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Publication date
01-07-2020

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Document Version
Accepted version

Citation for this work (American Psychological Association 7th edition)
Antonopoulou, K., & Begkos, C. (2020). *Strategizing for digital innovations: value propositions for transcending market boundaries* (Version 1). University of Sussex.
https://hdl.handle.net/10779/uos.23476304.v1

Published in
Technological Forecasting and Social Change

Link to external publisher version
https://doi.org/10.1016/j.techfore.2020.120042

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Strategizing for digital innovations: value propositions for transcending market boundaries

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26th February 2020

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Declarations of interest: none

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ABSTRACT

Digital entrepreneurs often exploit market opportunities across boundaries by constantly designing value propositions rather than innovating. We conceptualize this as a strategizing practice, which we aim to investigate further. This paper explores the mechanisms that digital entrepreneurs use to design and redesign value propositions to exploit market opportunities across boundaries by drawing on a two-year in-depth case study of a digital venture. We argue that at the heart of designing value propositions are the following four mechanisms: excogitating functionality, self-reverberating benefits, designating interdependencies, and conforming intentionalities. The paper argues that through the constant enactment of these mechanisms and a pattern that acts as a catalyst, it is possible to redesign the value proposition to transcend market boundaries without constantly developing new digital products. Our paper offers significant implications for digital technology entrepreneurship and strategizing literature by (a) capturing and theorizing the continual design of the value proposition as a strategizing practice to transcend market boundaries, (b) enunciating the mechanisms underpinning the design of the value proposition, and (c) introducing a new theoretical approach to the study of value proposition drawing on a practice perspective.

Keywords: digital innovation, strategizing, value proposition, practice, market boundaries, mechanisms

1. Introduction

Digital entrepreneurs face the uncertainty of creating innovations with contingent market potential because they often generate innovations with limited visibility in terms of the anticipated functionality and usage of those innovations. It is not clear or predetermined who the users might be and what they might do with such technologies and, in many cases, new and unpredictable markets are created while existing markets and sectors are undermined, or their boundaries become blurred and shifting (Henfridsson and Yoo, 2014; Ojala, 2016). On a general level, digital innovation is a distinct form of innovation which relies on the combination of digital and physical components and results in digital objects that propose valuable new uses for goods, services or procedures (Yoo et al., 2010; Kolloch and Dellermann, 2018). Digital technology products have been associated with the

particular architecture that imparts on them context-transforming characteristics (Yoo et al., 2010; de Reuver et al., 2018). Viewed in this way, digital innovations differ from technological artefacts due to specific attributes such as intentional incompleteness, easy re-programmability and malleability, which make such innovations easy to reconfigure (Yoo et al., 2010; Kallinikos et al., 2013; Tiwana et al., 2010; Huang et al., 2017). Within this turbulent business environment which is characterized by technology-push situations (Brem and Voigt, 2009), digital entrepreneurs often focus on the offering of their business idea rather than the actual technology (Giones and Brem, 2017). They constantly have to probe and sense possible usages through the launching of minimally viable digital innovations in a strategizing attempt to explore market opportunities.

Strategizing is *"grounded in the ongoing practices of organizational actors, and emerges out of their (tacit and not so tacit) accommodations to and experiments with the everyday contingencies, breakdowns, exceptions, opportunities, and unintended consequences that they encounter"* (Orlikowski, 1996, p. 65). Seminal management and innovation studies offer significant understanding regarding strategizing for new product development (c.f. Starbuck, 1993; Teece, 2010; Besson and Rowe, 2012; Jørgensen and Messner, 2010) with the assumptions that the use of the products is clearly predetermined and there are well-defined markets. Nevertheless, it is undeniable that the development and commercialization of innovations involves uncertainty and risk, which are even more prominent for digital innovations due to their particular ontology (Kallinikos et al., 2013). Digital entrepreneurs, through focusing on a business idea instead of technology (Giones and Brem, 2017), they often aim to explore opportunities in markets that are not yet in existence while attempting to create demand across market boundaries to assure profitability and exploit opportunities for growth.

In consequence, digital entrepreneurs engage in practices to introduce a digital innovation across different markets offering alternative usages. For example, digital animations can be marketized for different uses within existing markets and can be edited relatively easily to target uncommon 'pressure points' in new uncontested market spaces. We consider that the reuse of digital innovations with minor changes for different purposes does not make them particularly different technically, and they are considered as variations that, in essence, are the same digital product with alternative offerings of value in a new market space. Given the importance for digital entrepreneurs to devise initiatives of strategic importance (El Sawy et al., 2010; Brem et al., 2019), among their strategizing practices is to design promises of value - value propositions - that they consider a 'test' and the overcoming of which indicates a reconciliation between the vendor and the potential customer (Doganova and Eyquem-Renault, 2009). We refer to a value proposition as a comprehensive description of the value an innovation might offer to an audience; a concept which, to date, is underdeveloped. The 'prospective nature' of innovations hinders the design of value propositions (Doganova and Eyquem-Renault, 2009) and it is difficult to describe the utility and the anticipated benefits of a technology when its inherent value has yet to become fully visible or even remains

obscured until commercialisation (Chesbrough and Rosenbloom, 2002). Extant studies on new product development, entrepreneurial opportunities, or business model development do not help explain this new phenomenon of exploiting market opportunities across boundaries with the same digital innovation. In most cases, they stop short of explaining the value proposition within the scope of value creation and capture without clear distinction of the value proposition and usually with the assumption of pre-existing market boundaries or preconfigured functionality for the innovation. Therefore, the aforementioned literature does not accommodate for the uncertainty pertaining to the value and realization of digital innovations, thus necessitating a more detailed examination of the dynamic relationship between strategy and value propositions.

This study aims to answer the following research question: *'What are the underpinning mechanisms that digital entrepreneurs use to design value propositions to exploit market opportunities across boundaries?'.* We address our research question through an in-depth case study (Gerring, 2007; Walsham, 1995) of a digital venture based in the UK, Allo (pseudonym). We observed how the digital entrepreneurs in a company seek to develop value propositions for a digital innovation that can be used beyond entertainment, i.e., for training, education, investigation or advertising, by proposing different offerings. We were intrigued by the company's ability to quickly expand into multiple markets despite having a limited initial grasp of the potential of each one of those markets, and we witnessed the persistent attempts by digital entrepreneurs to transcend market boundaries with the same digital innovation and its variations.

We conceptualize the continual redesign of value propositions as a form of strategizing to manage the uncertainty, as well as create and capture demand across market boundaries. In doing so, we draw inspiration from scholars with a practice perspective (Schatzki, 2002; Whittington, 2006; Jarzabkowski et al., 2007), as we move from a cognitive to a performative understanding of the value proposition as a strategizing practice. This points to a direction where *"strategizing comprises those actions, interactions and negotiations of multiple actors and the situated practices that they draw upon in accomplishing that activity"* (Jarzabkowski et al., 2007, p. 7-8). We envisage situated practices as *"routinized types of behaviour"* (Reckwitz, 2002, p. 249) and *"organized human activities"* (Schatzki, 2005, p. 471), such as the *"planning, resource allocation, monitoring and control practices and processes through which strategy is enacted"* (Jarzabkowski and Fenton, 2006, p. 632). Through our theoretical approach and in-depth qualitative methodology, the paper offers three significant contributions. First, we capture and provide theoretical insight on the continual redesign of the value proposition as a strategizing practice. Second, we outline the mechanisms that capture the detailed ways by which the design of value propositions to explore opportunities across market boundaries are made possible. Last, we introduce a new theoretical approach to the study of value proposition drawing on a practice perspective.

The remainder of the paper is organized as follows: first, we review the key literature on the nexus of value proposition and strategizing. Then, we discuss Schatzki's (2002) site ontology, which

is helpful in investigating how the design of a value proposition is practiced in the context of digital innovation. The following section proceeds to describe our research setting and outlines our methodological approach. This is followed by the presentation of our empirical findings and analysis. Next, we draw on this analysis to answer our research question and build on our findings to offer new insights. Finally, the last section outlines our study's limitations and suggestions for future research.

