend the significance of digital transformation in driving business model innovation and its impact on decision-making inside the firm [11]. Moreover, the ever-changing and technologically advanced corporate landscape requires the adoption of IT governance processes and information systems to convert conventional company models into digital ones [12].

The digitalization of small and medium-sized firms (SMEs) is of great significance, as it has been highlighted that the digitalization of SME business models plays a role in fostering sustainable socio-economic progress [13]. SMEs may get several advantages from the process of digital transformation. Firstly, it enables them to boost operational efficiency by using digital technology and automation, leading to cost reductions, faster time to market, and improved overall operational efficiency [14]. Furthermore, digital transformation empowers them to adjust to evolving circumstances through the facilitation of nimble decision-making, flexible business structures, and the capacity to swiftly adjust initiatives in reaction to market disruptions, changes in customer behavior, and challenges in the supply chain [15]. Furthermore, it enhances customer engagement and experience by enabling SMEs to interact with consumers in novel and personalized ways, leveraging data analytics and AI-powered insights [16]. Additionally, digital transformation allows for remote work and collaboration, providing the tools and infrastructure necessary for remote work, virtual collaboration, and secure data exchange, thereby increasing labor productivity and ensuring business continuity [17]. Moreover, it broadens market reach by enabling SMEs to access new markets domestically and globally through e-commerce platforms, digital marketing methods, and online marketplaces [13].

Nevertheless, the process of digital transformation presents notable obstacles and impediments for SMEs, including limited resources, expertise, infrastructure, awareness, and assistance [18]. Hence, it is essential to comprehend the significance of digital transformation for SMEs amidst a health crisis and to discern the aspects that promote or impede its execution [19].

## **2.2. Digital Transformation as a Tool for Business Resilience**

The COVID-19 pandemic has underscored the importance of digital transformation as a crucial tool for enhancing business resilience and ensuring continuity during times of crisis [14]. Numerous studies have explored the role of digital transformation in enabling organizations, particularly SMEs, to navigate the unprecedented challenges posed by the pandemic.

Researchers have emphasized the pivotal role of digital technologies in crisis responses, especially for SMEs ([5]. [7] provided evidence of how emerging digital communication technologies played a critical role in activating SMEs' resilience during the crisis, highlighting the drivers that facilitated this resilience. [20] further underscored the crucial role of digital transformation in mitigating economic recession and accelerating economic recovery.

Digital transformation has been identified as a fundamental tool for crisis recovery strategies among SMEs [6]. [8] observed that digital technologies can facilitate the analysis of crisis contexts, enabling organizations to better understand and respond to the

challenges they face. Moreover, [9] explored alternatives for sustainable development during turbulent circumstances, with digital transformation playing a mediating role in mitigating the destruction arising from crises.

The COVID-19 pandemic has presented an opportunity for dealing with persistent problems through a transformative recovery process, where digital transformation can play a pivotal role [21]. [22] focused on the digital responses of SMEs to the COVID-19 crisis, guided by the theoretical context of the Technology-Organization-Environment (TOE) framework, highlighting the interplay between technological, organizational, and environmental factors in shaping digital transformation strategies.

Furthermore, [23] stressed the importance of organizational mindfulness toward digital transformation as a prerequisite for achieving market agility, a critical capability for resilience during crises. They also emphasized the significance of building connections with external stakeholders to keep pace with digital transformation efforts.

While the studies mentioned provide valuable insights into the role of digital transformation as a tool for enhancing business resilience and continuity during crises like the COVID-19 pandemic, there appears to be a gap in the literature regarding the specific exploration of how digital transformation strategies contributed to the resilience and business continuity of SMEs through empirical case studies during the COVID-19 pandemic. Most of the studies cited tend to take a more theoretical or conceptual approach, emphasizing the importance of digital transformation for crisis responses and recovery strategies. However, there is a need for empirical research that delves into the actual digital transformation strategies adopted by SMEs and how these strategies directly contributed to their resilience and business continuity during the specific context of the COVID-19 pandemic.

The objective of the present study, which is to explore "How did digital transformation strategies contribute to the resilience and business continuity of SMEs during the COVID-19 pandemic" through case studies, addresses this gap in the literature. By conducting a qualitative analysis of multiple case studies of SMEs from various regions, this study aims to provide empirical evidence and insights into the specific digital transformation strategies that enabled SMEs to maintain resilience and business continuity during the pandemic.

While the existing literature recognizes the importance of digital transformation for crisis management and resilience, the present study's focus on empirical case studies allows for a more detailed and contextualized understanding of the actual strategies adopted by SMEs, their implementation challenges, and their impact on resilience and business continuity in the face of the unique challenges posed by the COVID-19 pandemic.

