

Digitalization - An Emerging Business Trend for Sustainable Transformation of SMEs Sectors: A Proposed Model for Survival and Sustainability in Uncertainties

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Abstract

Purpose: Rapid technological developments have increased organizational dependence on digitization and relying on digital business models for survival and sustainability, this paper will address the key areas digital transformation and digitalization have enabled transformation business in SMEs business in different economies.

Methodology: The study explored the literature gathering secondary data from international and governmental organizations and described the digital transformation models presented by various researchers were reviewed to assess the elements necessary for implementing digital technology in SMEs.

Findings: The findings suggested that digital technology activities should be adopted in a phased manner with support from top management, governing bodies, and government. The study further proposed a digital transformation model that serves as a roadmap and provides a pathway to effectively plan and execute the digital technology tailored to the nature of their business.

Implications: The study adds data and information to the existing literature on SMEs, and digital technology to researchers pursuing studies related to sustainable organization and provides future researchers with the scope of digital transformation pathways in sustainability in the digital technology era.

Limitations: More empirical studies are required considering a wide range of SMEs in different geographical contexts across different economies that would help to precisely understand the extent to which digital technology and transformation can facilitate sustainability for SMEs during global uncertainties.

Originality: SMEs globally are very detrimental to their business sustainability and the transition to innovative mechanisms puts a burden on capital investment which cannot be afforded by many SMEs. Bringing policy changes, government assistance, focus on employee productivity, customer satisfaction, and operational efficiency are prime movers to sustain SMEs in low economic countries.

Keywords: Digitalization, Transformation, Pandemic, Business Operation, Technology, Organization

1.0 Introduction:

The term digitalization is considered as a process of converting information into an electronic format through different technologies sometimes more generically referred to as digital transformation from analogous form to digital layout (Bloomberg, 2018). Digitalization is currently taking a stride in all business sectors both in larger firms and small and medium-sized enterprises (SMEs) globally. Digitalization has comfortably become a development concept among many industries in the backdrop of industrialization and globalization phenomena that have paved the way for industry 4.0 implementation (Kilimis, 2019). Digitalization is one of the prime key drivers identified to lead the 4th industrial revolution in the current phase through digital-enabled operations across all industrial sectors. On the other hand, there is much significance and importance that is tied up with the concept of digital transformation to SMEs, especially in developing and less developed countries. Notwithstanding to say, many anonymous case studies conducted on the implications of digitalization have reported manufacturing and service sectors have maximized the benefits of transforming into digitally-enabled operations. On the contrary, owing to the intense competition among organizations that are coupled with emerging technologies from the industrial revolution, digitalization in SMEs is a window of opportunity for preparing these enterprises to withstand any forthcoming uncertainties. SMEs on the other hand are very important sectors representing 90% of global businesses contributing to more than 50% of employment across all organizations (World Bank, 2022). Currently, the development of SMEs in all aspects is of prime importance to all economies as these enterprise sectors have the potential to provide 600mn jobs by the turn of 2030 thereby contributing nearly 40% of national GDP in developing nations.

1.2 SME Implication on Emerging Business and Economy

SMEs sectors indeed are attracting the attention of emerging economies those that belong to low income and rapidly growing countries considering the contribution these enterprises can significantly impact the socio-economic status of developing and least developed countries (Han et al., 2018). The number and volume of these enterprises in many countries are rising with every industrial revolution in some countries, all of them invariably contribute to the economic growth and GDP of individual countries. SMEs however have proven to support the economy largely through employment, flexibility to operate, entrepreneurship, and holding subsidiary operations like supply chain to larger firms (Meghana et al., 2011). Erdin and Ozkaya (2020) contend SMEs play a substantial role in shaping the economic development in case of particular countries showing investments and improved policies toward innovation. Global studies pursued by different researchers show SMEs are very instrumental in driving economic growth and employment in South Africa (Abor & Quartey, 2010), social development in Indonesia (Padmadinata, 2007) in addition to numerous ways business emerging through different perspectives in the current 4th industrial revolution. Smaller firms have started adopting innovative business strategies such as improved HR practices (Zheng et al., 2009), use of e-business applications (Koh & Maguire, 2004), invasion of information and communication technology (Nycz et al., 2015), and also prominently digital and digitalization applications (Bouwman et al., 2019) to keep afloat their business operations during recessions. In this setting, the purpose of the study is to highlight the significant role of digitalization and digital technology in SMEs by examining the scope of digitalization concepts and applications across prominent sectors globally and analyzing how the digitalization trend is transforming the business operations in SMEs. As an outcome, the following research questions are deliberated- what are the emerging business trends collaborated with digitalization concept and consequences to SMEs from digitalization opportunities, potential benefits of digitalization advancement in SMEs of both developed and developing economics.

