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Business model innovation and digital technology: The perspective of incumbent Italian small and medium-sized firms

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ABSTRACT

Objective: The aim of the article was to conduct an explorative study on the relationship between business model innovation and digital technologies in incumbent small and medium-sized enterprises (SMEs).

Research Design & Methods: A qualitative methodology supported the study by providing a novel perspective of analysis. Ten cases were selected from a sample of seventy SMEs engaged in a university-industry collaboration programme.

Findings: The study aimed to explore the implications of the business model innovation process in incumbent SMEs when they adopt digital technologies. This perspective helped to understand how digital technologies act as enabling factors that support SMEs in innovating their business models.

Implications & Recommendations: This study developed a conceptual framework to depict business model innovation when SMEs adopt digital technologies. Digital technology emerged as a necessary but not sufficient condition to achieve business model innovation.

Contribution & Value Added: The study shed light on the relationship between business model innovation and digital technologies in incumbent SMEs and unfolded its major underlying factors.

Article type: research article

Keywords: business model innovation; SMEs; digital technology; entrepreneurship; business model

JEL codes: O32, L26, L25

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INTRODUCTION

One of the most relevant reasons why small and medium-sized enterprises (hereafter SMEs) start rethinking and reshaping their business models is the opportunity to adopt new digital technology. A large and growing literature provides significant evidence on this issue (Christensen *et al*., 2016; Khanaga *et al*., 2014; Baden-Fuller & Haeflinger, 2013; Cucculelli & Bettinelli, 2015). However, some recent articles show that the adoption of digital technology alone may not be a sufficient driver for business model innovation in the case of incumbent SMEs, as the process of reshaping the existing business models can be difficult in firms that have already settled into a specific pattern (Bowman *et al*., 2019; Kiel *et al*., 2017; Müller *et al*., 2018). This makes the interaction between the adoption of new technologies and business model innovations a crucial issue to explore in empirical settings (Kim & Min, 2015). This issue is even more relevant in the case of SMEs, as their organisational structure makes them reluctant to make major changes and prone to inertia. Despite being the founding layer of most world economies, they are late to adopt digital technology (European Commission, 2020): thus, understanding the impact of the technology on business model innovation in SMEs is timely for the economic analysis and also highly relevant to the policy agenda. This article contributes to these

topics by providing an exploratory analysis of how and to what extent the process of business model innovation unfolds in the case of incumbent SMEs that adopt digital technologies.

Despite the extensive literature on business model innovation (cf. Foss & Saebi, 2018), no prior studies have focused on how business model innovation and adoption of digital technologies co-exist in explaining the growth of incumbent SMEs. Moreover, even though digital technologies play a crucial role in enabling and supporting business model innovation (Chesbrough, 2010; Christensen *et al*., 2016; Ibarra *et al*., 2018, Moeuf *et al*., 2018; Bollweg *et al*., 2019), the existing literature is mostly silent on how incumbent SMEs exploit new technologies to shape business model innovation. Finally, despite the large number of studies on business model innovation, very few have addressed the perspective of small incumbents (Anwar & Shah, 2018). By contrast, a considerable number of contributions has focused on start-ups and large corporations (Habtay & Holmen, 2014; Markides & Charitou, 2004; Osterwalder & Pigneur, 2010; Chesbrough, 2010; Chesbrough & Rosenbloom, 2002).

Due to the constraints of size and organisational resources, small and medium-sized incumbent firms usually experience a relationship between technology and business model innovation which is unique and largely atypical. The article explores this topic on an empirical ground by exploiting the evidence from ten case studies of incumbent SMEs that have adopted digital technologies as a lever for innovating their business model. Given the difficulty small firms have in managing the process of business model innovation, we believe that this article may also provide guidance for firms that are reshaping their model in the new competitive landscape that is prevailing after the Covid-19 outbreak (Bivona & Cruz, 2021; Breier *et al*., 2021; Cucculelli & Peruzzi, 2020; Thierry *et al*. 2020).

