Editorial: Digital transformation and business model innovation: advances, challenges and opportunities

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1 Introduction

Advancement in technology is continuous – it never ends! Yet, the extent to which technology advancement is disruptive and revolutionary has only become a subject of burgeoning interest among academics and professionals in recent times. Indeed, the revolutionary aspects of technology advancement brought by the latest industrial revolution (e.g., big data, wherein data as the new oil; artificial intelligence and machine learning, wherein human intelligence is simulated in machines for data acquisition, analysis, and decision making) have created unprecedented disruptions (e.g., co-existence of humans and machines in the future of work and the new marketplace), thereby leading to new challenges (e.g., danger or fear of becoming obsolete or redundant) and opportunities (e.g., creation of new markets and more efficient ways of doing things) for firms and their business models (BMs). However, business model innovation (BMI) that responds to these new developments (e.g., digitisation, digitalisation, digital transformation) has remained relatively underexplored. To address this pertinent research gap in a timely fashion, a special issue consisting of four papers on this revolutionary, yet disruptive phenomenon was curated to offer first-hand insights on the state of BMI through digitalisation. Future research directions are also thoughtfully provided herein this paper to stimulate additional research with respect to digital transformation and BMI.

Perpetual change, unexpected disruption, and constant innovation represent the most widespread mantras in business in recent years (Savić, 2019). This is largely due to the exponential growth of digitalisation, whose implications manifest with full force on society as a whole as it enables unforeseen possibilities (Brynjolfsson and Mcfee, 2014). While digitisation means conversing analogue information to a digital format (Ng and Wakenshaw, 2017), digitalisation refers to the systems-level restructuring of economies, institutions, and society that occurs through digital diffusion (Unruh and Kiron, 2017).

An unprecedented wave of digitalisation is occurring by relying on the convergence of SMAC technologies – i.e., social, mobile, analytics and cloud computing – that fuel innovation among firm and societal practices due to their ever-increasing processing power, storage capacity, and communication bandwidth (Legner et al., 2017). Rapid and transformative changes driven by digitalisation have provided many opportunities for firms of all sizes operating in the most diverse industries. Indeed, firms today can achieve and reap the many benefits from resource utilisation improvement, cost reduction, employee productivity intensification, supply chain optimisation, and customer satisfaction and loyalty enhancement because of digital transformation and BMI (Loebbecke and Picot, 2015).

Yet, digitalisation has also place immense pressure on firms to hop on the digital transformation bandwagon to avoid being left out and suffer from equivalent repercussions (e.g., becoming obsolete or redundant), thereby leaving firms no choice but to embrace a paradigm shift in how business is done in a technological era where the competition is highly disruptive and processes are technology-mediated (Ferraris et al.,

2018; Venkatraman, 2017; Warner and Wäger, 2019). Therefore, it is no surprise to see a tsunami of firms today undertaking digital transformation to revolutionise their BM so that they can leverage the benefits of digitalisation, such as the new and innovative ways it afford to firms for developing new forms of collaboration or modifying relationships within and across ecosystems (e.g., customers, employees, suppliers) (Kiel et al., 2017; Bresciani et al., 2018; Grandinetti et al., 2020).

In response to the pressure exerted by digitalisation, firms today need to reconsider their current strategic and operative models so that they can take advantage of what is newly possible for competitive differentiation (Linz et al., 2017). Firms need to complement and/or enrich existing product offerings (e.g., goods, services, solutions) as well as to build or upgrade to new BMs by leveraging on advanced technologies (Matzler et al., 2018), thereby moving away from traditional management thinking.

The pervasive digitalisation phenomenon has opened additional avenues for BMI. In essence, a BM is an "architecture for how a firm creates and delivers value to customers and the mechanisms employed to capture a share of that value" [Teece, (2018), p.40]. On this basis, BMI today can be understood as a "change in a company's business model that is new to the firm and results in observable changes in its practices toward customers and partners" in response to the increasing availability and embeddedness of digital technologies [Bouwman et al., (2017), p.3].

Emergent technologies such as artificial intelligence, big data, cloud computing, and the internet of things (IoT) are (re)shaping the interconnections of value chains and customer interfaces, thereby driving innovation in BMs (Hartmann et al., 2016; Matzler et al., 2016). In this logic, digitalisation can be defined as the "use of digital technologies to innovate a business model and provide new revenue streams and value-producing opportunities in industrial ecosystems" [Parida et al., (2019), p.6].

Though BMI has garnered a strong interest in the scientific literature (Massa et al., 2017; Foss and Saebi, 2018; Ritter and Lettl, 2018), the state-of-the-art knowledge on digital technology-driven BMI is still very limited and fuzzy (Müller and Hundahl, 2020). Indeed, few empirical insights exist (as the extant literature is largely conceptual constructs) and thus explaining why digital technology-driven BMI remains inadequately operationalised (Rachinger et al., 2019).