1.3 Significance and Objective of the Study

Small and medium enterprises are important employment generation entities in both developed and developing countries and the majority of the workforce indirectly is associated with the business in these enterprises. Knowingly that the pandemic has caused a severe crisis, understanding the mechanisms business organizations are taking to cope and survive the uncertainties are very crucial to discovering alternative strategies and effectively sustaining the business. In this perspective, research studies are required and needed to explore the applications of different technological advancements that can be adapted to business operations to maintain business continuity. In this pursuit, the intended paper will attempt to signify the role of digital technology and how digital transformation will prove prospective for SMEs survival and sustainability, especially during pandemic uncertainties.

2.0 Methodology and Framework

The present study reviews the role of digitalization technology in SMEs and critically examines how digital technology can be utilized as an enabler to sustain and enhance performance during the pandemic crisis. Further, this study will also strive to analyze the potential benefits and scope of digital technology applications can offer towards maintaining business survival and continuity in SMEs in the different economies. Within the scope of this research, the study will attempt to answer questions related to the significance of digital technology as an effective tool in transforming business in SMEs and the significant approaches these enterprises have taken during the transition phase of the pandemic. The purpose of the study is to examine the principal role of digital technology in response to the implications of the COVID -19 pandemic which impacted SMEs globally and further study the scope of digital tools as an effective mechanism in the digital transformation of industries. To achieve these objectives, we have adopted three different approaches.

1. *M1: Exploratory Methodology- conducting extensive literature studies basically to identify the COVID-19 pandemic implications and examine the nature of positive and negative impacts on SMEs in different geographical contexts.*
2. *M2: Secondary Data- reviewing published work from international organizations, company websites, and reports from business analysts are carefully examined to describe the digitalization concept and its wide applications in SMEs in different economies.*
3. *M3: Descriptive Analysis- examined the digital transformation models presented as road maps by various researchers and developed a proposed digital transformation roadmap considering the different elements required for the digitalization of business activities in SMEs.*

3.0 Results and Discussion

3.1 COVID -19 Pandemic Implication on SMEs Sectors: Global Scenario

COVID -19, has created a crisis that swept across all business sectors more severely in countries that are driven by small and medium enterprises. Startlingly SMEs constitute 90% of all businesses providing more than 50% of employment (World Bank, 2021). Globally there are 212.98 million SMEs reported in the year 2020 which is slightly less than were in the year 2019, the highest present in the Asia Pacific region with 131.88 million, followed by 57 million in the Europe and Middle East region combined and 25 million in North and South America (Clark, 2021).

Unprecedentedly the impact on SMEs was observed in both least developed countries (LDC) and developing countries causing implications in financial support, disruption of business activities due to shortage of manpower resources, and difficulties in business survival (Zutshi et al., 2021). In comparison, SMEs in the developing nations are more resilient to withstand impacts

from impeding economic crises than their counterparts in LDCs. However, due to the intensity of the COVID -19 that caused a pandemic situation, it has affected all types of businesses and associated operations and in our context particularly affected SMEs in both least developed countries to a larger extent and developing countries to a moderate extent (Figure 1).

In general, the pandemic led to both positive as well as negative implications in SMEs according to the observations by Lim et al. (2020), regardless of the economic status of nations, though there are not sufficient studies proving either of the implications favoring any economic category of countries and the most severe implication from the pandemic is known to have caused the global business sectors to shut down partially or fully (Figure 1). Analysis shows SMEs like transport manufacturing, construction, wholesale and retail trade, air transport, accommodation and food services, real estate, professional services, and other personal services are the ones most affected sectors than others (OECD, 2020). Reports from ILO (2020) state that a study done in 8 countries across four continents shows 70 % of them have shut down operations and 50% have closed temporarily from reduced sales and orders although other significant impacts affected these enterprises. Survey reports from the US reveal 43% of businesses associated with SMEs are temporarily halted which also led to a 40% reduction in employment (Bartik et al., 2020a).

Among the other pertinent implications SMEs have suffered, the most prominent being are lower revenues, declining orders, shortage in cash flow, and reduction in manpower have all led to disruption in business continuity. SMEs in China have faced supply shortages, a fall in demand, and scarcity in the workforce apart from suffering a shortage of resources harming the owners and stakeholders (Aftab et al., 2021; Bartik et al., 2020). Elsewhere it was also reported the studies, indicated a decrease in supply and demand by up to 83%, income generation ceased by 89% and 60% of SMEs have reduced working hours in Somalia (Warsame, 2020).

