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# The digital transition and the future of the SMEs

Carmina S. Nunes[1,2] (carminanunes@ua.pt) & Frederico Nunes[3]

[1] Universidade de Aveiro; [2] GOVCOPP; [3]Business Consultant

## Abstract

This paper intends to present in which way small and medium sized enterprises (SMEs) can focus on digital transition to adapt their business models during economic crises. Digital issues are related not only with the development of SME(s) but to the society as a whole. In some organizations, the digital process was already put in place, the digital means in a way were existing in the before pandemic world, but this outbreak made a very quick shift to the digital world. As the customer changed his behaviour rapidly in a way the organization had to adapt their business models to give rapid response to this change and the most common response was to create virtually their business. The actual state of economy in the COVID-19 pandemic is rising some questions as the decline of global economy and intensification of digital technology, as a possible consequence a stagnation of the globalization process (Sułkowski, 2020). Some of the challenges related to the Coronavirus outbreak have been and related to a profound insecurity, deficient information, excessive risk, and necessity (Dwivedi et al., 2020). As the topic is still in progress and is someway the pandemic situation is still in here, only some reports are used to characterise these elements and to establish a link between them. Is what way this change still valid in the post pandemic world? How will the organizations reinvent and also the digital transition will it be enough for the survival of the SMEs? In what ways the technologies are crucial and appointed to act as the critical success factor for the businesses? Asking and responding to these questions is essential to SMEs success in the near future. As is obvious the present research presents the limitation as were not enough studies regarding the approach of SME(s) regarding the digital transformation.

**Keywords:** Digital transition, economic crises, customer behaviour, SMEs

## 1. INTRODUCTION

The actual global context for all SME is complex and require identifying all the necessary changes that are required to confront this digital transition challenge.

The paper is organized as follows: an overview of the role of SMEs technologies, namely breakdown in three subtopics, before outbreak, during pandemic and some assumptions regarding the post pandemic era, a discussion related to the necessity of implementing new business models and a conclusion. There is still a necessity to conclude some aspects regarding the topic as is still on-going, will be make some assumptions referent to this.

Because digital transformation will look different for every company, it can be difficult to come up with a definition that applies to all. However, in very general terms, we define digital transformation as the integration of digital technologies into all areas of a business, leading to fundamental changes in the way businesses operate and how they deliver value to their customers. Furthermore, it is a cultural shift that requires companies to continually challenge the status quo, to experiment frequently, and to accept failure. This sometimes means abandoning long-standing business processes on which companies were built in favour of relatively new practices that are still being defined (https://enterprisersproject.com/what-is-digital-transformation, 2021).

> The digitalisation of companies has developed rapidly in recent years. Across industries, companies of all sizes are increasingly equipping their employees with digital tools, albeit at a slower pace for smaller companies and a faster pace for some bigger industries. Digitalisation is multi-faceted, as it involves the use of different technologies that serve different purposes and requires a recombination of different strategic means. Not all SMEs are capable of making this transformation. The smaller the businesses, the less likely they are to adopt new digital practices and the more likely they are to limit their use to basic services. Overall, the digitisation of SMEs is strongly related to the type of value creation within the company and the industry in which it operates. When SMEs digitize their business functions, they tend to outsource solutions, partly to compensate for weak internal capabilities, but also for cost reasons. For example, digital platforms (e.g. social networks, e-commerce marketplaces, etc.) serve to optimize certain functions at very low cost (e.g. business intelligence and data analytics services). SMEs also tend to rely on external consultants or the security-by-design features of the products and services they use to manage digital security risks. They are also sourcing Artificial Intelligence (AI) solutions from knowledge markets and moving to new AI systems with Cloud Computing(CC) -based software as a service. Pre- COVID risks associated with (non)adoption of digital technologies remain. At the enterprise level, digital gaps are strongly associated with gaps in productivity, scale, innovation and growth. At the market level, concerns remain about technology lock-ins, data protection for SMEs or competitive distortions. At the aggregate level, the digital divide among SMEs contributes to greater inequalities among people, places, and businesses. First-mover advantage in digital markets, strong network effects and complementarities in digital diffusion, especially as the firm grows in size and scope, could exacerbate the digital divide. The crisis COVID - 19 has already exacerbated the effects of the existing division (OECD, 2021).

## 2. LITERATURE REVIEW

The methodology adopted is a literature review, but as is obvious is representing some limitations as this issues is in progress. The actual outbreak context has changed our lives for ever. We can't just wonder what will happen next, what will be the social and economic context we must face?