2. Value proposition: Related literature and conceptual basis

Scholars from diverse streams of literature understand the value proposition differently. For example, in the entrepreneurship literature, the value proposition is viewed as one of the *"decision variables in the areas of venture strategy, architecture and economics that creates a competitive advantage in defined markets"* (Morris et al., 2005, p. 727). In the strategy literature the value proposition is described as the value a company creates for stakeholders (Stähler, 2002). In extant marketing studies, the value proposition is described as an outcome of marketing activities or a communication practice (Ballantyne et al., 2011; Truong et al., 2012) and sometimes as the *'offering'* (Magretta, 2002; Ramirez, 1999) that represents a crucial step towards the joint realization of value between different stakeholders.

Over the last decade, information systems scholars have also addressed the value proposition concept in relation to business model development (e.g., Osterwalder and Pigneur, 2012; Afuah and Tucci, 2000; Al-Debei and Avison, 2010; Pateli and Giaglis, 2004; Hedman and Kalling, 2003), acknowledging its importance in justifying the value of an innovation. Within those studies, the design of the value proposition has been touched upon in relation to efforts being made to define the uses, addressable markets, knowable costs and revenue streams (e.g., Al-Debei and Avison, 2010; Hitt and Brynjolfsson, 1996; Pateli and Giaglis, 2004). Despite the importance ascribed to it in extant studies, the notion of the value proposition and its design remain under investigated, particularly in relation to understanding the value and market potential which result from the particular nature of digital innovation. In this direction, there is a breadth of perspectives that describe the value proposition as the value a company creates for different stakeholders (e.g., Al-Debei and Avison, 2010; Morris et al., 2005; Zott et al., 2011; Osterwalder et al., 2014). These views echo that the design of a value proposition creates a convoluted explanation of multiple dimensions of value which emerges from developers targeting potential customers, in pursuit of ways to justify the innovation's value. In a similar way, Ulrich et al. (1999) highlight that there are five types of value propositions focused on either low cost, quality, speed, service or innovation and they demonstrate the relevance of a product or service to the market. Nevertheless, there is no explanation of the practices for designing multiple value propositions for the same innovation and there is no discussion about the relationship between the value proposition and a strategy to exploit multiple market opportunities without constantly innovating.

In the wider innovation studies literature, Doganova and Eyquem-Renault (2009) consider the value proposition as a *'test'* or *'trial'*, the outcome of which is a consensus between the vendor and the potential customer leading to the procurement of the innovation. This view echoes some other insightful perspectives that argue that the existence of multiple value propositions deals with different *'regimes of value'* (Barrett et al., 2016; Boltanski and Thevenot, 2006; Stark, 2009; Corvellec and Hultman, 2014). Along these lines, the value proposition is considered in terms of its articulation of different *'embedded values'* that are woven together (Antonopoulou et al., 2014), aiming to demonstrate value in terms of profits or of advantages for different stakeholders, such as a customer, a partner or even an investor. Nevertheless, those views do not sufficiently address how a value proposition is created and shared, particularly in specific digital innovation settings where, because of the unbounded combinations of digital and physical features, it is difficult to foresee the benefits of such novel digital ventures (Chesbrough, 2010; Nambisan, 2013; Yoo, 2013; Yoo et al., 2010; Yoo et al., 2012). Also, thus far the '*value in use'* (i.e., derived value) does not presuppose the existence of value in exchange and firms *"do not deliver value but only value propositions"* (Vargo et al., 2008, p. 148). This warrants an emphasis on the constant design of value propositions rather than innovations, however how digital entrepreneurs or innovators make a step towards the delivery of value across market boundaries without constantly innovating and how they strategize by continually designing a value proposition is, once again, not investigated fully.

The recent literature on digital technology entrepreneurship, however, presents a view of the value proposition as dynamic due to the fact that digital innovations are constantly in the making (Henfridsson et al., 2018; Van Le and Suh, 2019; Kallinikos et al., 2013) with a multiplicity of possible paths and outcomes. Within this context, digital entrepreneurs surrounded by network effects, standard or dominant designs, make resource combinations and trials (Brem et al., 2019) that lead to unexpected offerings based on their assumptions regarding the functionality of the innovation and market potential (König et al., 2018). These insights challenge earlier views of the value proposition which do not accommodate the uncertainty involved in the realization of digital innovations. An interesting perspective in this direction is offered by Chesbrough and Rosenbloom (2002), who propose a dynamic perspective that echoes an emerging value proposition that intercedes between the technical and economic spheres of activity. This is seen as important in terms of dealing with how technical uncertainty is often intertwined with the unforeseen market potential, thereby increasing the difficulty of designing a value proposition. Also, Henfridsson et al. (2018) provides important insights regarding the activity of recombination of digital resources which enables a "*value path by connecting digital resources as a value offering to users*" (p. 95). The authors argue that recombination always pre-exists the offering but they do not describe the underlying mechanisms which enable the offering's development. In this vein, an important viewpoint in the lean start-up approach (e.g., Blank, 2013; Frederiksen and Brem, 2017) views the value proposition as evolutionary but its multiple facets are not examined. Hence, how this might relate to the design of a value

proposition that provides a consistent rationale regarding the features of the technology, the different options of its functionality and the benefits for potential customers across multiple market spaces have not yet been addressed.

Our review of the above extant studies in information systems, innovation, business model development and digital technology entrepreneurship highlights that the concept of value proposition has been primarily explored in the crossroads of value creation and capture with predetermined assumptions about the users and usages of the products or services. In such views, there is very limited empirical evidence relating to cases where the usage of the technology is undetermined, the market is uncertain and the value proposition is designed and redesigned while a digital innovation takes shape, unfolds, and is finally realized (Chesbrough, 2010; Chesbrough, 2012; Doganova and Eyquem-Renault, 2009). In addition, the design of the value proposition remains surprisingly underappreciated as a strategizing practice when it is examined and discussed with reference to business model development. There is limited understanding of how digital entrepreneurs strategize in the absence of a set strategy that is described by a business model which has yet to manifest (Doganova and Eyquem-Renault, 2009). Therefore, there is a need for further research on the design of value propositions as a strategizing practice to enunciate the underpinning mechanisms that allow digital entrepreneurs and innovators to exploit market opportunities across boundaries.

To explore the value proposition as a practice where the *"future becomes the condition of the possibility for action in the present"* (Kornberger and Clegg 2011, p. 138) and with a more performative view (cf. Callon, 2010; Latour, 1992; Guérard et al., 2013; Gehman et al., 2013), we draw inspiration from scholars with a practice perspective (Schatzki, 2002; Whittington, 2006). This approach enables us to move away from abstract understandings of the value proposition to a performative understanding of the value proposition as a strategizing practice.

3. Strategizing for digital innovations

Digital entrepreneurs and innovators are organizational actors who engage on strategizing practices to delineate *"the goals of the enterprise, the value the enterprise will create for customers, and the plan of action to achieve those goals over time, including redirecting action in response to changes in the environment"* (Dougherty and Dunne, 2011, p. 1218). Seminal studies at the crossroad of innovation and strategy consider that such practices rely on clear conclusions regarding the products or services (e.g., use and functionality) and existing detailed descriptions of predetermined market spaces (e.g., Porter, 1985; Barney, 1986; Mintzberg, 1987). A significant assumption underpinning these views is the existence of demand, which helps to align the value an innovation is expected to create for certain potential customers and their needs. Thus, differentiation or a decrease

of cost may be among the main choices that set the ground for strategizing (Porter, 1985), and the value proposition is enacted to provide a rationale for this.

Within this context, the value proposition may be enacted for two main reasons. First, to explain differentiation from other available products or services in terms of functionality or performance, taking for granted the existence of demand and a well-defined market that displays the traditional characteristics of supply and demand (Porter, 1985). However, the differentiation of innovation relies on contextual conditions that are not fully visible because of the uncertainty involved in the realization of the innovation and its utility. Second, to offer an explanation of how the innovation can reduce the cost of specific processes of the potential customer (Porter, 1985). This is also problematic. The abate of cost is not always measurable when there are difficulties to foresee future demand. Additionally, cost can be perceived in different terms by the potential customers and innovators, while it can range from economic to social and non-monetary forms (e.g., time, indirect costs, etc.) (Stark, 2011).