This study was based on case studies. Data was collected through semi-structured interviews with entrepreneurs and managers in ten Italian incumbent SMEs (Yin, 2014; Eisenhardt, 1989). An abductive approach was followed in collecting and analysing data (Corbin & Strauss, 2014; Dubois & Gadde, 2002).

To examine the business model innovation process in sample firms, we developed a conceptual framework to identify and cluster profiles of SMEs with similar patterns of business model innovation and adoption of digital technologies. For each profile, we examined the managerial propositions that drive innovation in the business profile and influence the adoption of digital technologies.

The remaining part of the article is organised as follows. Section 2 will describe the literature background of the study with a focus on the SMEs' perspective. Section 3 will outline the methodology. Section 4 will present findings from the analysis of the cases and discusse some theoretical and managerial implications. Section 5 will conclude.

RESEARCH METHODOLOGY

Business model, business model innovation, and digital technologies

Teece (2010, p. 179) assumes that 'a business model articulates the logic, the data and other pieces of evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value.' Consistently, a 'practitioner's' perspective shows that the business model is represented and developed through several 'building blocks,' which have been conceptualised in different perspectives (cf. Osterwalder *et al*., 2005; Taran *et al*., 2015; Gasmann *et al*., 2014).

Foss and Saebi (2015; 2018, p. 11) recognise business model innovation as 'designed, novel and non-trivial changes to the key elements of a firm's business model and the architecture linking these elements.' Business model innovation is also understood as a process (Christensen *et al*., 2016; Frankenberger *et al*., 2013) to create new value for customers, to gain higher profits (Cliffe & McGrath, 2011; Ng, 2017).

Business model innovation has been described as simple or complex (Taran *et al*., 2015). The degree of complexity has been measured as the number of building blocks modified or changed to develop business model innovation. The innovation is simple when one or a few building blocks are modified and complex when several building blocks are changed (Taran *et al*., 2015; Foss & Saebi, 2017; Yeager & Shenhar, 2019).

Business model innovation has been conceptualised as a stage-gate process (Frankenberger *et al*., 2013; Christensen *et al*., 2016). Although adopting a processual stage-gate approach might have been outdated, the stages conceptualised by Frankenberger *et al*. (2013) were suitable to analyse data and

unfold theoretical and managerial implications regarding incumbent SMEs. According to Frankenberger *et al*. (2013), the stages of the business model innovation process are described as:

1. Initiation: The firm focuses on understanding the actors' ecosystem, identifying their needs, and the drivers of the change.
2. Ideation: The firm develops new ideas regarding business model innovation. These are related to the transfor-mation of opportunities and information collected. Several challenges are related to the current firm's dominant logic.
3. Integration: The firm starts to design a new business model. In this phase, the firm manages the resources and actors involved in the business model innovation process.
4. Implementation: Only when the new business model is designed, does its implementation begin. In this phase, the firm might experience internal resistance to change and problems in the experi-mentation of the model. The new business model is released after several iterations and experi-ments.

Business model innovation is context-dependent and can manifest differently from industry to industry. Moreover, given its dependency on the firm's resources (Rachinger *et al*., 2018; Khanaga *et al*., 2014), it also usually takes a considerable amount of time and effort by the firm to unfold.

Business model innovation can be activated by a limited number of elements (Ng, 2017; Gassmann *et al*., 2014), one of them is the adoption of digital technologies that has been indicated as one of the most significant drivers (Kiel *et al*., 2017; Christensen *et al*., 2016; Khanaga *et al*., 2014; Chesbrough, 2010), especially in the case of SMEs (Müller *et al*., 2018; Baden-Fuller & Haeflinger, 2013). Therefore, the study outlines digital technologies drawing from Moeuf *et al*. (2018).[1] Following Ibarra *et al*. (2018), Moeuf *et al*. (2018), Nagy *et al*. (2019), and Nambisan (2017), this study assumes that SMEs use digital technologies to facilitate, enable, or drive their business model innovation. It also recognises that SMEs adopt different types of digital technologies with different intensities, influencing the degree of business model innovation (Ibarra *et al*., 2018; Habtay & Holmen, 2014; Kiel *et al*., 2017; Müller *et al*., 2018; Anwar & Shah, 2018).