If we think about how SMEs should change their model to face new challenges, we probably need to analyse the microenvironment and the macroenvironment in which they operate. In terms of internal organization, how will an SME have to reorganize? Will work commute from home be a constant? Will the costs of renting the space and other additional costs decrease? Is it ready to operate through the online environment? Are the

providers also ready to embrace this online environment? What about customers? And the competitors? Regarding the macro-environment, how can the economic, natural, technological, social, and cultural environment influence the business model of an SME?

It seems that using the right digital strategies and adopting some of the innovative technologies may help the small business to survive as it happened during this Coronavirus outbreak (Akpan et al., 2020). On the other hand, yet in late 2015 (PWC) appointed that many SME were already seeking their position using the digitalization for maintaining and increase their position in the market. But also, it seems that the smaller SMEs are, the higher the risk that they will not be capable to take profit from this transition to the digital shift (Matt et al., 2020).

Digital transition can assume different meanings and understandings, depending on viewers perspectives. So, according with actual literature what it means digital transition?

> Although digital transformation will vary widely depending on a company's specific challenges and requirements, there are some constants and common themes among existing case studies and published frameworks that all business and technology leaders should consider as they embark on digital transformation.
>
> For example, these elements of digital transformation are often cited: Customer Experience, Operational Agility, Culture and Leadership, Workforce Empowerment, Digital Technology Integration and Digital platform transformation.
>
> Customer experience
>
> Looking at the business from the outside in-from the customer's perspective-is as relevant and necessary today as it was during the first phase of digital transformation. But while the focus on the customer has not radically changed, the elements required to create compelling experiences have.
>
> Operational Agility
>
> As always, a well-managed operation is essential to turning revenue into profit, but now we are seeing a shift in the focus of digital transformation in this area. Advances in sensors, cloud, machine learning and IoT are enabling companies in every industry to transform their operational capabilities. In addition, SMEs are realizing how operational excellence can go beyond back-office efficiencies to enable engaging customer experiences and business models that cannot be duplicated by competitors.
>
> Workforce Empowerment
>
> If we've learned anything over the past decade of digital transformation, it's that employees can be either the biggest inhibitors or the biggest enablers to transformation success. Accordingly, SMEs companies have begun to focus on the employee experience as intently as the customer experience.
>
> Digital Technology Integration
>
> Although there was a lot of talk about business model transformation in 2014, we found that only 7% of companies were using digital initiatives to launch new businesses, and only 15% were creating new business models with digital technology. Times have changed. Now, executives in every industry are paying closer attention to how digital capabilities can lead to business model innovation. Without falling prey to the "everything is being disrupted" mantra, it's clear that the scope of business model transformation is expanding.
>
> Digital platform transformation

The foundation for digital transformation is a clean, well-structured digital platform-the technology, applications, and data that drive an organization's business processes. None of the other digital elements can reach their full potential without it.

Advances in technology and methodology in recent years have made the challenge of building a solid digital platform simultaneously easier and harder. Cloud computing, agile development methodologies, external code libraries, and easy-to-use development tools allow developers to build new features quickly, but can also lead to inconsistencies and complex tangles of technical spaghetti ( Bonnet and Westerman, 2020).

### 2.1 THE ROLE OF SME TECHNOLOGIES BEFORE THE PANDEMIC CRISIS

According to Pordata (2021), "a microenterprise is an enterprise that employs fewer than 10 persons and whose annual turnover and/ or annual balance sheet total does not exceed 2 million euros, a small enterprise is a company that employing between 10 and 49 persons and whose annual turnover and/or annual balance-sheet total varies between 2 and 10 million euros and a SME is made up of enterprises which employ fewer than 250 persons and whose annual turnover does not exceed 50 million euros or whose annual balance sheet total does not exceed 43 million euros.

SME have an important role in the economy and most of the countries offer the major source of employment. According with OECD reports "SMEs, and in particular medium-sized firms, outperform large enterprises in terms of productivity levels in many countries. SMEs were a considerable driver of overall employment growth in the market services sector between 2010 and 2016."