The recent literature offers an alternative view by discussing that entrepreneurs and innovators focus on strategizing practices to create uncontested market space, aiming to create and capture new demand (e.g., Kim and Mauborgne, 2014, Dew et al., 2004). Such practices involve the exploitation of opportunities across alternative industries or across different strategic groups within the same industry. Kim and Mauborgne (2014) provide an example of a hotel chain which focused on the needs of a new market segment of the hospitality sector, and more specifically, the growing mass of frequent travellers – mobile citizens. Along these lines, the value proposition is enacted to provide an effective offering with an emphasis to create specific demand around the product or service. However, in this view, the focus is more on market-creating innovations. Therefore, the design of the value proposition demonstrates an ideal one-to-one relationship between the needs in a niche market and the functionality of a specific product or service, while also aligning utility, price and cost activities for a target customer. Within this context, there is limited discussion on how an innovation can be the source of different offerings, thus providing digital entrepreneurs with the opportunity to redesign the value proposition.

Digital entrepreneurs and innovators find it challenging to design value propositions for their potential customers because they are involved in relentless attempts to assess the value provided by their innovations and often struggle to assess the market potential from the early stages of development to commercialization. Hence, the value of technological innovations often remains obscured until their commercialization (Chesbrough and Rosenbloom, 2002). In addition, the seminal studies on digital innovation claim that the malleability and re-programmability that characterize such innovations are important foundations that strengthen their potential to be readily editable (Yoo et al., 2010; Kallinikos et al., 2013; Huang et al., 2017). Therefore, such innovations may involve uncertainty about their commercialization but also opportunities for digital entrepreneurs to exploit market potential across market boundaries and sustain a competitive advantage (Davidson and Vaast,

2010; Brem and Radziwon, 2017). Furthermore, the functionality of digital innovations may be postponed until the time of use (Henfridsson et al., 2018; Eaton et al., 2015), making the rapid, ongoing transformation of the production and use contexts of such innovations highly uncertain. Within this context, the practices of digital entrepreneurs to create 'off-the-shelf products' and 'variations' of them, as well as the design of value propositions for such innovations to innovate horizontally (Narula and Hagedoorn, 1999) and meet or even create demand across different market boundaries, have not been brought together and examined through a strategizing lens.

As is evident from the preceding discussion, the extant literature recognizes that the enactment of a value proposition is generally acknowledged as an important facet of strategizing and is a key element to exploit the market opportunities for an innovation. Nevertheless, up to now, few studies have focused on the enactment of the value proposition as a practice. While the aforementioned views are insightful, there is little concurrence regarding the relationship of the value proposition and strategy in relation to innovations characterized with uncertainty owing to their *'prospective nature'* (Doganova and Eyquem-Renault, 2009). Additionally, there is little empirical evidence of how a value proposition is arrived at in practice and how an innovation can be addressed for multiple market spaces. Finally, there is not enough clarity regarding how to redesign the value proposition to transcend market boundaries without constantly innovating. In this regard, it makes sense to look closely at the value proposition under a practice perspective and develop an initial conceptual backbone for understanding strategizing for digital innovations and the role of the underpinning mechanisms of the value proposition for transcending market boundaries.

4. A practice perspective on the value proposition

Based on the above discussion, we consider the value proposition design as a discursive practice that allows digital entrepreneurs and innovators to discern future circumstances and act in the present (Brem et al., 2019). Such an approach is broadly consistent with the '*practice turn'* of strategy (e.g., Johnson et al., 2003; Whittington, 1996; Whittington, 2006) which *"analyses discursive practices that structure social reality"* (Kornberger and Clegg, 2011, p. 138). Among the contexts where such an approach has been adopted is in explaining organizational phenomena, such as the formulation of strategy (Chia and MacKay, 2007; Jarzabkowski, 2005) and specifically IS strategy (cf. Karpovsky et al., 2013; Peppard et al., 2014). At the core of the practice perspective is the notion that *"practices imply which ends should be pursued, what should be said and done, and how actions should be carried out"* (Gehman et al., 2013, p. 87).

Since the seminal writings of Johnson et al. (2003) and Whittington (1996; 2006), the practice turn has provided insightful perspectives on the strategizing of the firm (e.g., Vaara and Whittington, 2012) and provides a basis for understanding IS strategizing as a process involving organizational

actors. Within this context, strategy is a *"practice that constitutes a reality (instead of mirroring it), that defines what is meaningful (instead of measuring it) and that legitimizes actions and decisions (instead of rationally analysing them)"* (Kornberger and Clegg, 2011, p. 138). However, within the existing literature, there is not enough clarity regarding the relationship between the value proposition and strategy to explain how digital entrepreneurs and innovators design value propositions to explore multiple market opportunities across boundaries.

To explore this view of strategizing in a new ontological light, we draw on the theoretical practice approach of Schatzki (2002; 2005; 2012), which has been characterized as *"one of the strongest and far-reaching versions of practice theories available to date"* (Nicolini, 2013, p. 15), as a way to understand the underpinning mechanisms which actors use to design value propositions to exploit market opportunities across boundaries. Schatzki defines practices as *"organized human activities"* and *"organized, open-ended spatial-temporal manifold of actions"* such as *"political practices, cooking practices, educational practices, management practices, shop floor practices, and design practices"* (Schatzki, 2005, p. 471).

Within this context, Schatzki (2002) suggests that practices are organized activities that are interlinked by four elements, namely, rules, practical understandings, general understandings and teleoaffective structures. According to Schatzki's site ontology (2002), rules frame and guide how organized actions are performed. General understandings enable actors make sense of the activities performed, while practical understandings describe the *"knowing how to X, knowing how to identify X-ings, and knowing how to prompt as well as respond to X-ings"* (Schatzki, 2002, p. 78). Teleoaffective structures combine practice affectivities and ends, for example, the goals of transcending market boundaries and achieving financial success are interwoven in practice with emotions, such as passion, enthusiasm, fear and stress, which, in turn, affect how these teleologies are pursued (see also, Bui et al., 2019; Boedker and Chua, 2013). These elements hold sayings and doings together in practices. To explore this view of continually designing value propositions as a strategizing practice, we draw on the theoretical approach by Schatzki (2002) as a way to determine how different mechanisms come together to arrive at a value proposition and how they enable digital entrepreneurs and innovators to transcend market boundaries.

5. Research Design

This exploratory research aims to capture a deeper understanding of the mechanisms that digital entrepreneurs use to design and redesign value propositions to exploit market opportunities across boundaries. For this reason, we chose the case study approach and in particular we conducted an in-depth case study (Walsham, 1995; Eisenhardt, 1989; Yin, 2009) with the purpose of 'microscopic' examination (Yin, 2009) and theory building (e.g., Dul and Hak, 2007; Eisenhardt, 1989; Gillham, 2005; Dyer and Wilkins, 1991). Our case organization is Allo (pseudonym), which is a company

operating in a new segment of the industry for digital games with uses not limited to providing entertainment. It focuses on 'serious' digital games as a way of promoting learning, innovation and social change (Agogué et al., 2015; Goldberg and Cannon-Bowers, 2015), as well as providing game-based organizational design (Deterding et al., 2011; Hamari et al., 2015). The company was founded in 2012 and expanded rapidly by innovating across diverse market sectors. Allo can be regarded as an extreme case (Gerring, 2007; Yin, 2009), as it is *"prototypical or paradigmatic of some phenomenon of interest"* (Gerring, 2007, p. 101). More specifically, first, Allo is able to develop a digital product and some variations of it that are not particularly different technically for different markets in a very limited time. This offered an excellent opportunity to study how digital entrepreneurs strategize to exploit market opportunities across market boundaries. Second, Allo is an example of a digital venture that is not seeking to create innovations to meet a certain demand or to differentiate from other available products or services but to redesign the value proposition to exploit multiple market spaces. At the time of the study, Allo's operations targeted customers in the following eight industry sectors: automotive, healthcare, corporate training, retail, tourism, the military, aerospace and education.