Conversely, the pandemic eventually has also led to notable implications on the positive side such as the introduction of digital technology, promotion of online sales and purchases, ability to engage in business through remote working mechanisms, etc., are some changes explored by many business organizations globally including the SMEs sectors (Figure 2). However, the subject of digital technology applications as mechanisms to counteract such pandemic crises is very limited and investigated by researchers and business analysts (Papadopoulos et al., 2020). On the contrary, there are many research studies through empirical data published by various researchers who investigated the impact of COVID -19 on SMEs globally such as findings by Sun et al. (2021) on SMEs in China reveal the pandemic has impacted operational procedures, profitability, remote work, stakeholder satisfaction, and safety subsequently affecting their performance. According to studies by Adzic and Mansour (2021) the prominent negative impacts suffered by SMEs in Serbia are due to lack of revenue generation, operational inconsistency, lack of business opportunities, insufficient innovative business models, cost cuts, production declines, and lack of innovation marketing mechanism which made these enterprises vulnerable due to the COVID pandemic.

Further reports from the African region from Zambian, SMEs also claimed that the pandemic has caused revenue losses up to 50% apart from incurring high inputs cost, low customer demand, and salary cuts (Mwaanga et al., 2021). Besides, at a given point of time during the COVID pandemic, many countries have reported the implications SMEs have suffered based on the extent of impact felt ranging from moderate to a high level. For instance, in the UK, the pandemic has caused a moderate to a high threat to businesses which accounts for 63% of SMEs getting affected by early March 2020, while in the US during the same time, the impact was up to 96 % in their SMEs (OECD, 2020).

3.2 Digital Technology Concept and Applications in SMEs in Developed and Developing Economies

Digitalization technology particularly has gained recognition due to its wide applications and potential features that can be adopted in various business operations which have become the prime entities for the 4th industrial revolution (4 IR). In addition, digitalization has given a new dimension to the business process in SMEs including the larger firms because of the COVID - 19 pandemic.

Rapidly increasing industrialization and improvements in scientific knowledge have exposed every part of business operation to digital technologies involving the use of artificial intelligence (AI), the internet of things (IoT), Cloud computing, ERP, RFID, social media, B2G, big data analytics, etc., for improvising the business processes (Zairis, 2020; Yoo et al., 2012; Andrews et al., 2018) and gradually paved the way to digitalization (Table 1). Covid -19 pandemic has narrowed down the business opportunities putting SMEs under uncertainty in business continuity, in this gambit digital transformation (DX) concept has emerged integrating digital technologies in the various facets of business operations such as in manufacturing, transportation, hospitality, and tourism, healthcare, financial services, education, energy, media, retail business, agriculture processing, etc., (Figure 1) by delivering a new approach to business process and eventually offering good scope for organizations to sustain the pandemic crisis (Winarsih et al., 2021).

Digitalization includes multiple applications that can enhance the business process in SMEs as well as larger firms and can lead businesses to improvement in productivity, draws customer attention, consumer experience, and digital security (Dao, 2020). However, there are concerns obviously on the extent of digital literacy and familiarity with using digital tools by SMEs. Moreover, SMEs particularly in developing and least-developed nations currently face many challenges which are also presented by many researchers through their studies. A report by Wang (2016) examining SMEs in 119 developing countries indicates lack and inadequate financial support are the major obstacles limiting these organizations. In concurrence with these barriers, Christina et al. (2014) from their studies on 35 SMEs in the Muscat region of Oman, have stated most of the sectors are largely affected by challenges in availing appropriate financial support, inability to get requisite training in knowledge, and skill development to manpower. About these organizations in the Asian region, they are encountering difficulties in accessing funds, a lack of technical information and infrastructure facilities, slow growth in terms of research and development, and a lack of skills in IT literacy among workers (Yoshino & Hesary, 2016). In addition among the wider challenges, SMEs globally are facing include market competition with larger firms, financial and economic crisis, ICT, increase in multinational corporate entities, consumer preferences, trade conflicts and war between nations, etc. are significantly impacting the sustenance and growth (Gamage et al., 2019). On the contrary, digitalization, in turn, has become a solution for SMEs in overcoming the wider and specific challenges by helping these sectors in reduce costs of inputs, simplifying production and manufacturing processes by automation thereby reducing the reliance on manpower resources that eventually can create competitiveness and gain better consumer preference. Notably, digitalization to different extents in SMEs and the adoption of digital

technologies based on the nature of the business can potentially resolve the consumer preferences by responding to short and long-term demands of customers (Guo et al., 2020).

