

Digital business models

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Full Title: Digital Business Models: Taxonomy and Future Research Avenues¹

Short Title: Digital Business Models

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¹ J.E.L. classification codes: D21, M21.

Main conclusion:

Digital technologies reshape the competitive landscape as firms develop new means of value creation, delivery and capture.

Key points:

The implementation and suitability of digital business models depend largely on the resources of incumbent firms and new entrants and on the firm positioning in the supply chain.

The effect of digital business models is context specific and hence insights from a wide range of industries are included here; among them retailing, manufacturing, internet, health and television broadcasting.

The maximization of revenues through customer engagement and the reduction of costs are often the main drivers for digital business model adoption.

Introduction

Business models provide the rationale for how an organisation creates, delivers, and captures value, and as such, are seen as the route to competitiveness, growth and profitability (Teece, 2010). Firms bundle resources together to create capabilities that allow them to develop different business models, a process that has been enhanced by the developing digital technology led economy (Amit and Zott, 2001). The nature of digital technology has changed the way economic agents produce, interact and commercialize their offerings (Porter and Heppelman, 2014), leading to novel digitalized product-services business models (Visnijic *et al.*, 2016). The impact of digitization on businesses and society is broad, but its empirical assessment is complex and challenging (Vendrell-Herrero *et al.*, 2017a).

Digital business models have been implemented in a wide variety of industries including, but not limited to manufacturing, hardware, retailing, publishing and television broadcasting. Some companies have achieved tremendous success developing and internationalizing technology-enabled business models that affect local and global value chains (Alcácer *et al.*, 2016). An example of this transformation is the case of Uber who developed and commercialised a digital taxi booking system. The Uber application can be used by both licensed and unlicensed taxi/minicabs across the world and has dramatically increased competition in the industry, considerably affecting the ability of incumbents to appropriate value (Sharman, 2015). Another example is the use of 'big data' analytics, where firms who are able to develop processes for gathering, analysing and interpreting data from their offerings will gain significant insight and thus advantage over competitors. Big data is already impacting global production processes and the relationships between businesses and consumers (Opresnik and Taisch, 2015).

This special issue seeks to advance the understanding of the transition undertaken by many firms, towards more innovation-based and difficult-to-imitate digital business models. The collection of nine papers presented here provide insight into a variety of digital business models that are deployed and implemented by firms and provide assessment of their impact. All the articles were blind reviewed and most were presented at the fifth International Conference on Business Servitization, held in Granada, Spain (www.servitization.org) which allowed both formal and informal discussion of specific aspects of the developing research between authors and guest editors. The special issue has wide geographical representation of European contexts, with author affiliations from eight countries (Denmark, France, Hungary, Ireland, Netherlands, Portugal, Spain and the UK).

In this editorial note we present the articles using a taxonomy framework that is useful for both academic and practitioner audiences. In the next section we will develop our taxonomy framework of digital business models and summarize the various contributions of this special issue in relation to that framework. Building upon the taxonomy framework, the article concludes by suggesting some avenues for further research on digital business models.

Building a taxonomy framework

The implementation of digital technologies is not only a firm-specific phenomenon as change also affects what happens outside organizational boundaries, and therefore there is a transformation of the business ecosystem. Reflecting upon the submissions for this issue we propose that the nature and potential impact of digital business models depends on the supply chain position of the firm and the type of the organization deploying the

digital technologies (i.e. incumbent or new entrant). Based on these specifics, Table 1 provides a taxonomy framework.

[Insert Table 1]

In terms of digital business models, product focussed organisations (firms or sub-divisions of firms) differ from other organizations in the supply chain (i.e. provider, supplier, intermediary, third-party service provider or customer). Product focussed organisations are increasingly developing digitally enhanced smart and connected products (Porter and Heppelmann, 2014) that enhance opportunities to improve revenues during the product lifecycle (Cusumano *et al.*, 2015). Organizations also use digital technologies to gain power in the supply chain (Bustinza *et al.*, 2013) and where the producer relies on intermediaries they may find they are unable to maintain margins (Vendrell-Herrero *et al.*, 2017b). The vertical axis of our taxonomy framework differentiates between the *producer*, i.e. organizations for whose main mission is to produce goods and services, regardless of their digital nature; and the *intermediary (or network coordinator)*, i.e. organizations for which the main mission is to resell or to manage a network of firms/users.