5.1 Data collection

The data collection involved conducting semi-structured interviews (Davis and Powell, 1992; Eisenhardt, 1989; Gilbert, 2006) and observing meetings, including project and committee meetings, workshops, and meetings with potential customers (cf. Easterby-Smith et al., 2015). Data collection also involved observation of the design process for different digital innovations targeting different markets, conducting informal interviews and collecting documents and archival data (see Table 1).

We conducted 20 semi-structured interviews between October 2012 and August 2013 with different actors, including the founders, the sales and marketing director, the head of marketing, the head of development, the vice-president of business development and operations, designers, programmers, software engineers, software artists, project leaders, non-academic content experts and academic experts. According to Marshall et al. (2013), although there is no ideal number of interviews for single case studies, an average range is between 15 and 30 interviews. We concluded collecting data via interviews when new themes stopped arising in these interviews (Bowen, 2008; Forte et al., 2009; Goulielmos, 2004). The interviews lasted, on average, approximately 45 mins and were voice-recorded and transcribed. During the interviews, we generally focused on how the digital innovation evolved, what the actors saw as having significant potential to cross markets, whether and why the digital innovation was used repeatedly for different markets, how different the variations of the initial innovations were and how the team made sense of the usefulness of the digital innovation for different potential customers. In addition to formal interviews, we also engaged in several informal conversations and email exchanges with the participants.

We also spent time observing project meetings, committee meetings and two meetings with potential customers. Furthermore, the authors were involved in a market research project at Allo and were able to observe why and how some members of Allo behaved in relation to exploiting opportunities across different markets. We were able to take handwritten field notes either during or soon after the observations.

Finally, we also collected a significant volume of archival data and documents from the company, including research reports, conference papers and presentations, commercial reports, financial statements, and published material, such as articles or press releases about the company, its digital innovations and its business strategy and vision, as well as other documents, such as customer feedback forms and blog posts. These played a supportive role, helping us to organize our empirical material while giving us the opportunity to shed retrospective light on otherwise disregarded events (Czarniawska, 2008). We concluded data collection when we noticed a point of diminishing returns, when nothing new was being added and data saturation was reached (Bowen, 2008). Due to the richness of our dataset and our aim of theory building rather than advancing existing theory by comparing similarities and differences among cases (Ridder, 2017), our approach aimed "*to understand the deeper structure of the phenomenon, which it is believed can then be used to inform other settings*" (Orlikowski and Baroudi, 1991, p.5) instead of seeking generalization from our setting to a wider population. Thereby, we decided that our phenomenon can be opulently described by a single case study to understand the 'particular' (Langley et al., 2013), to answer the questions "'*what is going on here?,' and 'what is this a case of?'*" (Tsoukas, 2009, p.298).

Table 1: Data collection

Data source	**Details**
Organization (Allo - Pseudonym)	UK-based with 2 divisions in the USA and Singapore, multiplatform games, applications, virtual environments and data presentation software, 28 employees. Market segmentation: Automotive, healthcare, corporate training, retail, tourism, military sector, aerospace and education.
Interviews	20 formal, semi-structured interviews (average length of 45 mins) with the founders, the sales and marketing director, the head of marketing, the head of development, the vice-president of business development and operations, designers, programmers, software engineers, software artists, project leaders, non-academic content experts and academic experts; informal interviews with participants were also conducted.
Observations	Observation of meetings related to research and development, project management meetings, steering committee meetings, and meetings with potential customers. Participation of the researchers in a market research for the company with formal presentation. Nine of the meetings were recorded and transcribed. For meetings, we took notes for inclusion in our research database.
Documents and archival data	Digital innovation descriptions, research reports, conference papers and presentations, commercial reports, material published in press releases, commercial reports and blog posts.

5.2 Data analysis

The analysis of the empirical material (interview transcripts, observation notes, archival data and other material from the field study) collected at Allo centred on an iterative three-step approach (see Table 2). First, we sought to identify the key events in understanding the evolution of the digital innovation as it occurred over time. We used an open coding procedure as an interpretive and emergent process to identify events, actions and interactions (Charmaz, 2006; Strauss and Corbin, 1998) and construct a chronology of events (Van de Ven and Poole, 1995; Langley, 1999). Through open coding, we were able to identify meanings without preconceptions (Strauss and Corbin, 1998) and we focused on identifying the markets where the digital innovation and its variations were introduced and the meanings related to the value proposition within and across such markets. This involved the construction of an event database. Then, in the second step, we focused on identifying the recurrence of mechanisms using the notion of an action-formation mechanism (Hedström and Swedberg, 1998). Specifically, we focused on understanding what people do to transcend market boundaries, why they do what they do, and what consequences their doings have. We spent considerable time iterating between concepts from the literature and our empirical material before determining to draw on Schatzki's theoretical lens as a sensitizing concept (Nicolini, 2009; Walsham, 1995). Our intention was to identify the elements related to the design of value propositions, and we grouped the elements under high-level categories (four major clusters) that emerged from the analysis: excogitating functionality, self-reverberating benefits, designating interdependencies, and conforming intentionalities. Under excogitating functionality, we grouped the elements related to the perceptions of members of Allo regarding the functionality of the digital innovation and the way it can be beneficial in a certain context. Under self-reverberating benefits, we grouped the members' perceptions regarding the benefits of choosing Allo to buy such an innovation (e.g., expertise, customer support). We also grouped the elements related to the creation of a compelling explanation of the digital innovation and its autonomous or co-dependent use under designating interdependencies. Finally, under conforming intentionalities, we grouped the elements related to the justification of the contribution of the digital innovation to a potential customer to achieve specific goals. Finally, we used Pawson and Tilley's (1997) conditions–mechanisms–outcome structure to shift from a descriptive to an explanatory mode of analysis to associate our findings with the design of a value proposition as a dynamic practice. This revealed a pattern referred to as reshuffling that gives momentum to the mechanisms and makes possible the dynamic redesign of the value proposition for new market spaces. Table 2 summarizes the key stages of coding and analysis of the empirical material.

Table 2: Data analysis

Steps	Tasks	Outputs
1. Coding key events	a. Identifying key events and constructing a chronology of the key events (Van de Ven and Poole, 1995; Langley, 1999).	Four encounters based on the targeted industry sectors.
2. Theme analysis	a. Conducting a theme analysis of the key events and identifying the recurrence of local mechanisms using the notion of an action-formation mechanism (Hedström and Swedberg, 1998); b. Drawing on Schatzki's theoretical lens as a sensitizing concept and considering whether the mechanisms are conceptually and empirically distinctive.	Four high-level categories (major clusters) emerged from the analysis: excogitating functionality, self-reverberating benefits, designating interdependencies, and conforming intentionalities.
3. Narrative analysis	a. Recognizing similarities among the encounters, exploring how the mechanisms relate to each other and identifying a pattern of mechanism use; b. Investigating the explanatory mode of the mechanisms by using conditions–mechanisms–outcome structure (Pawson and Tilley, 1997).	Revealed a pattern referred as reshuffling.

6. Designing value propositions across market boundaries

Joy – a non-commercial digital human representation.

The avatar anonymized as 'Joy' is a digital human representation that was developed for non-commercial purposes by Allo, with the aim of having a demonstration of their technology available for potential customers visiting the firm. This avatar was capable of interacting with and assisting visitors to the company while it was also able to afford human-like gestures and recognize voice orders to interact with people. Anthony, the software engineer, explained that Joy was not sophisticated and they were not thinking of marketizing her; he mentioned that *"This was done very cheaply and for this, we just used textures so we took pictures of a person with a high-quality camera and then we basically had a grid… but it actually looks good…".* At that time, the company had budget constraints and was focusing on developing a large project (unrelated to Joy) with uncertain potential, but since Allo was not an established company and had no track record in any market context, they began to contemplate marketizing Joy. Earlier, they had observed the strong appeal of Joy to potential clients and started thinking that this might be a powerful solution for firms needing to provide assistance to customers. This helped the Allo team view Joy as a possible virtual receptionist to provide information, a virtual enquiry officer to improve training, a virtual teacher to enable collaborative learning and group discussion, or simply a human representation to entertain people at an event or venue.