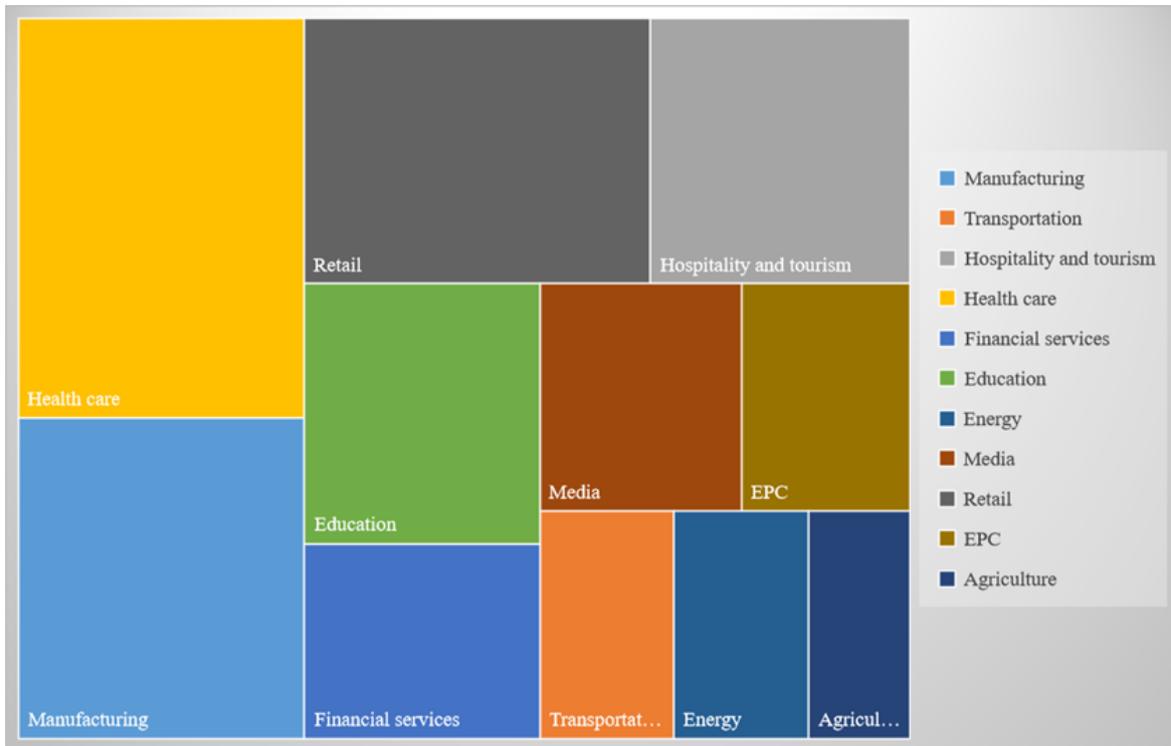


Figure 1: Analysis revealing volume of digital technology tools adopted by different business sectors

In concurrence, studies establish that the COVID-19 pandemic has articulated the concept of digital transformation in the current scenario through technology, automation, and collaboration allowing flexibility to business processes (Subramaniam et al., 2021), while in some countries the crisis has led to developing working models on digitalization in SMEs (Nachmias & Vierheilig, 2021). It is imperative to highlight that incorporating digital technology can assist SMEs in streamlining data collection, resource management, database generation on customer understandings, improved customer satisfaction, and experience, transition to digital culture, improved production and profits, better transaction flexibility for manufacturers and customers, etc. nevertheless digital transformation has improved market share up to 85% with substantial growth in revenue generation. On the other hand, there is also a considerable lack of proof to claim digital technologies are potential means to overcome shortcomings during such a global crisis (Bagale et al., 2021) regardless of the composite nature of SMEs to adapt and transit easily to digitally enabled business process (Stevens, 2002). As such, digital technology and digitalization of business processes have enhanced business prospects post-COVID -19, around 70% of the SMEs globally have started incorporating digital technologies into their business process (OECD, 2020) however there is considerable difference exists in the way larger firms are responding to the crisis. For instance, in Brazil, 50% of the SMEs in a study have migrated to digital technologies and many more countries have already taken steps to transit to digital-enabled business processes. Anonymous studies also report that 40% of organizations have already reached a milestone in digital initiatives,

among them 91% of organizations have successfully incorporated some form of digital technology into their business operations (Dobrowolska, 2020).

