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Digital transformation as a springboard for product, process and business model innovation

1. Introduction

Digital transformation has affected people, businesses and systems greatly in recent years (Del Giudice et al., 2020; Galindo-Martín, Castaño-Martínez, & Méndez-Picazo, 2019; Huarng, Yu, & Lai, 2015). This revolution is changing the way companies run businesses, and develop relationships within and across ecosystems (e.g. with consumers, suppliers, universities), posing new managerial opportunities and challenges (Bresciani, Ferraris, & Del Giudice, 2018; Verma, Gustafsson, Kristensson, & Witell, 2012). It is now evident that innovative companies (such as Uber, Airbnb and Spotify) have revolutionised industries, such as transport, accommodation and music, through innovative business models that leverage advanced technologies. Digital transformation is not limited to particularly innovative businesses, digital start-ups and high-tech giants, however, but is rather a process that embraces companies of all sizes, operating in the most diverse industries (Ferraris, Mazzoleni, Devalle, & Couturier, 2019; Warner & Wäger, 2019).

On the one hand, the literature has emphasised the various technological tools and paradigms that are revolutionising the way companies do business, such as big data, artificial intelligence, 4.0 machines, 3d printers and social media networks (e.g. Gunawan & Huarng, 2015; Rothberg & Erickson, 2017; Swani, Milne, Brown, Assaf, & Donthu, 2017). On the other hand, a stream of studies has tried to explore the impact of digital transformation on different business areas (Erevelles, Fukawa, & Swayne, 2016), business models (Alberti-Alhtaybat, Al-Htaybat, & Hutaibat, 2019; Loebbecke & Picot, 2015), business performances (Ferraris et al., 2019; Ferreira, Fernandes, & Ferreira, 2019) and required capabilities (Muninger, Hammedi, & Mahr, 2019; Warner & Wäger, 2019). For example, Erevelles et al. (2016) explored the impact of big data on various marketing activities. Ghezzi and Cavallo (2020) recently proposed a framework describing the relationship between business model innovation, lean start-up approaches and agile development in the context of digital entrepreneurship. Ferraris et al. (2019) showed that firms which developed greater big data analytics capabilities increased their performance, and that knowledge management capability plays a significant and positive moderator role. The interplay between information technology systems and knowledge management processes and tools can therefore speed up the digitalisation journey (Del Giudice & Della Peruta, 2016; Scuotto, Santoro, Bresciani, & Del Giudice, 2017). Muninger et al. (2019) explored the specific organisational capabilities that allow firms to gain advantages from social media through the innovation process. Despite this, we still know very little about how business can implement digital innovative strategies for growth and scale quickly and efficiently.

2. Statistics of the submissions

This special issue received 95 submissions, from which we collected 32 papers (the rejection rate was around 66%) with the aim of exploring how the current digital transformation is changing the way in which companies do business, with particular reference to innovation processes and business model transformations. This high number of submissions reflects the current ferment around this topic and underlines the wide scope of areas impacted by digital transformation. The authors countries of origin are quite well spread around the world, ranging from Europe, with 19 papers in total from Italy, Spain, France, Greece, Denmark, Finland and Cyprus, to North America (US and Canada) with three papers. We also collected four papers from Asia (from Taiwan, Vietnam and Pakistan), four from the UK and one each from Nigeria and Australia. Table 1 synthetises the origins of the papers in this special issue.

The topics analysed in this special issue are mainly related to SMEs (four articles), business model changes and innovations (three articles), big data (three articles), and how buying and purchasing behaviour (two articles) and work (three articles) will change. Four articles are specifically directed to some key industries, such as healthcare and food, as well as the financial and IT sectors. The four main areas of research are represented graphically in Fig. 1 and further developed in the next section of the paper.

3. Contributions

The main contribution of this special issue may be summed up by grouping the papers into four main areas of research: a) digital skills and capabilities; b) new business models and transformation within key industries; c) new role and new behaviours of consumers; d) effects and outcomes of digital transformation.