Joy for tourism.

In the following days and after some meetings, the members of Allo began to contemplate marketizing Joy as a hotel receptionist and felt that the digital avatar could potentially welcome visitors in a pleasant and hospitable manner and with a sense of fun. It is important to highlight here that the Allo developers did not alter any of the technological aspects of Joy. In addition, at that time, they had not done any market research and lacked any prior experience in the tourism sector to know if there were any 'pressure points' at hotels that would create a demand for such a digital solution. Nevertheless, they thought that the hospitality industry overall is a well-developed market, open to technological innovations and has also been disrupted due to digitalisation through online reviews (such as Booking.com) and apartment-sharing platforms (such as Airbnb). After a period of sustained interactions, the Allo team had to create a coherent proposal for the potential customers of Joy. Carl, the senior manager and founder of the company explained that the core for the value proposition was that *"The 3D avatar technology works on a similar basis to Apple's Siri Product. The difference being that our technology offers companies a 3D computer generated character to accompany the voice and act as the 'face' of the business. Knowledge is added by means of a search engine which enables the avatar to search a company's database or the internet. Joy is able to build additional knowledge over time using its artificial intelligence and responding to the input of customers, employees or guests"*. At this point, the offering was not very targeted to a certain customer because the members of Allo lacked experience and in-depth information regarding the potential problems at hotel front desks. They were trying to explain on a general level how Joy can be beneficial at the reception of a hotel and to provide some information regarding the technological aspects by justifying whether it functions as a hologram or as a PC-based human representation.

Joy for transportation.

After some weeks and before commercializing Joy, the members of Allo started considering whether they could exploit any other market opportunities and they had a 'hunch' that this might be a powerful solution for firms in the transportation sector. They started thinking about promoting Joy as a digital human representation to provide assistance to customers by providing multilingual interactions. The early version of Joy was already able to recognize voice orders and to interact with people in multiple languages. Therefore, they thought that after quickly enhancing those aspects, they could offer a digital avatar that could provide safety instructions at airports or directions and information in bus terminals or train stations. They knew that there were some other international companies offering similar products; however, at the same time, they thought that they would circumvent development costs while reaching potential customers with moderate effort and marketing costs. For this reason, they thought they had to redesign the initial value proposition to reorient the value this innovation could offer for such potential customers. However, the market potential was still

vague at that time and the company did not have well-established links with many potential clients. Thus, from their own experience, the Allo team was aware of the difficulties in creating customer demand because potential clients were suspicious of the objectives and potential value of such innovations. This triggered a constant interplay involving discussions from the perspective of the Allo team concerning the specifications for the development and the creation of a coherent narrative that could explain how the avatar will be used and how it would benefit a transportation company. Although there were almost unlimited ways to enhance the different aspects of Joy, this would require a long development cycle and the sacrifice of time and resources. According to Carl, the senior manager and founder, the focus of the team at that point was simply to raise revenue and showcase their products to increase their recognition as a company. He explained *"We provide large scale immersive simulations, 3D visualizations using virtual and augmented reality. Our innovative products can be developed for use in both the public and private sectors and can be delivered on a range of devices and platforms. We have the development expertise and commercial acumen to bring technology to life in a number of ways."* Therefore, the Allo team considered the use of Joy to provide an 'off-the-shelf solution' because they had limited visibility of the needs of any particular market and there was not a well-defined demand for such an innovative digital product. The product development director, Jonathan, noted that, in the context of transportation, Joy *"... was not actually initialized as a new idea but as a valuable solution. Let me explain. We advanced the technology and adjusted the prototype (Joy) to solve a certain problem and in this case, primarily, to increase customers' satisfaction. So basically, we utilized Joy, we tried the simple solution, which is the grid, and it worked very well and then what we did is what we call an iteration or a sprint and after [that] we had something more to show the customers"*. A few months later, they commercialised Joy for a very known hotel chain and they were in discussions for the commercialization of Joy for a train services provider.

Joy for the automotive industry.

Encouraged by the commercial success of Joy, the Allo team had a breakthrough when they came across an opportunity at a large company in the automotive industry. In detail, Allo's project manager, Alex, described that, through a chance meeting with an automotive manufacturer and subsequent discussions with the executives of the automotive company, they found out that the automotive company was receiving negative feedback due to significant problems resulting from a lack of standardized training of the staff in dealerships. This led to the idea of 're-skinning' Joy for the automotive sector and the product development director, Jonathan, mentioned the following: *"Our work could be re-skinned and repositioned for the new requirements. This is as an opportunity for business growth and an advance in the exploitation of new market opportunities".* They decided to combine the avatar with some digital photos to develop a digital training simulation that would give compelling lessons and engage with the staff in memorable ways, which would result in higher

knowledge retention because they could practice and improve their communication and decision-making skills by experiencing different scenarios.

This resulted in the development of another variation of Joy. Allo's project manager, Alex, explained in the following quote how he and the rest of the Allo team were deliberating: *"When I am involved and the budgets are small, I am looking for an existing idea that could be repurposed for a more serious role. Therefore, when budgets are big, you have to be very creative as well, you have to determine what is needed, what you want to sell, and then we work back and say, we can do this, we can do that, and then we provide them with creative solutions, so it's not just selling, it's solutions".* He pointed out that: *"There is no point in developing something expensive and then hoping that someone buys it. It's much better to develop something for a customer, re-skin it and then sell it to another customer".* Thus, the company's sales and marketing director, George, explained as follows: *"We can always sell it [Joy] off-the-shelf… and that is quite quick, quite fast… we identify a client; we think 'OK, we've got this technology for tourism; as an example, that would work well with entertainment, with airports whatever…'; that would be quite easy then… because we've got that particular product that would interest them…"*

Throughout the process, they were constantly attempting to formulate a value proposition that would portray the use value emerging from the digital innovation. The members of Allo were attempting to use ideas from the previous value propositions and the antecedent digital innovation to focus more on the successful aspects of their offerings and less around serendipity.

Joy for healthcare.