In another way shifts in client demands and supply chain processes are exerting pressure to reorganize business models to move towards digitalization era of permanent online and immediate global reach. In the 2019 report of "OECD SME and Entrepreneurship Outlook 2019", it was identified that "digital technologies are evolving rapidly and combining in often unforeseeable ways, with large scale effects on market structures and competitive conditions for SMEs." Also, market conditions and performance of SME are being shaped by the ongoing digitalization process, through digital tools, available digital services or accessing market places via online platforms, such as Amazon or Alibaba and other special company websites. Undeniably, most of SMEs "born global" due to digitalization era, which represents new opportunities to increase competitiveness, through innovation and improve production processes. Also, digitalization tools like big data and data analytics, enables SMEs trough a better understanding of processes within the firms and the needs of all stakeholders. Digital technologies and provide also and ease SMEs in many ways, like access to talent, trough outsourcing online hiring and better job recruitment sites. Another digital technologies which had a great impact on SMEs was the banking and online payments and itself the digitalization has allowed new financial services to emerge, with disrupting solutions.

In the view of the OECD report of 2019, "A large number of SMEs have still not capitalised on these possibilities. SMEs often lack the vision and resources to seize the opportunities opened up by the digital transformation." Regarding the European countries, for example we can observe that in Portugal, it was made a strong effort to simplify administrative and licensing procedures for SMEs. However exist room for further improvements in Portugal. Also we can observe that SMEs in Portugal weakly innovation networks but are very proactive in adopting high-speed broadband and new digital technologies. Therefore, many governmental programs were placed to develop skills and new digital methods on SMEs(OECD, 2019).

### 2.2 THE NEW ROLE OF TECHNOLOGIES DURING PANDEMIC AND CREATION OF NEW BUSINESS MODEL

In a simplest way, the digitalization is about SME with access to digital knowledge and those without (Kotler, Kartajaya & Setiawan, 2021).

Might SME can adopt various perspectives towards digital transformation. Priyono et al.(2020) appoints that SME depending on their situational factors adopt three classes of digital approaches:

SMEs with a high level of digital maturity that respond to the challenges by accelerating the transition to digitized businesses; second, SMEs with liquidity problems but a low level of digital maturity that decide to digitize only the sales function; and third, SMEs that have extremely limited digital capabilities but are supported by a high level of social capital. This last group of companies solves the challenges by finding partners who have excellent digital capabilities.

A list with some topics to be included as SME functional requests was established to create intelligent business. These elements could represent an important source of inspiration for any SME which think in adapting their business model:

Agility - build or improve production lines, ensure flexible and scalable production systems, minimize setup times, enable the ability to manufacture a variety of products, create self-regulating processes, enable easy-to-use and change systems of new manufacturing technologies, and use rapid prototyping technologies to facilitate product development;

Automation - mitigating repetitive tasks with rapid payback, enabling on-demand, customizable packaging, and reducing the labor and cost of all manufacturing and logistics processes by implementing self-perpetuating processes;

Connectivity - ensuring the ability to easily and efficiently communicate on a sufficient real-time basis with internal and external customers, standardizing and facilitating security and interoperability of information, creating standardized, easy-to-use systems for connectivity, communication and transparency, and enabling connectivity of internal and external information to enable better forecasting, etc;

Culture - understanding the culture of customers to interpret preferences for cost and quality, enabling manufacturing-ready design and the use of advanced manufacturing technologies in the design phase;

Digitization - implement automation and digitization of internal workflows and reporting, avoid physical prototyping costs, implement clear data collection, management, analysis and visualization for internal and external customers, capture real-time data from machines, warehouses and equipment to keep production under control, enable consistent data flow throughout the product lifecycle and supply chain, provide and visualize information anywhere, anytime to reduce wait times and unnecessary delays;

Ease of use - simplify maintenance of newly introduced manufacturing technologies, minimize the information barrier and complexity of getting started with new manufacturing technologies, enable user-friendly robot programming for "regular" workers;

Implementation - overcome legal and bureaucratic hurdles for new technologies, measure the impact on the sustainable success of the company;

Inspection - Identifying a defect as early as possible with little to no worker intervention, mitigating the human element in otherwise tedious or low-information tasks, identifying defects through in-line inspection of process and material to prevent quality defects on the customer side;

Lean - eliminate non-value added activities in production and logistics, produce on demand and deliver just in time, move product customization as late as possible in the value chain Machine learning,

automatically detect and adjust parameter variations in the manufacturing process that are affected by environmental variations, implement rapid and automated design-based generation of tool path, part machining plan and quotation;

Mass customization - gain the ability to produce small batch sizes without losing efficiency;

Network - ensure the SME has a culture that incorporates the needs of the customer and employees through discourse and communication; gain the ability to communicate and/or share capacity, materials, infrastructure and information with internal and external customers and suppliers;

People - enable ergonomic support for physically difficult tasks, manage internal knowledge and staff development;

Production planning and control - enable decentralized and highly reactive production planning and control, create a system that can quickly forecast changes in demand and interact with systems for planning, control and logistics;

