



EDITORIAL

DIGITAL TRANSITION:
WHAT ARE THE CHALLENGES FACING
SMALL AND MEDIUM-SIZED ENTERPRISES?

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Abstract

Purpose: The aim of this editorial is to provide a contribution of analysis and reflection on the impact that the advent of Information and Communication Technologies (ICTs) and the digital transition have had and are having on small and medium sized enterprises (SMEs).

Findings: The editorial offers possible interpretative and normative guides to successfully understand and deal with the digital transformations of SMEs.

Practical and Social implications: The essay illustrates the threats and the opportunities deriving from the digital transition for SMEs, highlighting the need to adopt entrepreneurial behavior appropriate to the importance of the challenges..

Originality of the study: We highlight the importance of the leadership of the SMEs in tackling the challenges between preserving the old world and welcoming the new induced by digitization with strategic ambidexterity.

1. The digital revolution, marketing 5.0, and the smart factory

In recent years, we have been witnessing a growing turbulence ascribable to the profound changes taking place in political, economic, social, environmental, technological, and legal contexts. Beyond the recent pandemic crisis and geopolitical upheavals (Pencarelli et al., 2022), which have caused a reframing of the optimistic vision that had accompanied the advent of globalization by shedding light on the risks associated with excessive interdependencies of the worldwide value chains, we are currently experiencing grave environmental discontinuity and uncertainty due to the digital revolution taking place with its plethora of unknowns regarding the present and the future of economic and social systems. In this editorial, space is given to reflecting on the question of whether this digital transition phase presents opportunities or conceals threats to the SME sector.

Digital transition began with the spread of the Internet, an intelligent infrastructure capable of connecting enterprises, machines, homes, people, and transportation means within a network that could be articulated in various ways, such as the Internet of communication, Internet of Energy (IoE), Internet of Logistics (IoL), Internet of Things (IoT) and Internet of Services (IoS). All of this is profoundly changing the way people and organizations operate. The number and type of available sensors is growing rapidly, thus making it possible for buildings to be fitted with intelligent meters and for technological devices to be connected to internet platforms, generating enormous quantities of data (Big data). The best-equipped enterprises will be able to utilize this data to gain better knowledge of production and consumption processes; they will also be able to create algorithms to both enhance their productive and logistical efficiency and their ability to segment the demand, as well as to create value propositions that are ever more personalized from a digital marketing standpoint.

The digital wave is manifesting revolutionary dynamics and bringing with it a phase of deep discontinuity in consolidated models (mental, social, cultural, educational, organizational, and managerial); this is requiring people and organizations to come up with new interpretative paradigms in order for them to comprehend and exploit new opportunities, neutralizing or limiting the potential risks associated with the new context. The health emergency has undoubtedly accelerated the spread and application of digital technologies on both sides of the consumption-production discourse; it has drastically modified the very structure of various sectors and, for SMEs in particular, has prompted a rapid revising of their competitive strategies and their organizational structures and processes. While consumers are using digital support more and more to obtain information, make comparisons, or buy and rate products, SMEs are enmeshed in deeply impacting competitive and organizational changes brought on by multiple phenom-

ena. In many sectors, alongside the eclipsing of certain traditional and/or “weak” actors in the value chain – often associated with commercial disintermediation processes – there also are appearing new actors and re-intermediation processes (online portals, sharing economy platforms, and electronic intermediaries and infomediaries). Moreover, the more innovative traditional actors are undergoing a gradual transformation as they begin to pursue strategies tied to innovations in business models and in marketing processes -whether information-based (Big data analysis), strategic (fine segmentation of markets), operational, or relational- by introducing ICT-guided practices having highly impactful effects on the competitive dynamics within the sector. As observed by Kartajaya et al. (2021), marketing has undergone a rapid evolution, over time, going from Marketing 1.0, where product orientation prevailed, to Marketing 2.0, client-orientated, to Marketing 3.0, value-orientated, followed by Marketing 4.0, where digital orientation, i.e., *Martech*, became the norm, and finally, to its latest configuration in Marketing 5.0, where technology serves humanity and where humans and machines collaborate. Worthy of note, Marketing 5.0 sees the application of technologies that imitate humans to create, communicate, offer, and augment value all along the customer journey.