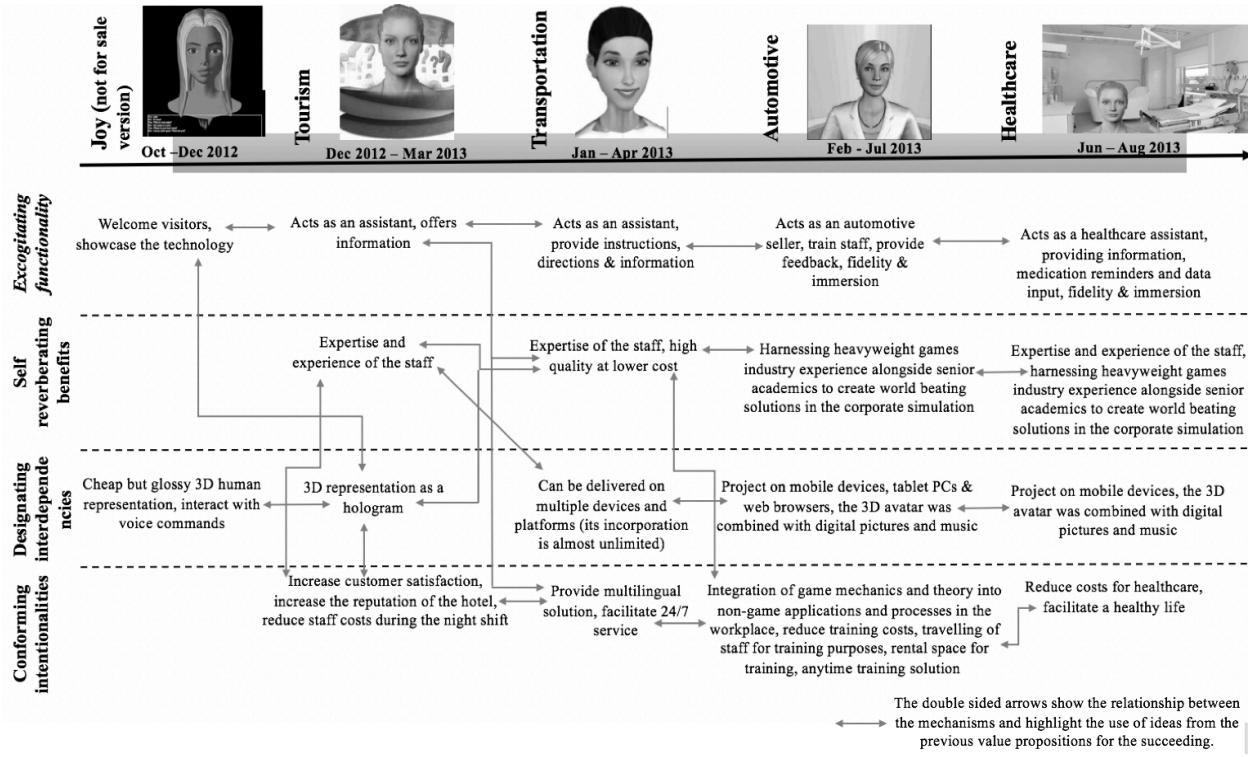
Five months after the inception of the latest project for the automotive industry, the Allo team became interested in healthcare. Specifically, they had a 'eureka' moment when they came up with an idea for using Joy to help patients with asthma, and they initiated discussions with medical practitioners to establish a deeper understanding before starting any development. Immediately after these discussions, consecutive meetings followed in which the Allo team attempted to justify the innovation, its value and market potential. They were aware that healthcare is a challenging sector and that it is very difficult to manage and marketize such an innovation; as Carl, the senior manager and founder stated in the following quote: *"We have successfully modified Joy as a COTS (commercial off-the-shelf) product to make it beneficial for patients with asthma. We incorporated panoramic photography, some video sequences and Joy, and the results were stunning, enabling users to have access through the PC, the tablet or even the phone. People with asthma could learn more about their condition, health advice, treatments and best practices to manage their asthma".* The team thought that they could simply change some of the characteristics of Joy related to its appearance (gender, voice, colours) by replacing them with 'stock' content that was already available. Jack explained, *"We lose time, money, and energy*

developing a brand new product, an app, what if it doesn't perform well? What if we do not find customers? COTS products help reduce this lost time and revenue."

To begin approaching executives from hospitals, they had to develop a strong value proposition. This time, they incorporated evidence from previous versions of Joy that were already in use to support their offering. Carl explained as follows: *"[Joy] is simple-to-use touchscreen software of a 3D virtual care lounge from a smartphone or tablet offer[ing] a solution to patients for managing chronic illness at home but also reducing hospital admissions and communications with their doctor. If you are diagnosed with a chronic long-term illness, that often means regular visits to a hospital and if your illness gets worse you could spend six days in hospital, so in the UK the cost for six days in hospital is, for example, for people with asthma is 5 thousand which is ridiculous and that is for people with that one illness so it is about managing your illness at home so once you have been diagnosed and then given the platform, it is ten pounds per month per user low cost... I am going for a mass (market), so ten pounds per month and you are given the platform".* He continued by explaining that it is important to demonstrate their expertise, ability for customization and support, which is demonstrated in the following quote: *"We are experts in developing large scale immersive simulations, 3D visualisations using virtual and augmented reality, and gamification applications, enabling our clients to better engage, train and/or support their staff and customers. Our team of artists and programmers are highly skilled at using the latest technologies on demanding projects with a creative flair. Our expertise in delivering 3D simulations for training applications is recognised by Learning and Performance Institute accreditation as a Learning Solutions Provider. Also, our innovative solutions in many sectors enable our clients to run their training and operations cheaper, safer and more effectively".*

Figure 1 illustrates the chronology of key events and the relationship between the four mechanisms as they occurred throughout the encounters.

Figure 1: Chronology of key events



7. Discussion and implications

At the beginning of this paper, we highlighted that digital entrepreneurs are able to rapidly exploit multiple market opportunities without constantly innovating as they extend their promises of value across market boundaries. In this section, drawing on our analysis of the empirical research presented, we seek to address our research question concerning the mechanisms that digital entrepreneurs use to design value propositions to exploit market opportunities across boundaries and present the implications of the findings for the literature, digital entrepreneurs and innovators.

7.1 Value propositions and underpinning mechanisms

The analysis of the empirical material showed that the Allo team was engaged in a constant attempt to preserve time and resources for their creations, which led to the idea of marketizing a digital innovation, Joy, across market boundaries. They were lacking an explicit strategy and a business model with an embedded value proposition, due to the numerous uncertainties regarding the anticipated functionality and use of the digital innovation as well as the market potential. They considered it important to create demand across markets to ensure profitability and exploit opportunities for growth. For this reason, the digital entrepreneurs in a strategizing attempt, they focused on developing a clear and strong value proposition to communicate the benefits of their product to the potential customers and then redesigned the value proposition to target another

industry. The analysis of the empirical account demonstrates the emergence of four mechanisms that repeated across a sequence of encounters, namely, (a) excogitating functionality, (b) self-reverberating benefits, (c) designating interdependencies, and (d) conforming intentionalities. We discuss in detail those mechanisms below and we present a pattern that allows digital entrepreneurs to exploit multiple market opportunities.

Excogitating functionality.

We observed that the digital entrepreneurs initially developed a human representation for non-commercial use but very soon they started articulating how the digital innovation can be beneficial in a certain context; we refer to this mechanism as *excogitating functionality* (as depicted in Figure 1). For example, the members of Allo took inspiration from their own use of Joy and thought that it could be an innovative communication technique to engage with an audience in places other than an office. Although there was not any demand for such an innovation, as there was not any additional development cost, they believed that they could pursue the innovation for an uncontested market. This practice was facilitated by digital technology's unboundedness to its original intent (Henfridsson et al., 2014; Yoo et al., 2010) offering digital entrepreneurs the potential to devise initiatives of strategic importance (El Sawy et al., 2010; Brem et al., 2019).

In this regard, we noticed that the digital entrepreneurs were attempting to attribute meaning through common sense regarding the pressure points for the potential customers and the potential benefits by connecting the digital innovation with the envisaged functionality. For example, digital entrepreneurs started recommending Joy as a hotel receptionist. They paralleled the digital innovation's offering under Allo's own organizational context with what the digital innovation could offer to a tourism sector firm, through highlighting hotels' potential 'pressure points' which Joy could address. Thereby, the excogitating functionality mechanism is underpinned by shared beliefs and common understandings for which there is much less disagreement about (Schatzki, 2002) (Table 3), while also bringing forth a level of knowledge which enables a person to generally understand, or make sense, of the performed practices (Begkos and Antonopoulou, 2020). Also, we noticed that by excogitating functionality digital entrepreneurs could conform intentionalities more easily through articulating the contribution of the digital innovation to the goals of the potential customers. For instance, Joy as a hotel receptionist could act as an effective assistant that provides information, improves customer satisfaction and the overall reputation of the hotel while it also reduces staff costs during the night shift.

Self-reverberating benefits.

In addition, our analysis also revealed that within these encounters, the members of Allo were attempting to include in the value proposition information regarding the benefits of purchasing such a digital innovation from Allo itself. After demonstrating the characteristics and the benefits of the

digital representation, members of the company aimed to justify the reasons why buying a digital receptionist from their company was adding value to the innovation. We refer to this mechanism as self-reverberating benefits (as depicted in Figure 1). In fact, for their first offerings targeting the tourism and transportation sector, Allo's representatives were attempting to create demand and then put forth reasons why their company can provide an optimal solution. They highlighted their expertise and the fact that their innovations were of high quality at lower cost since they had high knowledge and technical capacity.