3.1. Digital skills and capabilities

The first group reflects the need to upgrade the skills and capabilities of existing organisations, and the emergence of new key capabilities in the digital transformation era, such as analytics that impact business performances (e.g. Rialti, Zollo, Ferraris, & Alon, 2019). Recent studies demonstrate that innovation teams require a set of new skills, capabilities, and mechanisms in order to integrate digital technologies in the innovation process (Guinan, Parise, & Langowitz, 2019). Yet, there is limited understanding of the way team members interact and the tasks they perform to turn digital technologies into innovative outcomes for their organisation. In filling this gap, the paper "How do digital

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Table 1
. Origin of the papers.

Country of origin	Number of papers
Europe (Italy, Spain, France, Greece, Denmark, Finland, Cyprus)	19
North America (USA, Canada)	3
Asia (Taiwan, Vietnam, Pakistan)	4
United Kingdom	4
Nigeria	1
Australia	1

innovation teams function? Understanding the team cognition-process nexus within the context of digital transformation", written by Hadjielias et al. (this issue), focuses on team process and team cognition. These two pillars are key to the functioning of teams (Cooke, Gorman, Myers, & Duran, 2013), but they have been studied in isolation from each other in the entrepreneurship and innovation literatures. The authors draw on qualitative, in-depth interviews with three innovation teams dealing with digital technological innovations within separate telecom organisations. Their findings illustrate that when addressing digital innovation in organisations, teams nurture two types of cognition: a) team-specific cognitions required for digital innovation and, b) digital project-specific cognitions. Team-specific cognitions are shaped and transformed in relation to teamwork, within the team socio-cognitive arena, while project-specific cognitions emerge and unfold in relation to taskwork within the project socio-cognitive arena. This study advances theoretical understanding of the dynamics of innovation teams, and conceptualises the 'functioning of digital innovation teams' by contextualising the cognition-process nexus within digital transformation.

Digital transformation (DT) has also changed service systems through the real-time matching of customer needs. Since DT is a subset of digital economy, data and analytics play a key role across all service systems, however, the extant literature has failed to articulate the dynamic role of service analytics which is the key driver of DT which dictates service operations. As such, the paper by Akter et al. (this issue) entitled "Building dynamic service analytics capabilities for the digital marketplace" provides a dynamic service analytics capabilities (DSAC) framework. Drawing on a systematic literature review and 30 in-depth interviews, this paper proposes management, technology, talent, data governance, model development, and service innovation capabilities as the building blocks of DSAC. By sensing, seizing and transforming service systems, the DSAC framework is proposed to manage the environmental dynamism brought about by DT and big data.

Empirically, the paper authored by Mariani and Fosso Wamba (this issue) "Exploring how consumer goods companies innovate in the digital age: The role of big data analytics companies" shows the process carried out by the UK digital BDA company. By focusing on online consumer reviews (OCRs) they are able to forecast demand and determine the market potential for new products in several industries thanks to online experiments and advanced machine learning (ML) techniques. The main contribution of this paper is directed to the nascent research stream revolving around innovation analytics, arguing that it is not sufficient to identify the antecedents of effective innovation BDA and innovation BDAC. In fact, we need to know more about their effects on different kind of organisational performance. The authors also found that conducting effective digital experiments leading to meaningful innovation BDA in the Consumer Goods Companies requires a few *preconditions* (that improve the effectiveness) and a well-defined *holistic process (*a series of steps should be followed in order to improve the likelihood of success).

In line with this, the paper written by Ciampi et al. (this issue) entitled "Exploring the impact of big data analytics capabilities on business model innovation: The mediating role of entrepreneurial orientation" sheds lights on BDAC and related key capabilities for innovation. Grounded in the dynamic capabilities view (DCV) and based on data from 253 UK firms, this paper empirically tests the mediation effect of entrepreneurial orientation (EO) on the relationships between BDAC and business model innovation (BMI). Finding that BDAC has a positive direct and indirect (through EO) effect, the authors demonstrate that BDAC affects company strategic logics and objectives, instead of being dependent on them, thus significantly affecting value creation. The main contribution of this paper relies on empirical evidence of the indirect effect of BDAC on BMI by stimulating firms to proactively take innovative and risky decisions (EO) that are eased by the increase in proactive market information systems, external and internal knowledge transfer and collaborative processes, and advanced flexible infrastructure and quicker decision-making processes.