In this new scenario, a series of advanced technologies, which include artificial intelligence (AI), augmented reality (AR), virtual reality (VR), the Internet of things (IoT), Blockchain, and natural language processing (NLP), are adopted to replicate human cognitive capabilities and learn from data in order to provide customers with better, personalized offers. There is widespread use of chatbots and intelligent robots for customer service, eye tracking and mouse tracking are used to understand customer behaviors in front of a computer or tablet screen, and facial coding works with a webcam to measure people’s emotional responses based on their facial expressions. Marketing 5.0 adopts new technologies, called *next* technologies, to activate data-driven marketing (gathering and use of Big data to enhance marketing decisions), agile marketing (processes launched by decentralized and interfunctional teams to trigger rapid responses to problems that emerge in non-hierarchical, innovation-friendly contexts), predictive marketing (proactive marketing processes based on forecasting data and using machine learning to predict the outcome of marketing activities prior to the launch of a product or a campaign), contextual marketing (personalized, one-to-one real time marketing actions aimed at the appropriately profiled consumer in brick-and-mortar buying locations), and augmented marketing (actions that blend digital touchpoints, characterized by speed, with personal touchpoints, characterized by empathy, thereby augmenting the front line marketer’s ability to create value).

Therefore, the umbrella term ‘ICT’ represents a conceptual container in continual evolution, one which consists of technological devices with

information capabilities that support decision-making and organizational process as well as information processing (Eller et al., 2020). Increasingly, we are seeing the fusion of physical and virtual worlds, along with the integration of physical and computational processes. Thanks to the IoT, interactions between and among goods and other physical objects are made possible, while the IoS allows sellers of intangible goods to offer value propositions to clients via the Internet. New payment systems based on digital technologies, i.e., *Fintech* services (Moreira-Santos et al., 2022), have brought about the most significant changes in the financial sector, accelerated by the restrictions and lockdowns imposed in the wake of the COVID-19 pandemic; e-commerce, the use of tools such as contactless payments, and financial services conducted remotely have increased exponentially, thus revolutionizing the sector and, indeed, the entire economy. In addition, a new factory model, the so-called *smart factory*, has emerged; thanks to integrated cybernetic and physical systems, people and machines can be assisted in the execution of tasks. In the smart factory, production activities achieve high levels of efficiency and flexibility, thereby saving time, also thanks to the fact that production processes can be controlled and coordinated via the IoT and the IoS.

The new digitalized world is based on six principles: a) *interoperability*, supported by the standardization of communication codes; b) *virtualization*, by which cybernetic systems can control physical processes; c) *decentralization*, where every computer or technological device has decisional autonomy, even in centralized control procedures; d) *real time data gathering and analysis* capacity; e) *orientation to service*, that is external as well as internal, toward clients outside and inside organizations; f) *modularity*, which allows a flexible adaptation to requested changes through the substitution and/or expansion of single modules (Pencarelli, 2020). In sum, there are two principal application fields for digital technologies: one projected toward the outside and one focused on the inside. The external processes can be geared toward formulating new value propositions for clients by reconfiguring the value chain and enhancing the experience and engagement of clients and of the other stakeholders, which can also include integrating and hybridizing the physical and the digital dimensions. The internal processes can foretell a greater use of data for an integrated management of production activities, a (better) understanding of clients, and a reconfigured organization, all geared toward the fuller involvement of employees leading to enhanced culture and digital competency (Balakrishnan and Das, 2020).

2. Digital transition and SMEs: risks vs opportunities

The technological revolution taking place, it must be noted, is having a destructive impact on many traditional businesses; those enterprises and nations that are not able to adjust to the changes by investing in digital infrastructure, equipment, and competencies are risking their very survival. As has been observed and highlighted by many, digitalization could also provoke devastating effects on employment levels, as AI and robotics will be able to replace human labor (especially in repetitive tasks not requiring creativity or empathy) in many management processes within businesses, including smaller enterprises. SMEs risk not being able to take advantage of all the potentialities of going digital, given that they are often still poorly connected to high-speed broad band internet and, compared to larger enterprises, they have a lesser chance of fully participating in a data-based economy or of exploiting cloud computing for data archiving and processing. SMEs are also less proactive in safeguarding their own data and are often reluctant to do so, even to counter security threats; thus, they are also at greater risk of becoming weak nodes in the hyperconnected infrastructure systems and supply chain (Kergroach, 2020).