Therefore, this study's approach of using case studies to explore the link between digital transformation strategies and SME resilience during the COVID-19 pandemic contributes to filling a gap in the literature by providing empirical evidence and practical insights that can inform both academic understanding and business practices in times of crisis.

### **3. Methodology**

This study employed a qualitative research approach involving multiple case studies to investigate the role of digital transformation in enabling SME resilience and business continuity during the COVID-19 pandemic. The case studies were systematically collected from January to December 2022 as part of the CORONOMICS project, which aimed to understand the impact of the pandemic crisis on SMEs, particularly in terms of service and production disruptions. By conducting a comparative analysis across diverse case studies, the study aims to provide empirical evidence and insights into the specific digital transformation strategies implemented by SMEs, their challenges, and their impact on resilience and business continuity amidst the unique disruptions caused by the COVID-19 pandemic.

#### **3.1. Data Collection**

A total of 50 case studies of SMEs, primarily micro-enterprises, were collected from five geographic regions: Bulgaria, Belgium, Cyprus, Greece, and Turkey. The selection of cases focused on enterprises significantly affected by the pandemic-induced disruptions, allowing for an examination of the strategic initiatives they adopted to navigate the challenges posed by the crisis. Data collection involved in-depth interviews, document analysis, and observations, capturing the perspectives of SME owners, managers, and employees.

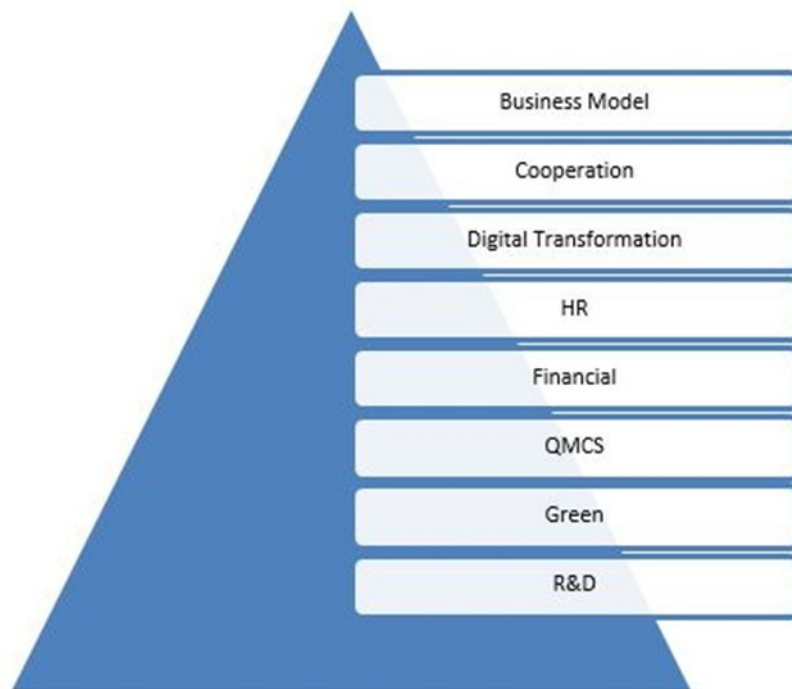
##### **3.1.1. SME Selection and Demographics**

The 50 SMEs included in this study were selected based on two main criteria: (1) being significantly impacted by the COVID-19 pandemic in terms of service or production disruptions, and (2) representing a diverse range of industries and geographic regions across Bulgaria, Belgium, Cyprus, Greece, and Turkey. The majority (85%) of the selected SMEs were micro-enterprises with fewer than 10 employees, while the remaining 15% were small enterprises with 10-49 employees. The SMEs operated in various sectors, including manufacturing, retail, food and beverage, professional services, and information technology. This diverse sample allowed for a comprehensive understanding of the digital transformation strategies adopted by SMEs across different contexts.

#### **3.2. 3.2. Data Analysis**

The data analysis involved a comparative analysis across the selected case studies, focusing on key dimensions such as product diversification, increased utilization of information and communication technology (ICT) applications, diversification of target groups, exploration of new distribution channels, and the incorporation of remote working practices. The key dimensions were identified based on a comprehensive

literature review on digital transformation strategies for SMEs during crises, as well as preliminary discussions with SME owners and experts during the early stages of the CORONOMICS project<sup>2</sup>. These dimensions emerged as critical areas where SMEs were likely to implement digital transformation initiatives to enhance resilience and continuity in the face of the COVID-19 disruptions. The findings were then correlated with the modular framework of the CORONOMICS project (Figure 1), ensuring that the real-world case scenarios were integrated into the instructional material and reinforcing the pedagogical approach.