As with any organization, innovative firms implementing digital technologies are subject to path dependency business hysteresis (or inertia), i.e. the dependence of current managerial decisions on past actions. This means that newly created firms differ from established corporations as they are not constrained by past actions and hence may have more flexibility at the time of decision making. As an example we can think of the HR department. Established firms inherit the workforce from past recruitment processes and the composition of skills may or may not match the current demands of the

organization. In contrast, new firms can recruit employees with the corresponding skillset that matches current corporate needs.

Business hysteresis not only differentiates between incumbent and new firms. Another important distinction when it comes to digital business models is previous experience with digital technologies. Some firms are digital natives (i.e. internet firms) and are more likely to have the appropriate skillset inside the organization to implement a wide range of digital activities. Other firms may have limited experience with digital technologies (digital non-native) as they were designed for the analogue world in which they were born.

Our taxonomy framework considers that business inertia produces three distinct subfields of digital business models. First, *digital servitization* refers to those business models that enhance traditional non-digital goods and services with the implementation of ICT or other digital technologies (Vendrell-Herrero *et al.*, 2017b; Visnijić *et al.*, 2016). Second, *digital innovation* enhances the processes of value creation, delivery and capture of an existing digital offering (Nambisan *et al.*, 2016). Third, *digital entrepreneurship* is the study of how new entrants use digital technologies to compete with incumbent firms (Fosfuri *et al.*, 2013).

Where in the taxonomy framework are the contributions of this special issue positioned?

There is an increasing body of research on product firms using digital technologies to upgrade their offering. This line of research is normally referred to as Industry 4.0 (De Propris, 2016) and is depicted in Quadrant I of Table 1. Martín-Peña *et al.* present a comprehensive literature review on digital business models for product firms and highlight the importance of digitization as an enabler for integrated solutions and smart

products. Similarly, a quantitative study by Bustinza *et al.* investigates the rationale for undertaking integrated solutions in product firms located in the Italian Veneto region. Their study finds that a commitment to digital technologies, and current organizational capabilities are key determinants of success when implementing integrated solutions. They also show that firm agility is a pre-requisite for developing digital business models in-house, suggesting that firms with low agility are better off outsourcing the digital service function.

Digital business models can also be implemented by digital non-native firms (Quadrant II Table 1). Loonam *et al.*, through a systemic review of the case literature, identify ten different case studies and analyse approaches to business transformation of traditional firms undertaking digital initiatives. They identify various key aspects of transformation management that refer to the organization, the customer and the technology. Similarly, Sánchez-Montesinos *et al.* analyse the case of the Spanish food retailing cooperative Covirán and show how digital services can be used as a way of setting entry barriers to competitors and therefore can enhance competitive advantage.

Digital native firms can also upgrade their business models to extract more value from their existing digital offer. The special issue contains two articles assessing the economic impact of the upgrading of such business models. The first article by Parry *et al.*, analyses the case of a producer of digital content (Quadrant III), a TV Broadcaster, willing to introduce a windowing business model. 'Windowing' is the strategy where content is made available to consumers through different channels over time (Doyle, 2016). Using an extensive consumer survey the authors show that by offering sampled digital content to consumers for free, firms can increase the number of pay subscriptions in the future. The second article, Müller *et al.*, refers to the cases of Google and Yahoo.

The two internet network firms (Quadrant IV) employed diverging envelopment strategies. Whilst new digital services added by Google offered extra functionality to the initial digital business (i.e. search engine), Yahoo decided to implement separate platforms. The authors conclude that the model of Google is superior because it develops a system of interconnected digital services.

New entrants also play an important role in the digital ecosystem. Digital technologies provide an opportunity for reduced entry costs and therefore new firms may find they are able to compete with established industry incumbents (Fosfuri *et al.*, 2013). Horváth and Szerb assess the productivity gains of information technologies in eighty newly formed Hungarian SMEs (Quadrant V). Their results show that digital and IT-based practices contribute to enhance SMEs' productivity.

New digital firms normally assume a role of intermediary between the producer and the consumer or user (Quadrant VI). Gauthier et al. pinpoint that this is the case of the health system in which new firms develop digital platforms and smart systems of data management to better connect health professionals with patients. The authors use five case studies in France to show that entrepreneurs need to develop a specific managerial skillset to enhance their competitiveness. These managerial skills include IT for managing internal resources, strategic capabilities for dealing with external agents, and business model capabilities to configure the front-office/back-office interfaces.