Despite these challenges and dangers, digitalization will create new business and employment opportunities, increasing the demand for digitally competent personnel who can work in the new context generated by the digital revolution and by the new information and communication technologies. Ghobakhloo and Ching (2019) underscored how small and medium-sized enterprises can integrate modern digital technologies relative to intelligent production with traditional business operations in order to develop intelligent production processes using artificial intelligence. Park et al. (2020) highlighted how digitalization can foster, within an enterprise, organizational and strategic ambidexterity that allows it to operate with efficiency and flexibility as it balances the exploitation of existing resources and the exploration of innovative processes, without ever losing sight of its current management goals. Although the advantages are clearly different for SMEs than they are for large enterprises, given the significant digital divide that penalizes them, SMEs nevertheless have within their grasp unprecedented opportunities to optimize their business processes (Eller et al. 2020) and to come out stronger, post pandemic-induced crisis. Clearly, digitalization can bring significant advantages to SMEs by helping them to reduce costs and save both time and resources in their drive to better exploit not only their supply markets but also new markets located far from where the enterprise is based, even without having to commit an overly large amount of resources. In this vein, research conducted by Denicolai et al. (2021) has revealed a positive relationship between digitalization and internationalization of SMEs; more specifically, the authors un-

derscore how, in addition to investment in ICTs, entrepreneurs must have a full awareness of the potential value of digital resources in terms of the growth and competitiveness of the enterprises. Bettiol et al. (2021), in turn, point to the importance of historically accumulated knowledge by SMEs in the digital field, which helps them acquire the competencies, culture, and technological maturity necessary to optimize their competitive and economic performance.

Nevertheless, although Kergroach (2020) does recognize that some SMEs are on the leading edge of knowledge and technology – e.g. in Finland, Sweden, France, and the UK – he underscores the need for SMEs, in general, to be better prepared to grasp the opportunities that arise. The potential presented by digital technology seems all too often underexploited, particularly by traditional businesses located in rural areas with poor connectivity or little broad band access; such enterprises are less able to utilize cloud computing services, less proactive or careful concerning data protection, less aware of opportunities tied to digitalization, and less open to training their employees in the use of digital innovations. Eller et al. (2020) point out how the digitalization challenges that SMEs face can be overcome thanks to the widespread availability of technological resources, to their personnel’s digital competencies, and to the adoption of clear strategies geared toward digitalization; they argue that small and medium-sized enterprises are therefore capable of grasping the opportunities to be had with ICTs without having to passively succumb to the digital revolution. In a similar vein, the contribution by Doerr et al., (2021) spotlights the importance of high quality, national digital infrastructure, which would facilitate SMEs’ ability to take full advantage of digitalization and its inherent potentialities in order to pull out of the post COVID-19 crisis by activating e-commerce solutions and improving customer service, logistics processes, and operations management. Sun et al. (2021) also shed light on how, in China, the SMEs that were best able to respond to the crisis were those located in urban centers that were more or better equipped with digital infrastructure. Research on the role played by digital innovation in SMEs operating in the main ‘Made in Italy’ sectors (Matarazzo et al, 2021; Grosso et. al, 2021) reveals how the digitalization of management and marketing processes can represent an important means for improving company performance, both in terms of market performance and of financial bottom line. On this point, Matarazzo et al., (2021) show how digitalization allows even traditional SMEs to reformulate their business model in the aim of improving the consumer experience of online clientele by acting in the arena of cognitive, emotional, social, and sensorial information in all phases of the client relationship and of the customer journey. It bears noting that all over the world, for many SMEs, digitalization has most frequently and successfully offered the way out of the Covid-19 crisis. One research study

on 518 Chinese SMEs clearly shows that digitalization has allowed SMEs to effectively respond to the crisis and improve their performance thanks to the use of dynamic competencies (Guo, 2020). The study highlights how, besides activating short term actions needed to face the emergency caused by the slowing or stopping of production and to avoid becoming insolvent, SMEs turned to long term strategies, leveraging on digitalization to pivot and reinvent themselves, taking a new look at their value propositions, and broadening their strategic and market horizons.