**Figure 1: Modular** Framework of Coronomics project.

By grounding the research in empirical case studies and employing a robust comparative analysis, this study aims to provide practical insights and empirical evidence on the role of digital transformation strategies in fostering SME resilience and business continuity during the COVID-19 pandemic. This approach addresses the identified gap in the literature and contributes to a deeper understanding of the interplay between digital transformation, crisis management, and SME resilience, informing both academic discourse and business practices.

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<sup>2</sup> <https://www.pandeconomics.eu/>

## 4. Results and Analysis

Table 1 provides a summary of the various digital transformation strategies adopted by SMEs across the five countries - Bulgaria, Belgium, Cyprus, Greece, and Turkey.

The analysis of the case studies revealed several key findings highlighting the digital transformation strategies adopted by SMEs to enhance their resilience and business continuity during the COVID-19 pandemic.

**Product Diversification:** To adapt to changing market demands and customer needs, some SMEs diversified their product offerings. This strategy was widely adopted by SMEs in Greece, followed by Cyprus and Turkey to a lesser extent. Greek SMEs were particularly proactive in introducing new product lines or modifying existing products suitable for online sales and home delivery, such as those in the food and beverage industry. For instance, a Turkish manufacturing SME introduced a new line of personal protective equipment (PPE) products like face masks and sanitizers to meet the increased demand during the pandemic.

**Table 1**

Summary of Digital Transformation Strategies Adopted by SMEs

	<b>Bulgaria</b>	<b>Belgium</b>	<b>Greece</b>	<b>Cyprus</b>	<b>Turkey</b>
<b>Product diversification</b>		xxxxx	xxxxxxx	xxx	xxx
<b>Increased ICT usage</b>	xx	xxxxx	xxxxxxxxx	xxxxxxxxxxx	xxxxxxxxx
<b>Diversification target groups</b>		xx	xxxxx	xx	xxxxxxxxx
<b>New distribution channels</b>	xx	xxx	xxxxxx	xxxxxxx	xxxxxxxxxx
<b>New company concept</b>		x		xx	
<b>Reduction of staff</b>	xxxx	xx			x
<b>Reducing activities (opening hours)</b>	xxxx	xx		x	x
<b>Distance/remote work</b>	xxxx	xx	xxxxx	xxxxxxxxx	
<b>Flexible working hours</b>	xxx			x	
<b>Financial state support</b>	x	xx		x	
<b>Detailed training for staff (disinfection etc.)</b>	xxxxx	x		x	

Note: 'x' indicates the extent to which each strategy was implemented in the SME cases from each country.

**Increased ICT Usage:** Increased utilization of information and communication technologies (ICT) was one of the most prevalent strategies across all five countries. SMEs heavily relied on digital tools, platforms, and applications to enable remote work, virtual collaboration, e-commerce, and process optimization. This highlights the critical role of ICT in supporting business continuity and resilience. Several SMEs adopted cloud-based platforms and video conferencing tools for remote collaboration, while other cases commonly adopted e-commerce website development and social media marketing strategies.

**Diversification of Target Groups:** Turkish SMEs appear to have diversified their target customer groups more actively compared to other countries, indicating efforts to explore new market segments or cater to evolving consumer preferences during the pandemic.

**New Distribution Channels:** SMEs explored new product distribution channels, such as e-commerce and mobile commerce platforms, allowing customers to make online transactions and purchases without physical presence, thereby overcoming lockdown restrictions. Several SMEs (e.g. restaurants) pivoted to online sales and delivery services, leveraging e-commerce platforms and social media. The adoption of new distribution channels, primarily e-commerce, was widely embraced across all five countries, with Turkey leading the way, underscoring the significant shift towards digital commerce.

**Remote Work Implementation:** The implementation of remote and flexible working methods was a common strategy enabling SMEs to continue operations during the COVID-19 crisis. Digital tools facilitated remote collaboration, ensuring smooth operations in a decentralized setting. This also resulted in implementing flexible working hours, aligning with digital transformation ideas emphasizing results over conventional arrangements. Several SMEs adopted virtual communication tools like Zoom and Microsoft Teams to support remote work practices.

**Other Strategies:** Additional strategies included introducing new company concepts, reducing staff or operating hours, seeking financial state support, and providing detailed staff training on health protocols like disinfection. These varied across countries, reflecting diverse challenges faced by SMEs.