"The profile of innovation driven Italian SMEs and the relationship between the firms' networking abilities and dynamic capabilities" written by Basile et al. (this issue) is another attempt to look at the abilities of firms in the nowadays digital arena in light of the dynamic capabilities theoretical stream of research. The authors analyze the profile and traits of innovative SMEs, looking at their behaviours and networking abilities. The empirical results suggest that the relationships between skills, strategies and stakeholders and the dynamic capability are all strong and direct, without indirect interaction effects, meaning that Italian SMEs adopt innovative strategies independently from having strong digital-related skills. This model shows how a firm's dynamic

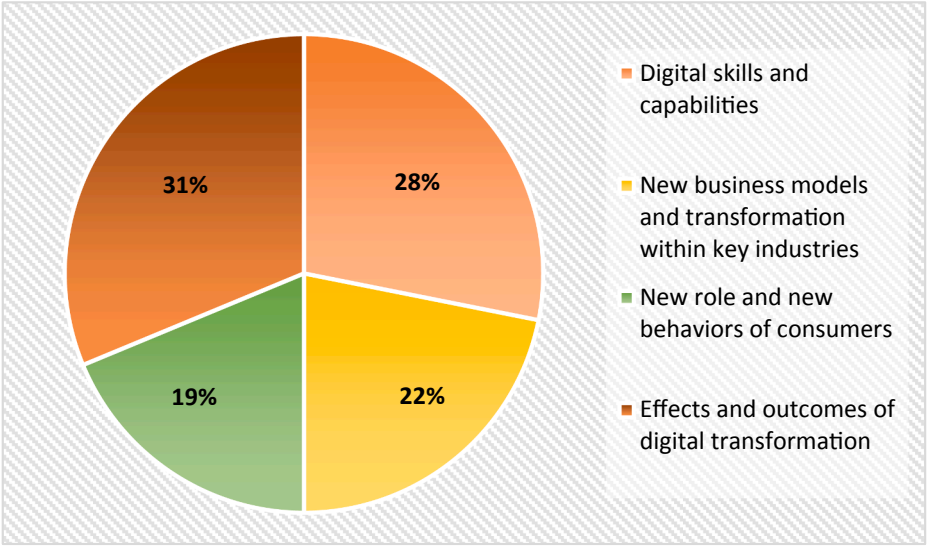

Fig. 1. Main areas of research.

capabilities are correlated to the innovatively-driven firm profile. Interestingly, the study's finding show that those firms pursuing survival on the basis of tangible innovation are characterised by both dynamic assets (skills, strategies and stakeholder) and networking strategies, while those SMEs that do not own any dynamic assets pursue the creation of network collaboration with firms that have dynamic, tangible or intangible assets.

Related to this, the paper "A microfoundational perspective on SMEs' growth in the digital transformation era" written by Scuotto et al. (this issue) offers a look at the digital transformation era from a microfoundational perspective. Through the lens of Penrosian growth theory, their quantitative study reinforces the relevance of individual digital capabilities for SME growth by analysing 2,156,360 SMEs in 26 European countries. The authors also found that innovation was insignificant as a moderator of the relationship between individual digital capabilities and SME growth. This means that individual digital capabilities matter for growth regardless of firm innovativeness. The digital transformation era thus evokes a need for more digital skills and if the introduction of new technologies was pushed by the advancement of innovations before, now it is possible to emphasise the importance of digital and human skills for business growth. In this vein, policymakers, governments, and practitioners are working together to support the lack of such skills in mainly small to medium enterprises (SMES). SMEs are more human than digital, even though they have the foundations to be agile, innovative and ambidextrous. In fact, an organisational environment needs to be built on trust, identification, and mutual obligation along with the embracing of the digital world (from human skills to technologies).

Another interesting and original contribution was written by Arora et al. (this issue), suggesting the introduction of a new construct termed "social capacitance". The authors refer to how social media can help an organisation's absorptive capacity development. The paper proposes the antecedents and consequences of social capacitance in the context of: a) consumer–firm interactions; b) firm–consumer interactions, c) consumer–consumer interactions, and, d) firm–firm interactions using social media platforms. The main contribution of the paper resides in the interconnection between the knowledge domains of absorptive capacity and social media, by addressing the integrative and capacitive coupling of social media with knowledge recognition, assimilation, transformation, and transfer from a micro-foundation perspective on absorptive capacity.