Moreover, digitalization has presented the most significant opportunity for economic and social recovery because it has activated an emerging cybernetic form of entrepreneurship that is associated with the use of ICTs. In the wake of this conceptualization, the study conducted by Tajvidi and Tajvidi (2020) first examines the main differences between traditional entrepreneurship based on the physical dimension of processes and cyber entrepreneurship based on the partial or total digitalization of processes; it then delves into how cyber entrepreneurship is applied in the food sector, highlighting how ICT applications (social media, Apps, e-commerce websites) have helped numerous enterprises in the sector to resist and overcome the Covid-19 crisis and generate sustainable economic and social pathways.

3. An interpretative model and the role of leadership in managing change

In consideration of what has so far been revealed, there emerges a scenario where the figures that govern small enterprises, whether owner/entrepreneurs or managers, are facing a new phase of history characterized by profound changes and continual rapid evolution, in which many consolidated paradigms are being tested and are requiring new interpretative lenses capable of managing the digital transition. Essentially, a synthesis of the old and the new must be sought and found, overcoming the inevitable uncertainties tied to present upheaval and future unknowns, which can no longer be tamed by holding fast to a traditional managerial culture. There must be found a synthesis of the present dialectic, which derives from the past and the strata of previous strategic pathways, and the new dialectic, which looks to the future.

To this end, Rullani & Rullani (2018) have proposed an interpretative model that they have named “4x2R”, designed to face the digital transition but also useful, in general, to comprehend the challenges posed by change. The term “4x2R” derives from the fact that the interpretative schema brings together two forces: that of conservation (thesis) and that of innovation (antithesis), along a pathway that consists of four phases: 1) a first phase in which enterprises strive for maintenance of what already exists and pose Resistance to the affirmation of the new; 2) a second phase in

which a break, or Rupture, occurs and enterprises are orientated toward processes of Restoration and conservative defense of the past, even in the face of an evident Revolution that fosters positive expectations regarding the emerging newness; 3) a third phase of Resilience in which enterprises begin to introduce some new elements in both strategies and processes, letting them coexist alongside what is established, fruit of a moment of Reflection on innovative dynamics that take into account the negative effects that they can generate; 4) a fourth phase in which enterprises begin to overcome the dichotomy between the old and the new and move toward a dialectic synthesis that favors a paradigm change in them, both in terms of strategic ideas (Redesign) and in terms of their practical adoption (Reorganization). This model allows enterprises to frame and analyze what has happened in, for example, areas like the restaurant industry and the retail industry; in these sectors, the advent of digitalization has represented a tool used by many organizations to successfully overcome the Covid-19 crisis, but other enterprises have not always been ready to grasp the opportunities offered by ICTs. While some SMEs managed the worldwide health emergency by innovating their business model, pivoting to e-commerce solutions, turning to collaborations on digital platforms, and introducing home delivery systems in order to satisfy old and new clients, other enterprises simply tried to outlast the crisis by counting heavily on financial support measures provided by the government. From the perspective of the Rullani model, it can be said that while the former were able to redesign and reorganize their strategic path and become part of the wave of creating new forms of value for consumers and organizations, the latter remained anchored to the tried-and-true, firmly entrenched in waiting for the Covid-19 crisis to end and for digitalization trends to be clarified, unwilling to embark on new paths and preferring to defend the old standbys in a conservationist or restorationist outlook.