Digital technologies are categorised in three main fields according to their potential impact on the firm structure, which is also related to the 'building blocks' of the business model. The three fields are (Rachinger *et al*., 2018; Ibarra *et al*., 2018; Bollweg *et al*., 2019, Osterwalder & Pigneur, 2010; Gassman *et al*., 2014; Taran *et al*., 2015):

1. Digital Technologies in organisation and management (value configuration), as in software enterprise resource planning (ERP).
2. Digital Technologies in Marketing and Sales (value segment and customer relationship management), as in social media marketing and websites, CRMs (Software as a service (SaaS) or apps).
3. Digital Technologies in Production (value proposition), as in production cost management (PCM) or the PLM (product lifecycle management) software, or other management software and cyber-physical systems adopted to boost production and efficiency.

These three fields of application were adopted in the study as a proxy for digital technology adoption intensity. The intensity summarises the investments in terms of time and resources, and finally, the overall complexity in the technology development. In addition, the intensity of the adoption of digital technologies can be taken as a proxy for the firm's willingness to change. However, a higher intensity of adoption also increases the complexity in managing the business model innovation process (Taran *et al*., 2015).

Incumbent SMEs and business model innovation challenges

Small and medium-sized enterprises (SMEs) are the driving force of most economies (Bowman *et al*., 2019). Despite this fact, few studies have developed an in-depth analysis of the impact of digital technology adoption in their business model innovation process.

[1] Digital technologies are conceptualised according to the Industry 4.0 paradigm (Kagermann *et al*., 2013) as follows: big data and analytics; simulation; autonomous robots; internet of things; cyber-physical systems; cloud computing; virtual reality; machine-to-machine communication; cyber security; digital and social media marketing.

Habtay and Holmen (2014) and Markides and Charitou (2004) posit that a clear separation between new and old business models in these firms is difficult to observe, as incumbent SMEs with a solid entrepreneurial orientation develop business model innovations within the established business units or set up a new business unit dedicated to exploiting business opportunities. It is worth noting that SMEs usually look forward to Business Model Innovations (BMI) to achieve new levels of competitive advantage (Anwar, 2018). Incumbent SMEs mobilise digital technology adoption resources to unfold BMI (Bowman *et al*., 2019). However, several challenges remain in the BMI process in SMEs, as the process might be linked to the existence of a prior business model, to path-dependency in the entrepreneur's dominant logic, to hidden and tacit rules (Nonaka, 1994) of the previous firm resource settings, or the pressure for short-term results (Ciulli & Kolk, 2019). Finally, SMEs are often short of resources and time to experiment with new business models, deploy business model innovation (Bowman *et al*., 2019; Khanaga *et al*., 2014), or invest in digital technologies and innovation programmes to achieve new competitive advantages (Anwar *et al*., 2018; Barney, 1991; Bollweg *et al*., 2019).

Moreover, previous studies suggested that incumbent SMEs follow a different path in innovating the business model for start-ups and large corporations. For start-ups, designing and testing new business model components may be regarded as common steps in their growth process (Chesbrough, 2010; Christensen *et al*., 2016). By contrast, this is rather uncommon for established firms, such as incumbent SMEs, in which experimentation is often perceived as a waste of time (Liu & Bell, 2019).

Business model innovation and digital technologies in SMEs: A conceptual model

The study explores the emerging issue of incumbent SMEs at the intersection between digital technologies and business model innovation processes. To the best of our knowledge, no previous studies have provided a detailed picture of how digital technologies impact SMEs business model innovation processes using a case study approach. Using a qualitative methodology with semi-structured interviews, the study was founded on the following research question: How do incumbent SMEs unfold business model innovation processes through digital technologies? Given the explorative and qualitative nature of the article, the research question wass deliberately broad to accommodate any further insights that may come from the data collection.