Another interesting and related piece of research about digital capabilities is the paper "I digitise so I exist. Searching for critical capabilities affecting firms' digital innovation" written by Tortora et al. (this issue). This research looked at the internal-external critical and dynamic capabilities affecting the digital innovation of firms, in terms of new products or processes, using varied digital technologies. The authors empirically tested and found evidence of specific knowledge-based capabilities that improve the development of digital innovation, as well as the moderating effect of social media. The authors confirm the relevance of dynamic capabilities in the digital arena, and that the absence of such practices could throw these companies out of the market over the years, due to the underlying lack of acquisition and implementation of adequate capabilities.

The last paper in this group is "Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective" written by Matarazzo et al. (this issue). The authors highlight the need for the development of sensing and learning capabilities that lie at the centre of firms' agility (e.g. Shams, Vrontis, Belyaeva, Ferraris, & Czinkota, 2020). The first capability is mainly related to entrepreneur/family members in the focal context of analysis (SMEs), while the second one is crucial for the design of digital transformation, with hiring new human resources as a necessary condition.

3.2. New business models and transformation within key industries

The second group of papers focuses more on how whole industries have been affected by digital transformation, with some key papers addressing the relevant issue of the emergence of new business models or the need to pursue business model innovation. For example, Kraus et al. (this issue), in the article "Digital transformation in healthcare: Analysing the current state-of-research", aims to answer the following research question: how do industry multiple stakeholders implement digital transformation technologies for management and business purposes? To this end, the article offers the results of a systematic literature review of research articles published in the business and management literature within the last 20 years regarding digital transformation and healthcare. Five research areas emerge from the review: operational efficiency by healthcare providers, patient-centred approaches, organisational factors and managerial implications, workforce practices, and socio-economic aspects. These clusters provide evidence from a stakeholder-based view of how digital transformation takes places within this complex and fascinating industry.

Sund et al (this issue) with the paper "Managing Business Model Exploration in Incumbent Firms: A Case Study of Innovation Labs in European Banks" explore the organizational barriers that incumbent's banks face when exploring radically new business models. Using multiple case studies, they found that innovation labs are constrained by the need to fulfil the needs of both top management and managers in the core business units through integration mechanisms and ambidexterity. The contributions are mainly directed to the specific context of analysis (banks) that is suitable for the exploration of the barriers related to the digitalization as well as to the development of key practical recommendations for managers.

In "The role of digital innovation in knowledge management systems: A systematic literature review" Di Vaio et al. (this issue) investigate the way that digital innovation promotes new business models through the optimisation of new knowledge. Analysing 46 research articles in depth, the authors show a strong interconnection between innovation and sustainability, highlighting how digital transformation tools contribute to the long-term value creation process. This study is based mainly on the "knowledge management system" point of view, and its role in strategic innovation towards the implementation of new business models, and one of its main contributions is to point out the need to implement new knowledge creation and sharing measures to support global and inclusive growth.

Another literature review paper that is focused on the impact of digitalisation on business models was developed by Caputo et al. (this issue). Analysing 198 peer-reviewed articles, the authors applied a wide range of bibliometric analyses, such as the analyses of citations, co-citations, bibliographic coupling, and co-occurrences of keywords. In addition to interesting information on key journals and authors in this domain, they found three main thematic clusters: a) technological innovation, b) strategic management, and c) digital transformation. They also analyse in depth the main contributions for each group, as well as key promising lines for future studies, thus stimulating a rich research agenda in this domain.