Preventive and predictive maintenance - ensure maintenance costs are minimized while maximizing value-added machine time; proactive maintenance to ensure availability and reduce machine downtime; predict data-based probability of machine stoppages or machine downtime;

Real-time status - create a digital feedback system and infrastructure that monitors the status of production, storage, shipping, risk and crisis management; Capture real-time status and visualize this data for operators and management;

Remote control - enable location-independent control of maintenance, equipment and products;

Resource management - create a data-driven system to monitor material and process capability for all relevant resources, ensure machines are suitable for the tasks at hand and can be reused for a variety of other tasks;

Safety - Provide an ergonomic workplace for employees and a safe working environment;

Sustainability - minimize energy consumption and environmental costs and measure and optimize energy, material and time consumption in processes;

Tracking and tracing - implement easy tracking of products from origin through the value chain, ensure the supply chain is capable of digital traceability, and enable systems localization;

Transport - Create an easy-to-use, worker-independent material handling system for in-plant transportation;

Upgrade - reuse and upgrade existing manufacturing equipment;

Virtual reality - enable a user-friendly, "smart" representation of systems for production, maintenance, design and service; create a data-driven system for product development, improvement, management and safety to ensure the product is more profitable for SMEs and customers throughout its lifecycle (Matt et al., 2020, pp. 57-59).

Business surveys conducted globally during 2020 the increasing adoption of digital technologies and online sales by SMEs as of May 2020. The surveys show that up to 70% of SMEs have increased their use of digital technologies since the onset of the COVID -19 pandemic, although there are significant differences between countries. However, the gap between SMEs - and in particular, small businesses - and large businesses remains significant, with SMEs' use of digital technologies half that of larger businesses.

The sectors most affected by the COVID -19 pandemic are those where constraints related to physical and social distance, supply chain disruptions and activity interruptions have been most severe. These

are also sectors where teleworking and smart working arrangements or digital solutions were less easy to implement.

Policy makers have been active in providing targeted financial support and technical assistance to SMEs to conduct technology and problem-solving diagnostics or implement new e-business solutions, often in the form of small-scale and place-based initiatives. In some cases, financial and technical assistance is complemented by training and guidance on the skills and organisational changes needed to support technological change. According to a report on small business digitisation from Connected Commerce Council (10 September), 72% of small businesses have increased their use of digital tools during the pandemic COVID -19. A distinction is made between different types of SMEs. Digital Drivers (35%) consider digital tools essential and were already using them before COVID -19 Digital Adopters use some digital tools, but are not yet fully adapted to digitalisation. And digital maintainers are generally sceptical about the use of digital tools. But digitization is multi-faceted. It involves the use and application of a wide range of different technologies for different purposes. SMEs tend to digitise general administration and marketing first, with the intensity of use of electronic invoices more similar to that of large companies. Similarly, the digital gaps are smaller when it comes to using social media or participating in e-commerce. On the contrary, SME adoption gaps increase when technologies become more sophisticated or when it comes to implementing mass products. Technology supports further technology diffusion as complementarities in diffusion take place. However, this raises a problem as this complementarity could contribute to further widening the digital divide and increase the risk that the benefits of digital transformation will accrue to early adopters( OCDE, 2020).

### 2.3 ASSUMPTIONS REGARDING THE POST PANDEMIC SMEs CONTEXT

Virtualization of the communication process and how SMEs must adapt their business model seem to be an important (Sułkowski, 2020).

AI could trigger a new manufacturing revolution and radically change business practises and conditions. Recent developments in machine learning, greater data availability for training AI models, and increased computer storage and processing capacity have produced a new generation of AI statistical systems that constantly adapt as they process input data, with little (or no) human oversight. The new generation of AI systems can impact and benefit SMEs in two ways: by changing their business environment or by enabling them to change their business practises and increase their productivity and reach. The main business applications of AI relate to automation, image/face recognition, natural language processing, data analytics and decision making, the latter of which includes improved information management and predictive capabilities. By recognising patterns in datasets and learning from tacit knowledge, new AI systems enable the automation of non-routine tasks and free workers from repetitive, lower-value-added tasks, provided their jobs can be reorganised and their skills improved. These new waves of automation could help SMEs increase productivity, for example by refocusing activities on higher value-added functions, reducing the human and economic costs associated with accidents or injuries, or improving the work environment. Implementing such systems could also help small businesses overcome administrative bottlenecks and increase responsiveness at lower cost, for example by enabling customer interactions. AI can be applied across most sectors, with a few sectors likely to see greater gains. AI can also drive changes in the company's internal value chain and can be applied to multiple business functions. Marketing and sales, supply chain management, and manufacturing are considered the business functions where AI could have the greatest impact.