In this study, we combined dimensions of business model innovation processes, that is, complexity and status, with the intensity of adoption of digital technologies (see Figure 1).

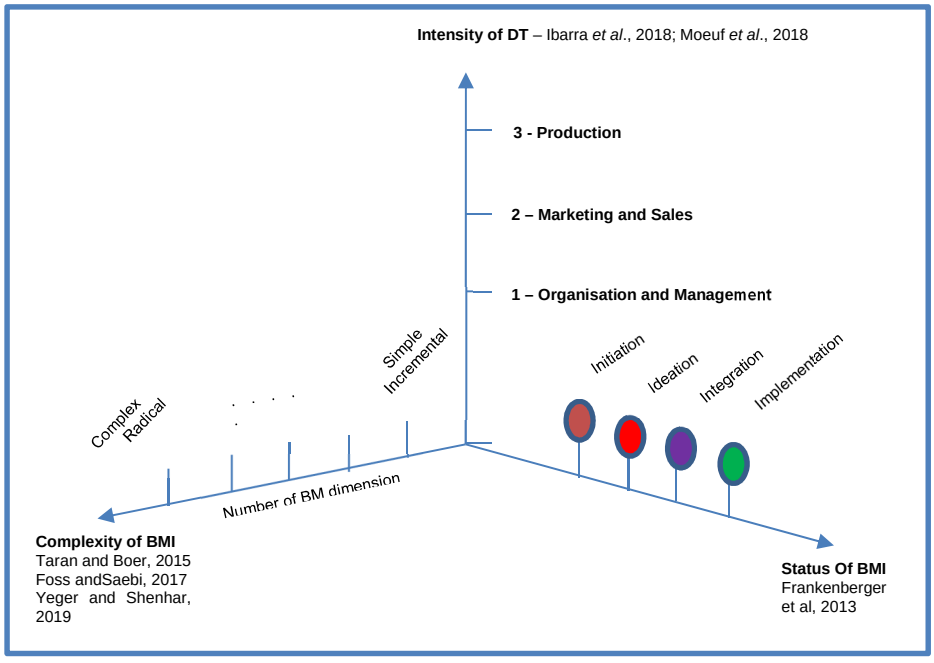

Figure 1. The dimensions of analysis of business model innovation
Source: own elaboration.

The complexity of business model innovation described how many building blocks of the model have been changed or impacted by the adoption of digital technology (Taran *et al*., 2015; Foss & Saebi, 2018; Yeager & Shenhar 2019). Likewise, the intensity of adoption of digital technology – borrowed from Ibarra *et al*. (2018) and Moeuf *et al*. (2018) – related to the pervasiveness of the adoption in three major areas: organisation and management, marketing and sales, and production. Finally, the status of the business model innovation process drew from Frankenberger *et al*. (2013).

A conceptual framework (Figure 1) was developed to ease the analysis of the information gathered from semi-structured interviews. It positioned each case into a conceptual map. It also enabled the qualitative comparison of cases according to the elements that inspire the research. Finally, the model was explorative as per Nonaka (1994), that is, it can bring new light on a case that has not been studied so far.

RESEARCH METHODOLOGY

The study lied at the intersection between two literature streams, to shed light on the under-explored challenges related to incumbent SME business model innovation processes. Therefore, an explorative, empirical, and qualitative research methodology was deemed useful to provide thoughtful insights for researchers and practitioners (Eisenhardt, 1989; Voss *et al*., 2002 Yin, 2014). The information was gathered through in-depth, semi-structured interviews, with ten different firms (Corbin & Strauss, 2014; Dubois & Gadde, 2002). The semi-structured interviews were considered appropriate to gather the informants' perspectives according to a multi-faceted and partly unknown phenomenon (Yin, 2014). Moreover, the development of a semi-structured interview protocol ensured the validity of the data collection process (Yin, 2014).[2]