In "Antecedents and consequences of Business Model innovation in the IT industry", Bhatti et al. (this issue) explores the factors that contribute towards improving business model innovations (BMI) in a sector marked by the industry 4.0 revolution. The majority of studies on BMI lack empirical evidence and most have excluded developing markets, which are characterised by weaker institutional factors and support for innovation, from this debate. Additionally, most studies have only looked at either the antecedents or the consequences of BMI. The main contribution by Bhatti et al. is to propose an integrative model of the antecedents and consequences of BMI. The findings thus provide valuable insights for practicing managers, and highlight the importance of dynamic capabilities (knowledge absorptive capacity), organisational flexibility towards changes (agility) and the cognitive abilities of the leaders (mindfulness) as a means to improve firm performance though the intermediary role of innovation in business models. By focusing on these factors, businesses can react better to changes in technologies

through the successful adoption of BMI, which can lead to higher market and financial performance.

Another study focusing on BMI was developed by Haaker et al. (this issue) with the title "Business model innovation through application of the Internet-of-Things: A comparative analysis". The authors point out the key role of IoT technologies in empowering the remote monitoring and management of performance, and thus facilitating innovation in service business models. Firms are facing new challenges, however, especially when they have to develop a new business model when based in emerging markets. The multiple case studies of IoT-based business models in six firms from Vietnam carried out by the authors, and their analysis of commonalities and discrepancies allow them to provide business model alternatives for each of the four business model dimensions proposed. The main contribution of this article is to provide a novel application of morphological analysis to business model innovation to create a generic business model for IoT applications in emerging countries.

Cozzolino et al. (this issue) with the paper "Digital transformation in platform-based ecosystems: Competition and cooperation between producers and platforms" asks how incumbent producers adapt to entrant platforms in ecosystems becoming increasingly digital. The literature on incumbent adaptation to technological discontinuities has not explicitly examined how traditional organisations adapt to platform-based radical technologies. The literature on digital platform-based ecosystems, instead, has examined platform strategies such as competition and cooperation with complementors but from the perspective of new entrant platform owners (not the incumbents). The authors bridge these two streams of research by exploring how incumbent producers pivot around competitive and cooperative strategies in response to entrant platforms. By leveraging studies of incumbent-entrant dynamics in technology-driven ecosystems (e.g. Hannah & Eisenhardt, 2018), and conducting an extensive inductive study of the global advertising ecosystem between 2005 and 2019, the authors develop a process model of responses from incumbent producers to digital platform entrants. The model reveals three sequential strategies of adaptation for incumbents ("selective cooperation", "allied competition", and "selective coopetition), which span multiple levels over time (i.e., high-end versus low-end products; products versus technological components). The main contribution is unique in showing how incumbent producers alternate cooperation and competition at different levels as a digital ecosystem evolves.

3.3. New role and new behaviours of consumers

The third group of papers show how the role of consumers is changing dramatically and often very fast. For example, given today's challenges in another key industry (retail), artificial intelligence technological advantages can assist in an organisation's overall productivity and performance. Artificial intelligence implementing music biometrics can assist us in understanding neural responses to particular tracks and sentiment of lyrics. The paper developed by Rodgers et al. (this issue) "Artificial intelligence-driven music biometrics influencing customers' retail buying Behaviour" is motivated by the implementation of facial and music recognition apparatus imbued with artificial intelligence to augment value creation when incorporated in a decision-making model described as the Throughput Model. This paper sets out an experiment that utilises artificial intelligence apparatuses focusing on music biometrics. The study demonstrates that music played in-store which emphasises tempo, genre and volume can directly influence a consumer's sensory perceptions and buying behaviour.

The paper "How to fight against food waste in the digital era: Key factors for a successful food sharing platform" written by Mazzucchelli et al. (this issue) is focused on food sharing platforms, with more attention on the "sharing for the community" model. The research sheds lights on the key drivers of their success, as well as their interrelationships and their role in favouring consumer behavioural responses. The findings show the crucial and interconnected roles of consumer familiarity, perceptions of environmental and social responsibility and community social support. The main contribution is in describing the direction taken by food sharing platforms, which are often conceived as a potentially transformative business model that favours the sharing and exchange of food surplus, where empirical research is rare.