Notwithstanding say, the COVID pandemic has given scope to many startups' businesses to be established most likely being SMEs that are digital-enabled posing significant benefit over existing organizations, especially those that have not stepped into DX. Despite the broadcast digitalization concept having progressively got integrated into the SME's business process, at the time when most of these enterprises were not anticipating the closure of businesses due to COVID -19 pandemic, alternative solutions such as digital technology have offered wide scope during the crisis. Although there are positives and negative facets to the application of digital technology, currently it would take a significant amount of time for the majority of the SMEs before the potential benefits are outweighed to overcome the pandemic challenges (Table 2).

3.3 Roadmap to the Digital Transformation of SMEs: Digital Business Models for Future

Every business is different; hence each business establishment must develop a digital transformation (DX) plan personalized to its business needs and requirements. The concept of DX involves the integration of digital technology in all aspects of business operation causing changes in the function and end-user product. Against this backdrop, the journey to the digitalization of business processes in SMEs is a quite challenging task that should be planned meticulously involving every phase of the business process. With the implication to drive the SMEs through the digital transformation effectively, customized business models tailored to the nature of each business are very important to explore the benefits of digital technology (DT).

While digital transformation has already underway in many SMEs including the LDC and developing countries, however, a complete digital transformation in most of the SMEs is yet to be fully explored. Despite the myriad of benefits and opportunities digitalization offers to business more distinctly to the SMEs that have suffered during the COVID pandemic, there is a significant delay in adoption due to gaps, namely not receiving proper financial support, inability to acquire the right skills and knowledge to use technology and lack of proper strategy to implement the various digital tools (Deshpande, 2020).

On the contrary, to embark on the successful path of digital transformation, SMEs invariably have to emphasize certain core elements in their business such as employee productivity, customer satisfaction, and operational efficiency all of which have a tremendous role in technological implications for business growth Deshpande (2020) at the same time organizations have to strive for minimizing the financial gaps to provide better infrastructure facilities in enabling the business process to adapt to the emerging digital transformation. Accordingly, government efforts also should be backed up by providing the SMEs with technical support and assistance, encouraging skill development and knowledge in digital tools, giving digital security and assurances, etc. (OECD, n d).

3.4 Review of Digital Transformations Models: Proposed Roadmap for SMEs

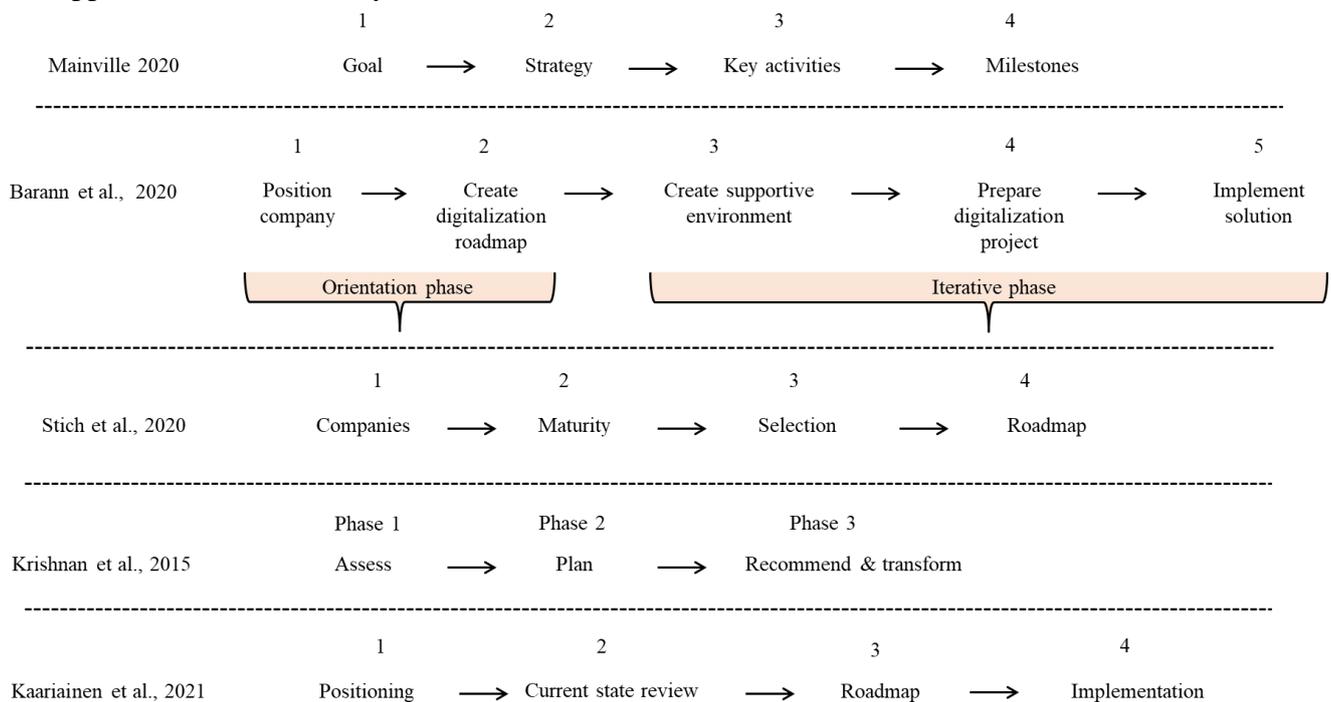
There are many business models proposed by researchers mentioning digital transformation roadmaps which provide a pathway for businesses to adopt DT in their operations (Mittal et al., 2018; Zaoui & Soussi, 2020). All business models for digital transformation proposed by various researchers are either recombination types combining the existing models or invention types developing a new model (Priyono et al., 2020). Importantly Mainville (2020) from his study on digital technology has outlined four core elements in his roadmap on digital transformation. Barann et al. (2019) have proposed a procedure model for (DX) in two phases, namely, orientation and iterative transformation, whereas Stich et al. (2020) presented the approach to DX through four-step processes. Further corporate companies like cognizant technologies have also developed a framework for following a strategic approach to DX in