Before the start of the pandemic, this conservation-innovation dialectic process had already begun with the advent of new enterprises with at their core digitalized business models that were having a destructive effect on numerous sectors where the most fragile actors were forced out (especially true in retail trade) or, in other cases, were provoking conservationist and restorationist responses from traditional businesses; in the most virtuous cases, initial resilience was followed by the redesign and reorganization of traditional business models to follow multichannel and omnichannel pathways. In sum, SME leadership has clearly played a critical role in such scenarios. In fact, Matarazzo et al. (2021) underscore the critical nature of a leader's dynamic capabilities, such as intuitiveness, ability to research, learn, and make choices. These capabilities are indispensable for using internal and external resources and digital competencies in an integrated way so as to formulate market-appropriate, innovative value propositions.

From a similar perspective, Charoensukmongkol (2021) identifies the ability to improvise as one of the gifts that successful entrepreneurs possess, one which helps them to carry out certain activities under the pressures of time constraints, to be innovative in seeing and grasping opportunities that arise, and to be tenacious and use their innate stick-to-itiveness, even in the face of seemingly insurmountable obstacles or failures, because they are self-confident and highly motivated. This is why the ability to improvise has proven to be so crucial in guiding the entrepreneurial behaviors of those smaller enterprises that have been capable of learning extemporaneously in order to pivot and have the flexibility enough to successfully face the health emergency in a rapidly changing context. Creativity is another of the notable competencies that have emerged as useful for SMEs if they are to respond to the pandemic with resilience, leveraging on digital innovation, also thanks to and supported by government policies (Thukral, 2021). Going a step further, Chhatwani et al. (2022) shed light on another facet of resilience, termed psychological resilience, which goes hand in hand with the ability to resist and face the SME depression in a positive way; this is a vital resource, one that can ensure the very survival of small enterprises during pandemic times. Today, leaders are required to possess a greater awareness of the fact that, for some time now, the only certainty that must guide the governance of an enterprise is that change will be a constant, manifesting itself ever more rapidly, characterized by uncertainty and unpredictability in contexts that are internal and external to the organization. In SMEs, leadership roles are those that, more than any others, are put to a rigorous test by the never-ending endogenous and exogenous changes taking place; therefore, the leadership figures must face the new challenges and align themselves with the updated competencies, strategic abilities, and values of small entrepreneurs and managers.

While this is always true, it is even more so in situations like the current one in which the uncertainties surrounding the future of the digital revolution must be faced by those at the helm of enterprises, those who will need to take the long view and possess optimism and determination if they are to comprehend and manage the changes proactively and not merely reactively. Leaders must find the courage and the fortitude to innovate, recognizing that not all of the conditions that had guaranteed levels of performance in the past can be replicated in the future. Thus, they must find allies inside and outside of the organization in order to bring about the change of culture that is necessary if they are to redesign and reorganize the new digital ecosystem's organizations; they will need to act with confidence, courage, optimism, and tenacity to neutralize any potential cultural resistance of people who lean toward conservatism. To meet the digital challenges that have emerged, SME leaders must adopt an approach consisting of constant strategic ambidexterity, indispensable for dealing with

continual change, and they must balance the requirements of day-to-day management with those of innovation. In addition, they must also adopt situational approaches and be able to adapt the organization's management processes according to evolving internal and external contexts, relative to the complexity of events determined by the new technologies and to the maturity of their employees' and colleagues' digital competencies. In sum, within context of growing digitalization, SME leaders must rely, not only on the entrepreneurial mindset, in the traditional sense, that is based on improvisation, flexibility, and intuition, but also on new digital knowledge and competence that are necessary to discern the direction of change and to formulate strategies suitable for taking up the opportunities therein. In support of this significant leadership innovation, the role played by public policies, by formation entities, and by universities will certainly be invaluable, in line with the *lifelong learning* perspective – useful for society as a whole, but indispensable for future leaders who are called to come to terms with the digital revolution. State-sponsored programs are just as important for relaunching the entire entrepreneurial system worldwide, post Covid-19 (Ratten, 2021) and for augmenting the digital culture of the general population and of enterprises. In SMEs, digital culture represents a foundational pillar for the adoption of new technologies along with appropriate technological and human resources, as well as new organizational structures capable of setting up digital smart factories and follow effective strategies to optimize managerial decisions and implement effective digital marketing strategies (Bettoni et al., 2021; Sidek et al., 2023).

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