Similarly, in the paper written by Lo et al. (this issue) entitled "Purchasing intention and behaviour in the sharing economy: Mediating effects of APP assessments", the authors focus on digital service platforms in order to gain potential customers and to improve their assessment of how to increase consumers' perceived benefits. Thanks to data from 464 surveys of users who had previous experiences with various related applications in the sharing economy, the authors empirically found that relational, attitude, and capability benefits are the three main perceived benefits that influence the purchasing intentions of consumers. The main contribution of this paper is to guide senior and middle managers in understanding the relevance of online product and service application assessments. Theoretically, the main contribution is the mediator effect of APP assessments in the relationships between perceived benefits and purchasing behaviours and intentions. This means that if firms want to increase purchasing intentions and behaviours, then they need to create greater firm values and reputations via consumers evaluating the APP platforms they are willing to use.

On the same line, Huarng et al. (this issue) suggest a model for experiential interaction design with a business purpose, covering a series of interactive activities, such as curiosity, motivation, play, and effect, as well as their relationships. The model proposes to balance motivation with the effects, but, more interestingly, suggests that continual rewards are critical in order to motivate users to continue their interaction until the effects are reached.

"Hyper-personalisation, co-creation, digital clienteling and transformation" written by Jain et al. (this issue) clearly shows how the consumers are changing thanks to digital transformation. The authors aim to extend the technology-based service adoption model within the fashion industry, using "digital clienteling". They examine the impact of customer innovativeness, willingness to co-create, and customer involvement on their intention to adopt co-creatively developed new services through digital transformation. In essence, they applied a technology-based reasoned action model with co-creation as the mediating variable in the use of digital clienteling for hyper-personalisation. The results suggest that customer innovativeness, attitude and subjective norms have a significant effect on customer involvement. Their most important contribution is to find empirical evidence of co-creation as the mediator for investigating digital clienteling for hyper-personalisation in the fashion industry.

The paper "when consumers stop co-creating" written by Pera et al. (this issue) aims to identify the individual motivations behind consumer attitudes of co-destruction when they are involved in a consumer-producers community. The work takes the perspective of consumers as a source of innovation, and investigates how and whether co-creation and co-destruction occur in a suitable empirical context, that of complementary modifications of video games, or "mods". The study is predominantly anchored in the fields of consumer innovation and of behavioural research in marketing, and adopts a sequential mixed method. A quantitative analysis isolates the relationship between the individual incentives to innovate and the quantity and quality of innovation generated within the community, or the "crowd", of consumer-innovators; secondly, a qualitative netnographic study explores why the consumers of online game communities stop contributing at the best, or why they start to enact antisocial behaviours at the worst.

Quantitative analysis shows that consumer innovation increases with the crowd of complementors up to a certain threshold and decreases afterwards; in addition, the incentives to incrementally contribute to product innovation diminish as the competition in the crowd becomes fiercer, as signalled by the quality of mods already made available. The qualitative analysis unveils the most significant reasons why consumers stop creating value for the community. The findings contribute to the co-

creation and co-destruction literature by proposing that the consumer innovation community is affected by a process of value co-destruction that leads consumers to stop co-creating innovative content. Modders perceive misbehaviours within the community in terms of: 1. lack of support; 2. content appropriation; 3. planned obsolescence; 4. stealing; 5. fierce competition; 6. toxic behaviours; 7. maddaholic; and 6. exploitation. Such misbehaviours are the cause of strong feelings of distrust, frustration, anger and demotivation, which lead modders to stop creating innovative content for the community. The authors propose a conceptual framework that visualises the main reasons that modders stop co-creating.

3.4. Effects and outcomes of digital transformation

Finally, the fourth group of papers highlights some of the effects of digitalisation. The paper written by Jafari-Sadeghi et al. (this issue) "Exploring the impact of digital transformation on technology entrepreneurship and technological market expansion: The role of technology readiness, exploration and exploitation" contributes to the special issue by exploring the effect of digital transformation on entrepreneurship and market expansion in the technology-driven business environment. It is particularly important as the concept of digital transformation has become a high priority for management in most sectors, offering new opportunities for entrepreneurship. In this vein, digital transformation is structured as a combination of nine influential elements in three categories of technology readiness, exploration and exploitation. In order to test a total of eighteen hypotheses, this paper takes advantage of a panel of 28 European nations over a time span of seven years between 2009 and 2015, and employs static panel data synthesis, applying the fittest model of fixed- versus random-effect. Ten hypotheses found support in this analysis, which represents a significant contribution to the literature.