Throughout all of the encounters, the Allo team was trying to communicate their commercial and development expertise and highlight that to their commercial partners. Although, they were proposing that Joy can act as an assistant, provide instructions, directions and information (as general understandings) for firms in the transportation sector, they were facing difficulties in convincing potential clients about the objectives and potential value of their innovation. For this reason, they were showcasing successful examples of their products and providing testimonials. In addition, Allo's members were showcasing similar innovations adopted by companies and explaining the reasons their products could be a fitting choice due to their technical knowledge and industry expertise. In this regard, we observed that the knowledge capacity and abilities to perform an action (Schatzki, 2002) underpin the mechanism of self-reverberating benefits (Table 3). The mechanism of self–reverberating benefits was interrelated with the other three mechanisms in creating compelling offerings and was constantly evolving to allow digital entrepreneurs to approach customers in new contexts. The mechanism was also very important when the members of Allo considered approaching several customers within the same sector aiming to innovate horizontally (Narula and Hagedoorn, 1999).

Designating interdependencies.

Our analysis also illustrated that the Allo team was engaged in a constant attempt to justify the autonomous or co-dependent use of the innovation. Designating interdependencies (as depicted in Figure 1) refers to the third mechanism underpinning the value proposition and relates to creating a compelling explanation for the potential use of the digital innovation. This mechanism is grounded on rules as "*explicit formulations that prescribe, require, or instruct that such and such be done, said, or the case*" (Schatzki, 2005, p. 471) (Table 3). Looking back at each of the encounters, we observed that the Allo team attempted to focus on the fundamental basis of the instructions of use to provide information regarding the technological characteristics of the innovation. For instance, the Allo team focused on whether there is the need for additional technological infrastructure (e.g., haptics, virtual reality glasses etc.) or if Joy can function as a standalone digital product; the team also considered whether any particular technological knowledge or expertise is necessary for using Joy. One example was the use of Joy for the automotive industry as an online licensed product instead of a console. Thus, Allo needed to explain to potential customers that the only prerequisite for Joy to function was

the pre-existence of computers, which needed no special characteristics in terms of the operating system but only a connection to the internet. Additionally, access was very user-friendly and potential users would be able to use Joy without any difficulty.

In addition to the other mechanisms, designating interdependencies was crucial to the design of a value proposition because it provided information regarding the IT infrastructure required for the use of the digital innovation, and it also provided rationale for the cost of the innovation. For example, for Joy as a healthcare assistant, the cost would vary on grounds of being developed as an online licensed product, an application for mobile devices or as a stand-alone console. More specifically, in the case of an application for mobile devices, the cost would be lower since the graphic design was less detailed compared to the graphic design needed for an online product or a console. Conversely, the use of the console was on the one hand increasing the cost, requiring more graphic design detail, but on the other hand, it could be connected with any monitor without the need for computers or internet. We observed, through all encounters, that the designating interdependencies mechanism was strongly interrelated with the other mechanisms through bridging the technical and monetary perspectives and enabling the development of an emerging value proposition that intercedes between the technical and economic spheres of activity (Chesbrough and Rosenbloom, 2002).

Conforming intentionalities.

The analysis also revealed that, within all encounters, the members of Allo were attempting to justify how the digital innovation would contribute to achieving the goals of their potential customers (Table 3). For example, they were trying to create an understanding and provide some estimations regarding the decrease of costs (e.g., training costs, treatment costs etc.) and the increase of customer satisfaction and profit. Throughout the encounters, the Allo team was engaged in a constant attempt to shift from being primarily discursive to becoming calculative. In our analysis, we observed teleologies as ends that broadly refer to the goals of a practice to achieve profitability or strategic objectives (Schatzki, 2002) and such teleologies informed the mechanism which underpinned what matters to potential customers. We refer to this mechanism as conforming intentionalities (as depicted in Figure 1).

For example, while the members of Allo were developing the value proposition of Joy as an immersive training instructor for automotive dealers, they estimated the annual cost to train the staff of the automotive company's dealership. Then, they were developing a rationale regarding how the adoption of Joy would enable them to reduce their operational cost, improve reputation and customer satisfaction. In detail, they estimated how much of the staff needs annual training, travel costs, accommodation costs and the cost for the required facilities (e.g., meeting rooms). Also, they took into consideration the potential drop of sales and complaints due to the lack of standardised service and they estimated how the purchase of such a digital innovation could benefit the automotive company. In addition, we observed that, through all encounters, the mechanism of conforming

intentionalities was very challenging as the members of Allo were often surrounded with uncertainty and experienced difficulties in making such calculations. For this reason, this mechanism was most of the times the last one to emerge during the development of the value proposition. The following table summarizes the mechanisms which actors use to design value propositions to exploit market opportunities across boundaries and outlines examples from our analysis.

Table 3: The mechanisms underpinning the design of value proposition to exploit market opportunities across boundaries

Mechanisms	**Semantic descriptors drawing on the theoretical practice approach of Schatzki (2002)**	**Meaning and examples**
Excogitating functionality	Shared beliefs, common understandings that there is much less disagreement about.	Digital entrepreneurs articulate how the digital innovation can be beneficial in a certain context. *"The 3D avatar is an excellent way of communicating information in a fun and effective manner. There are a whole range of questions for visitors to look at and all they will do is press a button and Joy will pop up on screen to give them the answer."* (Carl, senior manager and founder of the company for Joy in Transportation)
Self - reverberating benefits	Knowledge capacity underneath an action and abilities to perform an action.	Digital entrepreneurs justify the benefits of purchasing such a digital innovation from this particular company. *"we are experts in bringing a fresh but proven perspective to the business of applying games techniques to serious software solutions."* (Anthony, software engineer for Joy in Tourism)
Designating interdependencies	Rules that frame and guide how organized actions are performed	Digital entrepreneurs create a compelling explanation for the potential use of the digital innovation by justifying the autonomous or co-dependent use of the innovation. *"we should consider what is a better environment. If it is for a pc, mobile or tablet […] and we are considering if they've got a big screen or a small one if it will be online and whether there are any limitations."* (Jonathan, product development director for Joy in Transportation)
Conforming intentionalities	Teleologies as ends that broadly refers to the goals of a practice to achieve profitability or strategic objectives	Digital entrepreneurs articulate the contribution of the digital innovation to the goals of the potential customers. *"the first thing we have to do is to project the ROI […] so you are going to spend half a million pounds to get to a one-day training course and the retention is about 20% from our research. So, we are making a Joy (pseudonym) to get 80% retention because it's on the go you, can do it any time and repeat it again […]. So, we have to do quite a detailed return of investment for our value proposition."* (Carl, senior manager and founder of the company for Joy in Automotive)

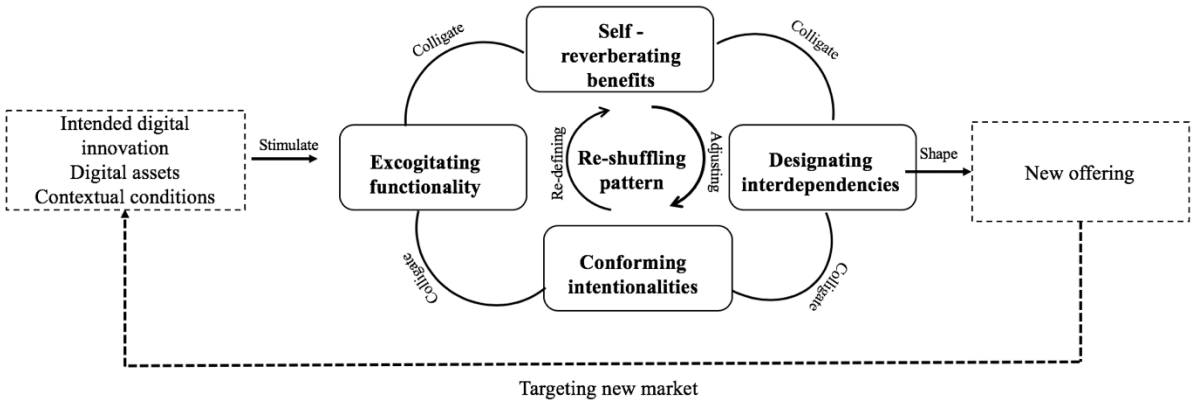
Re-shuffling pattern	Bundles of practices can diffuse, co-evolve, be transformed over time-space to achieve certain ends.	Similarities among the encounters which exhibit that digital entrepreneurs redesign and adjust the value proposition by using ideas from previous value propositions, given that the functional and physical aspects of the digital innovation are not hard wired.