To advance the body of knowledge on this topic, multidisciplinary research is needed to refine, broaden, and develop novel solutions, which will guide digital innovation management practices. Yet, it is surprising to note that while the literature is rich on insights pertaining to information systems and technologies, there is very scant studies explaining digitalisation's influence on BMI from a managerial standpoint. Exploitation of technological opportunities from a strategic viewpoint is thereby a challenging and promising research area (Paulus-Rohmer et al., 2016; Rachinger et al., 2019).

More importantly, digitalisation is much more than just the instrumental application of various digital technologies. In fact, digital transformation shifts into a multifaceted phenomenon that causes a strategic rather than technical evolution of BM, whose components require a wider and deeper rethinking. Hence, the present special issue was commissioned to promote greater research and understanding of the intricate relationship between digital transformation and BMI by focusing on the application of managerial theories in empirical settings.

2 Digital transformation and BMI insights from the special issue

This special issue attempts to advance knowledge in the field of BMI in the light of the digital revolution in the 21st century. The call for papers that was advertised during the COVID-19 pandemic invited new research initiatives focusing on BMI that emerged as a result of digital transformation and resulting in new business logics to create and capture value. Four papers submitted to the special issue, which were accepted after timely yet rigorous peer reviews, represent interesting advances in this contemporary and pertinent area of research, covering a stimulating diversity of research methodologies and settings.

First, Torriero, Montera and Cucari analysed the BM of a 'big bang disruptor' in the financial industry. Specifically, they conducted a case study of Credimi, which is one of the most important players in the provision of digital lending services in Europe. Using the BM canvas, their study showed that Credimi's BM is customer-oriented, and its services provided through a digital platform ensures better user experience in the digital era. More importantly, their study highlighted three important characteristics of 'big bang disruptors' – namely, agility, flexibility and adaptability – which are essential to remain competitive in a volatile, uncertain, complex, and ambiguous (VUCA) business environment.

Second, Leone, Pietronudo and Dezi proposed a detailed observation of the passage from virtual reality (VR) to the use of augmented reality (AR), highlighting the capability of AR systems in improving BMs. Using case studies of firms in various sectors (e.g., military, medicine, automotive and retail), their study shows how AR influence different BM. Their study makes clear that the adoption of AR by firms can provide benefits for BM components (e.g., value proposition, value configuration, partner network, relationship, core competences, cost structure, distribution channels, revenue model, target customer), which contribute to value configuration (i.e., value creation, value delivered, value capture) leading to firm desired outcomes (i.e., optimisation and transformation effects).

Third, Romeo and Capolupo conducted a systematic literature review of 49 papers in Scopus using the PRISMA protocol to reveal how big data could generate innovation processes that enable firms to reinvent themselves. Their review indicates that most research on the topic avails in the *Journal of Business Research*, *Journal of Product Innovation Management*, and *Technology in Society*, with China, Finland, and Italy leading research outputs in the area. Their review also indicates that most research in the area is conducted through case studies, conceptual methods, and systematic literature reviews. Interesting, their review reveals four main BMI research clusters – i.e., BMI barriers and enablers, BMI value proposition, BMI and organisations, and BMI and technology-driven innovation – and four main big data research themes – i.e., big data as an asset, strategic orientation of big data for competitive advantage, big data for operations improvement and innovation, and data-driven BMs emerging from big data.

Fourth, Vito, Iandolo and La Sala performed a bibliometric review to reveal the impact of digitalisation on BMs. Five main clusters were revealed, showing that scholarly attention has progressively shifted from general innovation and BMs (Cluster 1) to new innovation and BMs based on digital platforms such as Uber and AirBnB (Cluster 2) and BMI and digital innovation (Cluster 4), including that focusing specifically on the servitisation process (Cluster 3). The other cluster of research recently brought to attention is those of collaborative consumption and the sharing economy (Cluster 5).

3 Conclusions

To this end, the paper makes clear that digital transformation has spurred BMI, wherein the adoption of new technologies can benefit myriad components in a BM, thereby allowing firms to achieve desired outcomes in a disruptive, volatile, uncertain, complex and ambiguous business environment. The paper also demonstrates the contributions of papers in the special issue to the extant literature on digitalisation in business from a managerial perspective, which extends existing work on quality and innovation in the journal (Lim, 2019). To build on the insights contributed by the special issue, a collection of non-exhaustive research questions for future research consideration is provided, as follows:

- How can firms' best adapt their BM to the digital world? What elements act as drivers and/or barriers?
- Which dimensions of complexity increase or decrease because of digitalisation and BMI?
- What are the antecedents and consequences of BMI led by digitalisation?
- How and to what extent is the digital transformation changing the processes of creating, configuring, and capturing value?
- What capabilities are required to successfully embrace digitalisation and BMI?
- Which kind of relationships should be developed across and within ecosystems to nurture BMI through digitalisation?
- What is the extent to which digitalisation leads to BMI that differs according to company size and/or industry?
- What type of digital-enabled BMI can lead to growth in emerged and/or emerging markets?

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