A peculiar topic has been analysed in the paper entitled "When corporations get disruptive, the disruptive get corporate: Financing disruptive technologies through corporate venture capital" written by Rossi et al. (this issue), in which the authors have investigated how corporate venture capitalists (CVCs) manage the financial and strategic support for funded firms that are engaged in the business of disruptive technology. After identifying the huge interest of CVCs in these investments (for example, the internet, mobile, artificial intelligence, and cybersecurity), the examination focused on the five most active CVCs in 2018 (Google Venture, Intel Capital, Baidu Ventures, Legend Capital, and Salesforce Venture, all concentrating exclusively or predominantly on innovative technology). The authors found a correlation between the number of the operations and the related number of deals, although with different behaviours, providing evidence of the increasing interest of CVCs in this ground-breaking field.

Similarly, rooted in the resource-based view of firms, the paper by Ardito et al. (this issue) is one of the first attempts to simultaneously consider strategic commitments towards digitalisation (digital orientation) and environmental sustainability (environmental orientation) as antecedents of innovation performance – product and process innovation performance. They consider the specific context of SMEs. Specifically, the paper first assesses the direct effects of digital and environmental orientations on the product and process innovation performance of SMEs. The joint –complementary – effect of digital and environmental orientations is then also considered. The results reveal that digital and environmental orientations, *coeteris paribus*, have a positive direct effect on the product and process innovation performance of SMEs. Their complementary effect has a negative impact on process innovation performance and is not significant in product innovation performance. All in all, these results contribute to advancing the literature linking strategic orientation and innovation performance - which lacked a specific focus on SMEs – and provides relevant implications for managers and policymakers.

Another contribution is "Bold digital technologies and timid innovation" written by Orlando et al. (this issue), conducted on a large-scale sample of European firms. The authors examine the actual influence of digital technologies on innovation performance in depth, by firstly better defining the concept of digital technologies, which embraces a diverse universe of artefacts, a series of clusters technologies that are extremely differentiated. Secondly, they compare the effect of different types of digital technologies on innovation performance with that of in-house and open R&D expenditure. The findings indicate that digital technologies may affect the efficiency of the process in the short term, but they are not drivers of innovation, especially of radical innovation, in the long term. In other words, digital technologies may mainly effect the economic margins of firms in the short term, whether they are revenues, costs, or both. However, they are almost neutral for value creation in the long-term. By contrast, both in-house and open R&D confirm their positive and significant impact on innovation performance. This requires the attention of both managers and policy makers as regards overemphasising "digital" investments at the expense of innovation, because unbalanced decisions might lead to value destruction in the long run. Also, digital technologies are idiosyncratic and they can easily become sunk costs that deplete firm's flexibility and prevent the pursuit of innovation. This alternative and original view of digital technologies suggests that a firm's survival and value creation in the long-term is still based on investments in traditional mechanisms of innovative knowledge creation, suggesting that there should be more focus on the development of digital skills and competencies.

Orhan et al. (this issue) in "Technology distraction at work. Impacts on self-regulation and work engagement" analyses digital transformation in the workplace. The authors exploit a dataset of 369 employees and unveil the double edge of technology distraction and interruption in the workplace. The findings demonstrate that parallel communications positively influence job performance. Parallel communications negatively affect self-regulation and work engagement, which are, in turn, strong predictors of perceived performance. These results clearly enrich the literature on digital transformation and, at the same time, have solid practical implications for managers.

Siachou et al. (this issue) focus on traditional organisations in the paper "Can traditional organisations be digitally transformed by themselves? The moderating role of absorptive capacity and strategic interdependence". The authors propose a conceptual framework which approaches the digital transformation of these specific types of companies as a coordinated sequence of specific relationships. They suggest key propositions arguing that the relationship between alliance knowledge and digital transformation is a necessary but not absolute condition for the digital transformation of traditional organisations. Absorptive capacity and strategic interdependence are considered boundary conditions for this relationship. The main contributions of the paper are directed towards the development of new knowledge on the antecedents of DT (e.g. the acquisition of external alliance knowledge) in the context of traditional organisations. The authors also shed light on how organisations can be digitally transformed, by suggesting that the digital transformation of traditional organisations is subject to their ability to learn, as well as to the interdependence that is developed between the strategic partners.