The interview protocol was developed from the literature on business model innovation and digital technology adoption. All the informants were submitted the same interview to ensure the study's validity (Yin, 2014). Together with the conceptual model (Figure 1), the research question guided the researchers in collecting empirical data through interviews and secondary data. Data was collected from key informants, including entrepreneurs and managers, and analysed by combining the abductive and systematic approaches (Dubois & Gadde, 2002; Corbin & Strauss, 2014). Moreover, data from key informants was triangulated with direct observations, notes, and secondary data gathered directly from the official documents of the company and the web. Secondary source data were obtained from participation in meetings of the Board of Directors, operational meetings, formal documents and reports, analysis of websites, social media pages, brochures, and sales presentations.

Participating firms were selected from a sample of seventy SMEs enrolled in a university-industry collaboration programme. These firms were actively collaborating with the university for developing innovation in the business and engineering fields. Thus, cases were collected through purposeful sampling (Eisenhardt & Graebner, 2007). According to the sampling, interviewed firms have been selected – as a criterion for inclusion – by looking for those who have already adopted digital technologies and are potentially innovating the business model (see Table 1). The selected ten cases represent a consistent sample in line with data collection saturation principle of qualitative research (Yin, 2014). Interviews were characterised by the required respondents, technologies, context, and the business sector heterogeneity the companies were affiliated with.[3]

The research process consisted of the following steps: i) drafting the interview protocol; ii) creating the conceptual framework (see section 2.4); iii) developing the interviews and gathering other relevant secondary source data from the firm engaged in the research; iv) developing an analysis of the SME challenges in the business model innovation processes; v) developing the SME profiles for the evaluation of the business model innovation status. Data have been analysed through continuous back and forth cycling between data and literature (Dubois & Gadde, 2002; Corbin & Strauss, 2014).

[2] An abductive approach has been used, which entails moving backwards and forwards between the background theory and the findings (Eisenhardt, 1989; Corbin & Strauss, 2014; Dubois & Gadde, 2002; Yin, 2014).

[3] For each firm, the researcher found the key informant by contacting the key person, such as the principal manager (Eisenhardt and Graebner, 2007).

Table 1. Data collection overview

N.	Data	Firm	Actor	Length	Support
1	May 27, 2019	Gamma	R&D Director	70 mins.	Audio + Note
2	January 21, 2020	Teta	Marketing Director	15 mins.	Audio + Note
3	July 7, 2019	Beta	Export Manager	20 mins.	Audio + Note
4	May 20, 2019	Zeta	Entrepreneur	25 mins.	Audio + Note
5	June 5, 2019	Iota	Entrepreneur	45 mins.	Audio + Note
6	June 28, 2019	Alfa	Entrepreneur	15 mins.	Audio + Note
7	May 15, 2019	Kappa	CFO	25 mins.	Audio + Note
8	June 5, 2019	Epsilon	CFO	60 mins.	Note
9	October 8, 2019	Eta	Entrepreneur	45 mins.	Note
10	October 21, 2019	Delta	Entrepreneur	70 mins.	Note

Source: own elaboration.

Ten case studies were examined from a portfolio of more than seventy Italian firms. These firms were heterogeneous in terms of industrial sectors, for example, plastic moulding, shoemaking, industrial construction, and other sectors, together with the production and distribution of a wide range of products. All firms were SMEs adopting digital technologies as part of their business model innovation process. The ten cases were analysed according to the conceptual model presented above (Figure 1, Section 2.4). The summary of the cases is presented in the following Table 2.

Table 2. Summary of the ten cases

Dimensions	Alfa	Beta	Gamma	Delta	Epsilon	Zeta	Eta	Theta	Iota	Kappa
Industrial Sector	Industrial Printing	Packaging Machines	Coffee Machines	Industrial Constructions	Shoemaking	Shoemaking	Automotive Dealer	Synthetic Turf	Injection Moulding	Injection Moulding
Founded	2005	1980	1936	1970	1973	1965	1958	2012	1988	1994
Intensity of DT	1	1-3	1-2-3	1-2	1-2-3	1-2	1-2	2	1-3	1-3
Complexity of BMI	Complex	Complex	Complex	Simple	Complex	None	Complex	Complex	Complex	None
Status of BMI	Integration	Ideation	Integration	Initiation	Ideation	None	Initiation	Implementation	Initiation	None

Source: own elaboration.