manufacturing sectors. Krishnan et al. (2015) have reviewed describing the framework in three phases.

Similarly, in conjunction with the previous models, Kretzschmar (2020) has proposed a 12-step digital transformation roadmap considering the SMEs in the South African Development Community, Cotrino et al. (2020) have proposed a 5 step DX roadmap for SMEs from the perspective of the 4th industrial revolution categorizing the whole framework into practical implementation and strategic context phases. Kaariainen et al. (2020) have proposed a 4 step DX model based on studying the 19 small and medium enterprise industrial sectors in Finland by employing the DX concept published in their previous studies (Parviainen et al., 2017). The DX models are also proposed for the furniture industry based on the digitalization index and quality indicators by Szopa and Cyplik (2020) by a 4-step process. Li et al. (2018) in their study proposed a more dynamic model for DX for SMEs and cross-border e-commerce sectors indicating digital transformation is more likely to be led by entrepreneurs (Figure 2).

Considering the various DX business models presented and described by researchers through the existing models, and the limitations SMEs currently are facing from the COVID pandemic, the authors have examined the road map elements that are more critical to the digitalization process and developed a DX transformation model that serves more as a framework that can be adapted to the nature of every business (Figure 3).

The model on digital transformation proposed in our study is an outcome of integrating the different roadmap components essential in adopting digital technology to business operations, and the DX models presented by various researchers. The DX roadmap developed through our study is a fundamental framework built upon the plan, do check, act (PDCA) concept formulated by William Deming that is largely followed as a quality management system approach to sustainability in industries.