In "Online information on digitalisation processes and its impact on firm value" Salvi et al. (this issue) focus their attention on a firm's disclosure of knowledge related to digital transformation, which is crucial for investors' decisions. They interestingly argue that this disclosure can be an important "signal" that companies send to investors, and may positively enhance firm value. They investigated the relationship between information about digitalisation disclosed through their website and firm value. Based on data from a sample of 114 international firms, the authors demonstrated the existence of a positive relationship, demonstrating how information about digitalisation is crucial in order for companies to increase their value. The main contributions are in favour of managers, who should be able to use corporate websites properly to report on strategies, processes, and results

related to digitalisation to increase firm value. Ribeiro-Navarrete et al. (this issue) analyse how the digitalisation of knowledge intensive business services (KIBS) contributes to their future financial performance. More specifically, they investigated the performance effects of relatively simple digital tools that are accessible to any company, such as social network updates, the corporate use of digital tools and social networks, and training in new digital tools. Using a fuzzy-set qualitative comparative analysis (fsQCA), they studied a combination of conditions to investigate how their interaction can lead to strong financial performance. The study empirically demonstrated that updating social networks, using social networks for corporate purposes, having a high level of training in digital tools, and having older managers can enhance company performance.

In "Digital technologies and learning within asymmetric alliances: the Role of collaborative context", Cherbib et al. (this issue) investigate the role of collaborative context (complementarity, commitment and compatibility between partners) in the decision to digitalise for improved learning within asymmetric alliances. Methodologically, six dyadic asymmetric alliances between partners from an emerging market (Tunisia) and developed markets (USA, UK, Sweden, France), operating in varied sectors, were examined. The findings offer a descriptive and prescriptive elucidation of the asymmetric alliances' collaborative context, under which partners can exploit digital technologies when developing learning capabilities within complex and dynamic environments, and towards both scholarly and executive application. The research reinforces extant works, presents a contextually differing application, offers novel empirical insights, and achieves the first-ever definition and delineation of the nature of the link between digital technologies and the learning dynamic within asymmetric alliances.

Finally, Ogbeibu et al. (this issue) in "Bolstering creativity willingness through digital task interdependence and disruptive & smart HRM technologies" support the view in favour of a smart human resource management technology (SHRMT) that effectively drives the exchange of creative ideas in work teams. In fact, due to the volatility of digital transformation, and by leveraging SHRMT and digital-task-interdependence tenets, practitioners have to improve their team creativity willingness with the final aim of sustaining the firm's competitive advantage.

The results show that digital task interdependence, disruptive technology and SHRMT have direct positive effects on team creativity willingness, while disruptive technology attenuates SHRMT's positive effect on team creativity willingness. The main contributions of this research is to provide concrete answers regarding how digitally interdependent teams that are engaged in a digital task affect a team member's willingness to demonstrate creativity. They also shed light on the way digital transformation influences the willingness of team members to demonstrate creativity, and how SHRMT acts to predict the willingness of team members to exhibit increased creativity.

4. Concluding remarks

This special issue greatly deepens our knowledge on digital transformation and on different areas of related and interconnected research, such as new digital skills and the capabilities they require, the emergence of new business models and transformation within key industries, and the new role and new behaviours of consumers. We delivered key value around the main effects and outcomes of digital transformation. Digital transformation is a constantly evolving issue and there are therefore still many answers to be provided for management. For example, from a business model perspective, it is necessary to explore how digital transformation and specific technologies can affect the key components of the business model, namely value creation, value configuration and value capture (Franceschelli, Santoro, & Candelo, 2018). How and which forms of dynamic capabilities should be developed by firms to embrace digital innovation remains unclear, in which contexts (e.g. smart cities), and in relation to which kind of growth strategy (e.g. internationalisation, diversification, vertical or horizontal integration).

The discussion is still ongoing around digital transformation in business and management, but we believe the scholars published in this special issue have delivered an important development of the topic, and we thank them for their scientific and human contribution.

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