RESULTS AND DISCUSSION

Evidence from the cases

The cases in which digital technologies brought tangible effects often depicted firms developing new products, services, or a new way to reach their buyers. However, the findings suggested that several firms were still not very aware of the business model innovation's implications on their growth and competitive advantage. Indeed, these firms were still struggling to find a viable business model innovation. 'We have developed new machines that entail industry 4.0 technologies, but we have not yet developed a business based on these products' (ALFA).

Moreover, many firms (for example, Gamma with investments in sensors and IoT technologies, Epsilon with investments in digital technologies and production technologies) were still looking for the right digital technology setup for their firms, even before designing a path toward business model innovation. According to the evidence gathered, firms were more focused on technology adoption and digital technology investments rather than deploying the business model innovation activities.

The firms' management often appears highly concerned with developing and setting up the technological profile of the company, rather than focusing on how this would contribute to renovating their business model. Moreover, firms that involve a consulting firm (for example, Delta, Gamma) mainly ask them to support the introduction of digital technologies rather than finding consistency with the

business model or renewing their business model. Nonetheless, observing tangible business model changes is rare when the technological intensity is low (for example, Eta case).

The weakness of incumbent SMEs lays in understanding the impact of digital technologies on business model innovation by the firms' leadership. The evidence suggests that the business model concept is not yet well-established among the informants. When asked how these technologies would impact the different business model building blocks, they only provided a superficial and incomplete understanding of the potential business implications of adopting the digital technologies. It is worth noting that several firms still consider Computer Aided Design and Computer Aided Manufacturing (CAD-CAM) technology as a new digital application, as they also do with remote banking and other now-common applications (for example Zeta case). The misconception about digital technologies in business model innovation is visible in a statement by BETA: 'We are still performing manual data analysis, but we are looking to adopt a big data approach soon' (BETA).

In this respect, some firms clearly showed that they still lack the in-depth know-how of digital technologies (for example, Alfa, Zeta, and Iota). The firms highlighted a limited ability to manage digital technologies. This lack of information could be related to the lack of drive in the entrepreneur and the firms' personnel, even though they had invested in recruiting new people dedicated to IT and technological development. Moreover, considering that the entrepreneurs were often the single decision-makers in these firms, their limited knowledge and awareness of digital technologies emerged as a larger burden toward changing the firm's business model.

Above all of this, almost all interviewed entrepreneurs stated that the ability to adopt and exploit new technologies by top employees was one of the most significant managerial challenges for the firm. Accordingly, the resistance to change the perspective of top employees towards the adoption and use of digital technology was a crucial factor to consider when dealing with business model innovation. In this sense, several cases suggested how hiring external professionals was regarded as a potential key to initiate and enhance the business model innovation process (for example Eta). 'To cope with digital technologies, we hired a digital marketing manager as a key actor to steer the digital transition and the evolution of our business' (ETA).

A further theme emerges from the evidence with regard to the firm's ability to strategize business model innovation. Although all the firms in the sample are in the process of introducing technologies to renovate processes, products and services, very few of them referred to their aim to begin business model innovation as a potential outcome of their efforts and investments in digital technology (for example, Alfa, Gamma). To make matters worse, almost all of the informants started adopting the digital technologies without a clear goal on how the business model should have been changed to exploit these technologies. Nevertheless, as the business model innovation had been sparked from the need to renew the firm's strategic approach (for example, Teta and Eta case), the role of digital technology was still marginal and mostly related to customer engagement, suggesting that firms were still looking forward to understanding how to use digital technology to improve their business. 'Potentially, the new technologies will change our business soon, but not in reality' (IOTA).