In addition, AI can significantly impact the business environment of SMEs, in a variety of ways. Machine learning can increase the efficiency of public administration and reduce bureaucracy. The use of AI can help tax authorities implement a "tax compliance by design" approach for SMEs. Language processing and AI document mining capabilities could make case review more efficient and cost-effective,

reducing the need for SMEs to devote internal resources to resolving commercial disputes. AI systems are also becoming increasingly important for securing ICT infrastructure to address the rising number of cyberattacks and the skills shortage in the digital security industry. Neural network techniques enable the analysis of credit report data, which reduces the risk of default and the cost of lending, making it more profitable for lending institutions to serve certain segments of the SME population. The use of AI and "people analytics" in the workplace can support job performance evaluations and hiring and firing decisions. Automation of science can reduce the cost of experiments and improve data sharing and reproducibility, putting scientific research within the reach of more (and likely smaller) companies. At the same time, algorithms increase the risk of tacit collusion in product and labour markets and the maintenance of profits and prices above a fair level of competition, to the detriment of smaller firms(OECD, 2021).

## 3. DISCUSSION

The opportunities are not equally for all the SMEs and this create challenge from all the points of view, seek the right segment at the right time and establish the right relationship with the customer. Also, will be necessary to answer the question in which way technology can help to maintain the direct relationship with the customer, to achieve trust and to conduct customer experience to excellence (PWC, 2021).

Even before COVID, barriers to the adoption of digital technologies in SMEs remain: access to infrastructure, low interoperability of systems, lack of data culture and digital awareness, internal skills gaps, funding gaps to cover the high sunk costs of transformation, uncertainty about liability and responsibility when starting new digital activities, risks of reputational damage, etc.

SMEs tend to digitize general administration or marketing functions first. Cross-sector differences in digitisation are significant. The adoption of some key technologies, which vary across sectors, may explain these differences. For example, in the accommodation and food services sector, high-speed broadband, a website and CC for storing files are the key technologies associated with higher penetration gaps and higher sectoral value added (OECD, 2021).

## 4. CONCLUSIONS

SMEs need to be better prepared to adapt their operations, and the stakes are high. Not only because SMEs are the main form of enterprise in most countries and regions and play a key role in building inclusive and resilient societies, but also because digital gaps have been shown to weigh on a country's productivity and contribute to growing inequalities between people, communities and places. The crisis COVID -19 exemplified how differences in digital maturity and readiness can undermine the resilience of businesses and their chances of recovering more quickly. The digitisation of businesses has continued in recent years across all sectors and among businesses of all sizes, albeit at different paces. SMEs have had a specific digital journey. They lag behind in all digital technology areas, and small firms are less digitized than medium-sized firms, which in turn are less digitized than large firms. Overall, however, diffusion patterns are relatively similar across all firm sizes, with larger firms simply moving faster along the diffusion curve.

However, digitization is multi-faceted. It involves the use and application of a wide range of different technologies for different purposes, e.g. to provide better access to markets and end customers, to achieve greater integration of internal business processes, or to expand the capacity of the firm IT etc. Technology supports further technology diffusion as complementarities in diffusion take place. However, this raises a problem as this complementarity could contribute to further widening the digital divide and increase the risk that the benefits of digital transformation accrue to early adopters. In addition, some technologies are more crucial in explaining the different diffusion of digital technologies in the different sectors and are more closely related to the value added in these sectors. For example, high-speed broadband is important for digitisation and value added in the accommodation and food services sector, while the use of portable devices is more important in construction and administrative and support services. The crisis COVID -19 gave a major boost

to further digitisation, with SMEs looking to move operations online to survive closures and supply chain disruptions, and to find new working arrangements to meet the constraints of social and physical distance in the workplace(OECD, 2021).

The COVID -19 crisis has increased the importance of SME digitization and served as an accelerator. Companies have moved their business operations online and implemented smart working solutions to stay in business during shutdowns and overcome supply chain disruptions, with online platforms playing a critical role in connecting users to new markets, suppliers or resources. Early evidence from business surveys around the world suggests that up to 70% of SMEs have intensified their use of digital technologies as a result of COVID -19. Most of these changes will be permanent, as some investments are irreversible and the efficiency gains have now been demonstrated (OECD, 2021).

The present research presents the obvious limitation, as the scientific communities are still looking an answer that is desirable to be more near to the veracity.

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