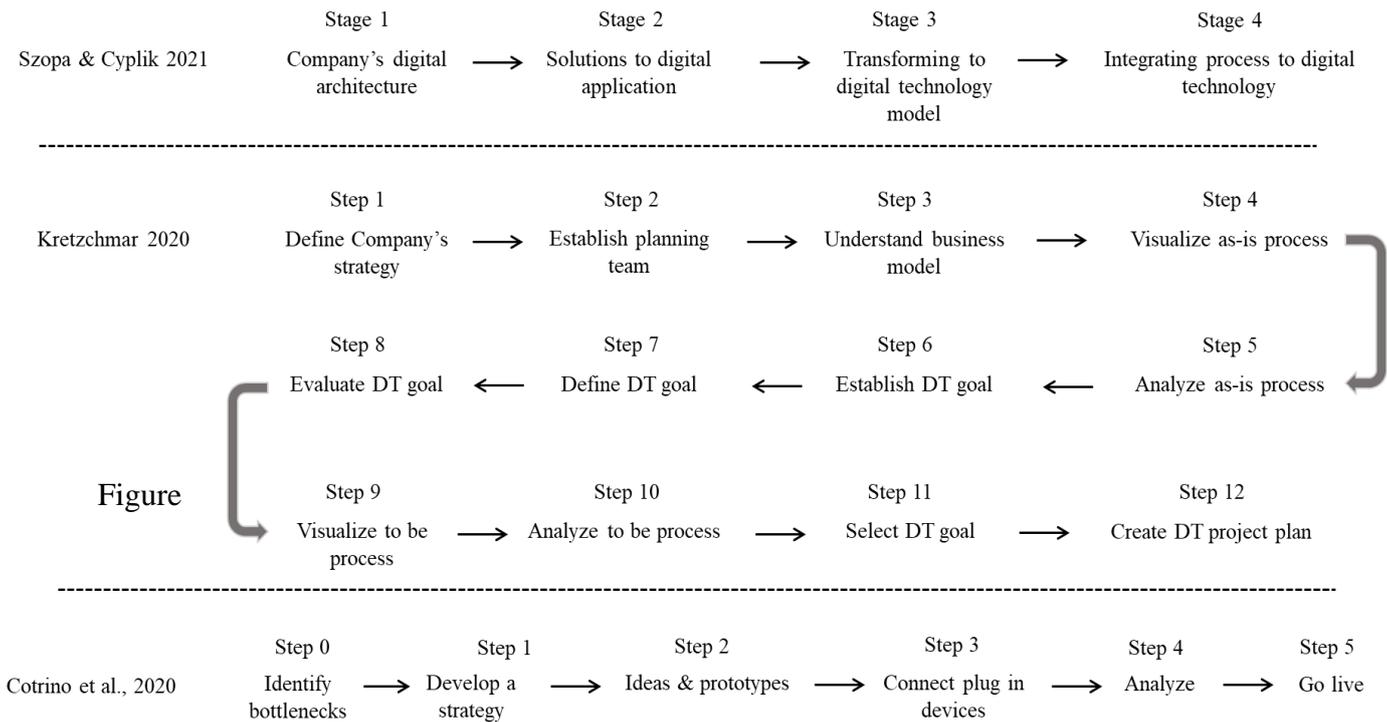


Figure 2: Proposed digital transformation roadmap models proposed by various researchers

Currently, the PDCA concept is widely used across all industrial sectors for achieving competitive advantage, improving productivity, the continual improvement of organization performance, evaluating organizations' progress, product development, etc. (Patel & Deshpande, 2017; Nguyen et al., 2020; Srivannaboon, 2009; Lodgaard & Aasland, 2011). In this context, the DX roadmap presented in our study provides a pathway for SMEs to gradually migrate their business activities to digitally enabled operations.

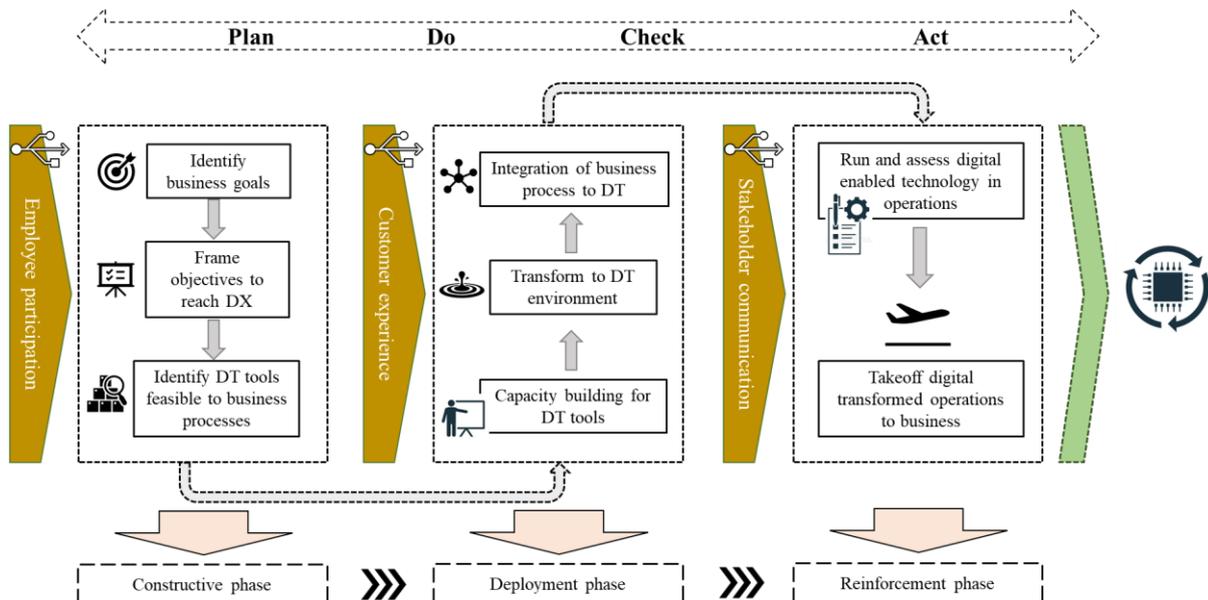


Figure 3: Proposed digital transformation model crafted as a framework for SMEs to embark on digitalization adapting to the nature of their business.