What was gathered from the findings was that business model innovation had been regarded as something not really planned. In addition, the findings showed that some of the firms made relevant investments without achieving any tangible effect on the innovation of their business model (for example, Kappa and Gamma), while others exploited a few digital technologies to produce remarkable changes in their way of doing business (for example, Eta and Delta). 'The role of digital technologies is linked with the development of new products and, here, we can link it to the potential sale of new services, for example, predictive manufacturing, which we have not developed yet' (GAMMA).

Lastly, what emerged from the interviews and data gathered was that business model innovation, enabled by the adoption of digital technology, was a long-time process. Some informants suggest that their path toward digital technology began even before the terms industry 4.0 became mainstream (for example Kappa), and that the integration of these technologies into the business logic was crucial and was still ongoing (for example Gamma). Indeed, almost all the interviewed informants suggested that the tangible effects of digital technology were not yet achieved. Thus, it could be argued that their

business model innovation was still underway. 'The change takes us a lot of time; the adoption of these technologies requires the involvement and coordination of so many people' (IOTA).

Theoretical implications

The ten cases highlighted the many challenges studied in the SMEs' path towards business model innovation. These are related to the role of digital technology in business model innovation.

One of the first issues was linked to the firms' focus. The cases highlight that incumbent SMEs put a greater emphasis on digital technology instead of business model innovation. This focus might be mandatory because, according to Moeuf *et al*. (2018), digital technologies support firms in enabling and driving business model innovation. However, the present study argues that digital technology should be considered the mean for incumbent SMEs to achieve business model innovation, and not be the core of innovation. In fact, as Chesbrough (2010) suggests, technologies alone have almost no effect on the firm's competitiveness. Therefore, developing and improving skills to manage and exploit new technologies to support business model innovation is still a challenge for SMEs.

Subsequently, the study highlighted the lack of awareness about the potential positive influence of the adoption of digital technology on business model innovation (von den Eichen *et al*., 2014; Teece, 2010; Casadesus-Masanell & Ricart, 2010; Osterwalder *et al*., 2005; Moeuf *et al*., 2018; Nagy *et al*., 2019). This remains a major limiting factor for incumbent SMEs to fully exploit the business potential of digital technology. Likewise, the lack of awareness about the management of the business model innovation processes raises significant concerns about the suitability of the entrepreneurial and managerial leadership to utilise the business model as a tool to embrace the innovation processes in SMEs (Osterwalder & Pigneur, 2010; Osterwalder *et al*., 2005).

The findings also shed light on the SMEs' difficulty to recognise and manage business dynamics in terms of the building blocks and innovation processes (Habtay & Holmen, 2014; Foss & Saebi, 2018; Frankenberger *et al*., 2013). This drawback could be associated with the entrepreneurial nature of SMEs, in which the entrepreneur is often the only person responsible for the innovation process and the only one who decides which technologies will be used in the firm and how they will be used. The entrepreneurs' centrality tends to blur the distinction between the stages of initiation and ideation, as also the phases of implementation and integration, especially in incumbent SMEs (Frankenberger *et al*., 2013). Besides, the present study assumed that the incumbent SMEs lack the IT or management staff to drive the business model innovation initiative.

Although business model innovation has been understood as a designed process (Foss & Saebi, 2018; Rachinger *et al*., 2018), findings show that the SMEs' business model innovation processes are emergent and mostly unexpected when adopting digital technologies. Thus, while emergent business model innovation can be defined according to emergent strategy conceptualisation (Mintzberg & Waters, 1985), the study suggested that business model innovation may suddenly emerge when incumbent SMEs adopt digital technology. Thus, digital technologies are clearly the enabling and driving factors only when the entrepreneur becomes aware of their potential influence (Bollweg *et al*., 2019). However, the study also suggested that a lack of long-term strategic design concerning business model innovation within incumbent SMEs, was often related to the poor performance of incumbent SMEs in renovating their business model.