The qualitative findings suggest a significant correlation between SME tactics and the overarching concept of digital transformation during the COVID-19 crisis. SMEs restructured their strategies by integrating digital advancements, including online services and platforms. The broad acceptance of increased ICT use was crucial for digital transformation, enabling improved communication, process optimization, and adaptation to remote work trends.

Online sales emerged as a new business model, with SMEs adopting modes like social media marketing, e-marketplaces, and online stores to tackle closures of physical locations. E-commerce became a necessity rather than an alternative sales channel, and SMEs realized the importance of adapting products for online sales due to changing consumer habits post-pandemic.



Regarding human resources, the implementation of remote and flexible work methods was common, facilitated by digital tools for collaboration and decentralized operations. Digital training platforms were used for comprehensive staff training, including health protocols.

Overall, research showed that digital transformation not only made businesses more resilient but also provided a competitive edge for future development. Successful digital transformation created opportunities for newly established digitalized business models, such as strengthening digital marketing efforts. Building resilience and adaptability through digital means proved cost-effective and offered additional advantages beyond coping with unexpected events.

## **5. Recommendations for Future Crisis Preparedness**

The analysis and knowledge gained in surveying the coping methods and success of different SMEs during the Covid-19 crisis is destined to provide important insights for SME practice and future crisis preparedness. As such, one strong recommendation to potentially undertake future crisis situations is to make sure that small businesses engage in digital transformation continuously during normal times. The previous self-preservation and cost-minimize approaches towards technology investment, a main reason that many SMEs have not yet been digitalized and left behind, should be abandoned. A change of scholars' focal point from technology adoption to technology institutionalization signifies the emerging importance of digital transformation in terms of revolutionizing business activities.

However, many SMEs were struggling in successful digital transformation and eager for supportive measures and initiatives by the governments, such as consultancy services or financial subsidies. For example, in the Turkish cases, several SMEs reported facing challenges in securing funding and technical expertise for digital transformation initiatives during the pandemic, highlighting the need for government support and capacity-building programs. Such proactive support could mentor, reassure and empower more SME owners in overcoming the technology fear and thereby capturing the strategic opportunities that technology brings about. These include not only in-ternal process re-engineering and innovation of products and services, but also market expansion and customer relationship management facilitated by advanced customer data analytics obtained through the public application programming interfaces (API) open by big digital platforms. If digital transformation was so critically important to business success and wider economic development before the pandemic and has led to much higher survival rates and reduced employment losses during the pandemic according to the survey outputs, then it may be pragmatic to expect a paradigm shift of SME support policies post-Covid. Given that substantial public resources have been deployed to rescue and assist business operations that were affected by the pandemic.

## 6. Conclusions

This study has investigated the role of digital transformation strategies in enabling SMEs to navigate the challenges posed by the COVID-19 pandemic and maintain business continuity. Through a qualitative analysis of 50 case studies of SMEs, primarily micro-enterprises, from Bulgaria, Belgium, Cyprus, Greece, and Turkey, the findings revealed that digital transformation initiatives such as increased utilization of ICT, adoption of new distribution channels like e-commerce, implementation of remote work practices, and product diversification were crucial for enhancing SME resilience during the crisis period.

The empirical evidence from multiple case studies contributes to the understanding of how digital transformation can foster resilience and business continuity for SMEs in crisis situations. The study offers practical recommendations for SMEs and policy makers to prioritize continuous digital transformation efforts as a means of crisis preparedness and resilience building.

However, it is important to acknowledge the limitations of this research. First, the focus on micro-SMEs from only five countries may limit the generalizability of the findings to larger SMEs or other geographic contexts. Second, the cross-sectional nature of the data collection provides a snapshot of the pandemic's impact, but a longitudinal study tracking the long-term effects of digital transformation on SME resilience could yield additional insights.

Future research could address these limitations by conducting longitudinal studies to investigate the sustained impact of digital transformation on SME resilience over time. Additionally, cross-country comparative analyses could provide a more subtle understanding of the regional and cultural factors influencing digital transformation in SMEs. Furthermore, exploring the role of digital transformation in other crisis contexts beyond the COVID-19 pandemic could broaden the applicability of the findings to various disruptions and challenges faced by SMEs.

In conclusion, this study contributes to the growing body of knowledge on digital transformation and its pivotal role in enhancing SME resilience and business continuity during crisis situations, such as the COVID-19 pandemic. The findings underscore the importance of continuous digital transformation efforts and provide empirical evidence to guide SMEs, policymakers, and researchers in better preparing for future crises through digital means.

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