Constructive phase (PLAN): organizations intending to adopt digital technology in their business activities should initiate the digital transformation journey by identifying the goals personalized to the nature of every business operation, later frame objectives, and identify a range of DT tools that are appropriate the business process. Moreover, to accomplish the tasks in the constructive phase (PLAN), employee involvement is the key plugin necessary to provide confidence to staff on management commitment towards the DX journey.

Deployment phase (DO): this phase builds upon the extent of tasks executed from the previous stage. This phase indicates the grounding of the digital technology and tools into the business activities in a phased manner by imparting training to staff on DT tools through capacity building tasks followed by digitalizing the business environment and later integrating the business process with digital tools. Consequently, deploying these measures in the phase requires feedback from customer experience as a key plugin to ensure customers are receptive to understanding the organization's effort in the DX journey.

Reinforcement phase: this phase takes over from the previous phase and finally plans to reinforce the digital technology completely into the business process systems of SMEs. Before that, the digital-enabled technology should be tested and assessed (CHECK) against the business goals established in the constructive phase to verify the effectiveness and integrity of adopting digital technology in the operations.

Lastly, the organization acts (ACT) by planning and deciding to launch the digital transformed operations into the entire business activities. On the other hand, stakeholder communication and interaction as a key plugin plays a significant role in this phase thus effectively reinforcing the digital technology and transforming all phases of the business operations in SMEs. Finally, consistent progression of the organization through the three phases gradually will lead the SMEs to a successful DX roadmap thereby eventually contributing to these enterprises' multiple benefits of digitalization.

3.5 Managerial Implications

To keep pace with the industrialization and globalization phenomena, SMEs must embrace digital technologies in their business operations to remain competitive among counterparts and larger firms. On the other hand, extensive studies were done focusing on the impact of digitalization on business activities and how digital technology led to a facelift for many SMEs that suffered amid the COVID pandemic (Foroudi et al., 2017).

The negative implications affecting the SMEs to accept DX need immediate attention, and the misconceptions among the SMEs that digital transformation and digitalization are more applicable to larger firms and big businesses should be demystified. Functionally, it is also important to spearhead the DX more carefully in organizations by bringing in policy changes to help the SMEs with technical support and assistance from both the management and government. In addition, the regulatory bodies should step forward to facilitate the SMEs in the digital transformation process by upskilling their knowledge of digital technology and tools, training, and educating the key benefits of digitalization. Apart from those actions, the SMEs sectors in coordination with governing bodies should formulate strategies and identify mechanisms to narrow the adoption gaps in using digital technology depending on the nature of business activities as this allow SMEs to focus more specifically on the strengths, weakness, opportunities, and threats (Figure 3).

Among the other managerial measures, the provision of infrastructure facilities, the creation of networking facilities, and communication platforms with other business sectors are also very vital to diffuse the digitalization concept deep into the SMEs sector. Last but not the least, all SMEs on the path to digitalization must essentially consider focus on employee productivity,

customer satisfaction, and operational efficiency, which are three significant pillars determining the business growth and sustenance of any organization.

4.0 Conclusion

COVID -19 pandemic certainly has changed the way how business is managed. Obviously, as a result, many organizations and establishments had embarked on the path of adapting to the fluctuations by following innovative strategies and mechanisms to sustain business activities. Amidst these uncertainties, digital transformation surfaced as a ready reckoner to a majority of the business establishments for SMEs and some extent on larger firms, eventually leading the way for the digitalization of business processes. As a result, this study highlighted the key implications the COVID-19 pandemic had on the SMEs sector illustrating the positive and negative impact on business organizations worldwide. Many businesses especially SMEs currently have started to understand the digitalization concept, beginning to identify the applications of digital technology and the benefits digital transformation will bring to their nature of business activities. However, the migration of business activities to digital technology should be done in a phased manner with support from the management, local government, and governing bodies. In addition, the digital transformation model proposed by the authors in this study serves as a roadmap and provides a pathway for the enterprises to effectively plan and execute the digital technology tailored to the nature of their business.

4.1 Study Limitations and Future Scope

The present study findings are drawn from the exploratory analysis of literature studies published by various researchers on digital transformation models in different business contexts in SMEs. The significance of the digital technology and digitalization concepts predominantly examined in SMEs is limited to mostly secondary sources that restricted the scope of investigating the study from empirical research. The different digital technology applications adopted in different business sectors are largely presented by organizations and companies, with very limited support from first-hand research available. Therefore, further research on this subject should focus on empirical studies considering a wide range of SMEs in different geographical contexts across different economies that would help to precisely understand the extent to which digital technology and transformation can facilitate sustainability for SMEs during global uncertainties.

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