In addition, empirical findings supported the conceptualisation of business model innovation as a long-term process (Rachinger *et al*., 2018) that takes several years to generate a new business model even when large investments are made (Ng, 2017). Therefore, starting business model innovation and the process timing emerge as further managerial levers to reach innovation. Unfortunately, evidence from cases showed that SMEs were often unaware of the crucial time features and their influence on the business model innovation process.

Managerial implications

The study offers insightful managerial propositions for SMEs increasingly involved in managing business model innovation complexities and digital technology adoption.

Firstly, entrepreneurs and managers should become aware of the business model concept and understand the business model innovation as a process. Thus, they should exploit the available tools to manage the business model innovation and use the four phases of the business model innovation process outlined above to model the steps for the change.

Secondly, a better understanding of the business model innovation dynamics could enable agents of change to improve the firm's capabilities to renew the business model.

The study offers a conceptual framework that can support incumbent SMEs to be aware of their BMI process, helping entrepreneurs and managers to manage digital technology adoption in order to renovate the firm's business model.

Finally, SMEs should also be aware of the challenges related to the business model innovation process. The paths to business model innovation are often quite long and have a high-risk profile, thus, they require the entrepreneur to manage the unexpected. Business model innovation might suddenly emerge as a non-designed and unanticipated phenomenon. In this scenario, the adoption of digital technology might be the spark that initiates the process of business model innovation. Consistently, SMEs should put more effort into designing and foreseeing the path to business model innovation driven by digital technologies.

CONCLUSIONS

Final remarks

When observed from the incumbent SMEs' perspectives, the intersection between digital technology and business model innovation is still a blurred area that calls for additional investigation. Moreover, the topic's relevance is confirmed by the almost complete absence of studies addressing the issue of digital technology and business model innovation outside the field of start-ups or large corporations.

To explore the process of business model innovation in incumbent SMEs, this study developed a conceptual framework based on three levels of analysis: business model innovation complexity, phases of the business model innovation process, and intensity of the adoption of digital technologies.

The study found that SMEs were neither fully aware of the potential of digital technologies, nor were they ready to recognise and manage the concept of a business model and its innovation process. Moreover, incumbent SMEs appeared to misunderstand the role of digital technologies in the business model innovation process.

Finally, the great focus and effort in the development of digital technologies is not counterbalanced by a similar effort in devoting resources to address business model innovation practices. Indeed, incumbent SMEs do not realise that digital technologies are the main lever to handle the innovation of the business model. This lack of awareness negatively impacts the incumbent ability to renovate their business model.

The present study also highlighted that these drawbacks are linked to the incumbent SMEs' lack of knowledge and inability to properly support the innovation using the management staff effectively. The resistance towards business model innovation found at the initial stages of the process of adoption of new technologies pairs with the resource constraints that acts as a barrier towards innovation in incumbent SMEs. Due to the lack of resources, incumbent SMEs focus on short-term dynamics, whereas the conflict between the new and the old business models emerges as a bonding factor for reshaping the business model. Finally, the study argues that the exploitation of digital technologies is still a significant concern for SMEs. Entrepreneurs and managers struggle to find a practical approach for renovating the way of doing business. In this framework, it is worth stressing that designing and unfolding a new business model is not a short-term action for incumbent SMEs, but a long process which requires commitment and unfolds in years. Digital technologies emerge as a necessary but not sufficient condition to achieve business model innovation: incumbent SMEs must balance the investment in digital technologies with the development of capabilities for pushing the path toward innovation.

Limitations and further research

Beyond the results obtained from the empirical analysis, the study was not without limitations. Although we examined ten different cases using semi-structured interviews, the qualitative methodology was context-specific and could thus provide biased results. Therefore, further quantitative studies are needed to provide a more robust perspective on the topic. Future research is also called for developing a deeper understanding of the role of external actors in supporting and easing the business model innovation process. Moreover, a closer look at the broader perspective on firm strategies is needed to fully understand the influence of digital technologies on business model innovation. Finally, longitudinal case studies on successful business model innovations would aid in identifying all the shades that remain in this nuanced picture.

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