Entrepreneurs in emerging markets can also deploy digital technologies to gain competitiveness, but are subject to infrastructure availability. Boojihawon and Ngoasong analyze the necessary skillset and institutional support that Cameroon entrepreneurs need in order to establish new digital businesses. Through twelve qualitative case studies the authors conclude that digital entrepreneurs in emerging

economies require specific training and stable institutional support to create a network infrastructure to effectively build a sustainable digital business model.

Conclusions and research agenda

In an increasingly digitalized society the firm-level analysis of digitally enhanced business models has a growing relevance. This special issue contributes to a growing literature on digital business models (i.e. Amit and Zott, 2001; Nambisan *et al.*, 2016; Porter and Heppelman, 2014; Visnjic *et al.*, 2016). The theoretical developments and the qualitative and quantitative empirical evidence provided offer valuable lessons for academics, managers and policy makers. In summarizing the nine contributions of this issue this editorial contributes to the research on digital business models by presenting a new taxonomy.

The taxonomy provides a framework to position future research into digital business models. Future research may consider the development of studies analysing more than one quadrant simultaneously. An approach for doing this is to undertake research on mergers, acquisitions and strategic alliances, since they are key elements for value creation and competitive advantage (Gomes *et al.*, 2011; Gomes *et al.*, 2016). For example, digital-non-native firms can gain access to scarce digital skills and capabilities through the acquisition of new entrants or through collaborative arrangements with digital-native firms. Similarly, product firms can establish strategic alliances with service providers or intermediaries (Bigdeli *et al.*, 2017; Bustinza *et al.*, 2017; Paiola *et al.*, 2013).

Another area for further research is the use of digital technologies to sustain internationalization strategies (Vendrell-Herrero *et al.*, 2017c). Whilst recent research

has already concluded that firms in isolated areas can use information technologies to better engage with foreign clients (Vendrell-Herrero *et al.*, 2017d) and that digital upgrading is reshaping global value chains (Alcácer *et al.*, 2016), there is a need to better understand the mechanisms behind these technologies and the specific capabilities that need to be developed.

We propose that the digitization phenomenon will be an area of significant interest in the coming years. Future research may contribute to the development of firms, ecosystems and society by providing greater understanding of the challenges of digital business models at firm level and guidance as to how best to proceed in both developing practice and theory.

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Short Bios

Dr. Ferran Vendrell-Herrero is a Senior Lecturer (Associate Professor) in business economics at the University of Birmingham, UK. His research focuses on the innovation dynamics of business models within creative industries as well the impact of digital technology in organisation of creative businesses. This has led him to analyse recent changes in the business models of multinationals in the music, publishing and media sectors.

Dr. Oscar F. Bustinza is an Associate Professor of strategy and operations management at the University of Granada (Spain). His work analyses drivers of firms' boundaries choice, servitization, and demand chain management based upon data driven analysis. He publishes in international journals and has co-edited various special issues.

Prof. Glenn Parry is a Professor of Strategy and Operations Management at the University of the West of England, UK. He is interested in the meaning of 'good' in different business context and his research is characterised by a strong industrial focus on process combined with the rigour of academic analysis. His work aims to capture leading practice, moving companies forward through transformations based upon data driven analysis. He is currently involved in studying the move from product to service provision, particularly in the digital space.

Dr. Emanuel Gomes is an associate professor at the Nova School of Business and Economics, Portugal. His research interest is in the areas of M&A, strategic alliances, internationalisation of the firm, and strategic renewal. He is the author of three books and of several articles on M&A and strategic alliances.

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Table 1: Taxonomy of digital business models and the contributions of the special issue

		Business hysteresis/inertia		
		Digital Servitization	Digital innovation	Digital entrepreneurship
		Incumbents (digital Non-native)	Incumbents (digital natives)	New entrants
Supply chain position	Producer	<p><i>QUADRANT I</i></p> <p><i>Martín-Peña et al.</i></p> <p><i>Bustinza et al.</i></p>	<p><i>QUADRANT III</i></p> <p><i>Parry et al.</i></p>	<p><i>QUADRANT V</i></p> <p><i>Horváth and Szerb</i></p>
	Intermediary/Net work	<p><i>QUADRANT II</i></p> <p><i>Loonam et al.</i></p> <p><i>Sánchez-Montesinos et al.</i></p>	<p><i>QUADRANT IV</i></p> <p><i>Müller et al.</i></p>	<p><i>QUADRANT VI</i></p> <p><i>Boojihawon and Ngoasong</i></p> <p><i>Gauthier et al.</i></p>