A reshuffling pattern.

Finally, we observed the presence of a pattern, referred to as reshuffling, which imbues momentum to the four mechanisms and enables the dynamic redesign of the value proposition (Table 3). During the evolution of the encounters, the value proposition was redesigned by means of the four mechanisms described, providing the digital entrepreneurs the potential to exploit multiple opportunities across market boundaries. The functional and physical logic of the digital innovations were not hard wired and their decoupling enabled such artefacts to perform new functions after their production (Zittrain, 2006; Yoo et al., 2010; Kallinikos et al., 2013). For example, the members of Allo often claimed that they looked to re-skin an idea for different sectors and redesign their offering, which became the most important task in discovering new market possibilities.

Thereby, the members of Allo were redesigning and adjusting the value proposition by putting in motion the mechanisms from previous encounters (as depicted in Figure 2). For instance, our analysis shows that Joy, as an assistant who provides instructions, directions and information for transportation companies, was an element of excogitating functionality that was eventually reused due to its perceived success. Through this mechanism, the offering evolved to introduce the digital artefact as a human representation, able to train automotive sellers and provide immediate feedback. This illustrates that the mechanisms can collectively diffuse, co-evolve and be transformed over time-space to achieve certain ends (Schatzki, 2002; Tsoukas, 2019) through a pattern that can "*support reuse of ideas and functionality re-desig*n" (Henfridsson et al., 2014, p. 28).

Figure 2: Designing the value proposition for transcending market boundaries



The conceptualization, depicted in Figure 2, offers a substantive look at the mechanisms underpinning the design of the value proposition as it evolved at Allo. Our analysis shows that the four mechanisms (excogitating functionality, self-reverberating benefits, designating interdependencies and conforming intentionalities) emerge from the design of a value proposition and are constantly colligated in a dynamic rather than a sequential way. As illustrated in the case findings, the actors seem to draw on the aforementioned emerging mechanisms throughout the innovation process, enacting a recursive strategizing practice in the absence of a well-defined strategy and market demand. If the value proposition is successful in achieving the marketization of the digital innovation, then the practice is repeated within the same market, targeting additional customers. In addition, our analysis shows a reshuffling pattern which also allows digital entrepreneurs to transcend market boundaries to either assure profitability and exploit opportunities for growth, or to overcome any unsuccessful marketization. This reshuffling pattern enables redesigning and adjusting the value proposition from previous encounters by putting in motions the mechanisms of excogitating functionality, self-reverberating benefits, designating interdependencies and conforming intentionalities. Last, we argue that the number of loops depends on the evolution of digital entrepreneurs' perception about the use and functionality of the digital innovation, the corresponding market and the potential customers.

In what follows, we discuss the implications for ongoing research and practice.

7.2 Implications for theory

Existing digital technology entrepreneurship studies and the wider innovation and information systems research do not address how digital entrepreneurs and innovators go about designing value propositions for a digital innovation that is new to a market or where there is no pre-existing demand (Giones et al., 2013). Although Henfridsson et al. (2018) provide useful insights regarding the design of multiple offerings through recombining digital resources, there is an overall paucity of research on both the underlying mechanisms and the nature of such offerings. In addition, the value proposition is generally acknowledged as an important but, up to now, less studied concept, as it is often merely studied as an integral part of the business model (Al-Debei and Avison, 2010; Shafer et al., 2005; Osterwalder and Pigneur, 2012; Osterwalder et al., 2014). Within this context, the assumption often exists that there is a target customer, a market segment or pre-existing customer needs and demand that allow the digital entrepreneurs and innovators to link the needs of their potential customers with the value of their innovation. However, the prospective nature of an innovation often results in uncertainty regarding the *'value in use'* of an innovation (Bowman and Ambrosini, 2000; Vargo et al., 2008; Lepak et al., 2007). This is more prominent in technology-push situations (Brem and Voigt, 2009) and particularly in digital innovation cases due to their distinct characteristics which make them

incomplete and malleable. We contribute to digital technology entrepreneurship literature by providing an empirically based theorization of the mechanisms underpinning the design of value propositions for digital innovations. It is through excogitating functionality, self-reverberating benefits, designating interdependencies and conforming intentionalities that the design and redesign of a value proposition is made possible and points to ways of understanding how the benefits of such innovations might unfold ahead of commercialization (Chesbrough and Rosenbloom, 2002; Chesbrough, 2012) and despite the aforementioned uncertainties. In addition, we demonstrate that the design of a value proposition can be a self-contained entity that can be utilized by digital entrepreneurs in transcending market boundaries. Hence, it is important to consider the design of a value proposition as shaping new economic realities and demand rather than simply recombining digital resources (Henfridsson et al., 2018) or describing ill-defined business parameters based on pre-existing market conditions (c.f. Muniesa, 2014). Our research also highlights the importance of the value proposition as a heuristic practice that contributes to the realization of both a new digital technological entity but also to a new set of usages and commercial relations around that entity.

The theorization we propose also addresses a number of complications arising in the view of strategizing for digital innovations and innovations more generally. To date, this strand of literature offers insights for the strategizing practices of entrepreneurs to create a rationale regarding the reasons their products differ or outmatch existing products in terms of cost or performance for specific needs and within existing market spaces (Porter, 1985) or to create demand in uncontested markets by focusing on a very specific market segment by aligning utility, price and cost activities (Kim and Mauborgne, 2014; Dew et al., 2004). Our contribution to this literature is twofold. First, we theorize the continual design of the value proposition as a strategizing practice. In doing so, we contribute to these debates by capturing the mechanisms of designing and redesigning the value proposition. It is through the four mechanisms that the design of a value proposition is made possible and, with the reshuffling pattern acting as a catalyst, it is possible to redesign the value proposition to transcend market boundaries without constantly innovating and developing new products. This leads to our second contribution to the strategizing for digital innovations literature. We propose this practice as an alternative way to intensify the marketization of a digital innovation via demonstrating how digital entrepreneurs can transcend market boundaries to explore multiple opportunities when there is no pre-existing demand.

In addition, our conceptualization also benefits scholars who aim to explore the area of how a particular firm's strategy is formulated in practice (Chia and MacKay, 2007; Jarzabkowski, 2005). Although recombination (e.g., Henfridsson et al., 2018) and exaptation (Dew et al., 2004) are widely recognized as important in strategizing for exploiting and creating market potential, they tilt toward the link of "*evolution of technology with the entrepreneurial creation of new markets"* (Dew et al., 2004, p. 70). We contribute to such views by capturing a strategizing practice that provides a step towards understanding how digital entrepreneurs can transcend market boundaries by constantly

designing and redesigning value propositions. Our perspective posits the intentional incompleteness, easy re-programmability and malleability, which make such innovations easy to reconfigure (Yoo et al., 2010; Kallinikos et al., 2013; Tiwana et al., 2010; Huang et al., 2017) and provides useful insights into the relationship between the value proposition and strategy. Through the constant development of value propositions, it is possible to strategize to exploit multiple market opportunities. The value proposition acts a repository for the descriptions of the use and functions of the innovation, and digital entrepreneurs are able to realize the benefits of the innovation and discern the relationship amongst the underpinning mechanisms of the value proposition and how the company may respond to the contingent market potential. As shown in our empirical analysis and discussion so far, the value proposition is not merely a practice that brings clarity to the business strategy; it is also highly dynamic and facilitates emergent strategizing that is necessary in the contextual uncertainty within which digital innovation takes place.

Finally, we introduce a new theoretical approach to the study of value propositions drawing on a practice perspective. In particular, we provide insights into the evolutionary patterns of a value proposition to better understand the rapid scalability of digital products (Giones and Brem, 2017; Huang et al., 2017; Henfridsson and Bygstad, 2013; Kelestyn and Henfridsson, 2014). In this way, we provide in-depth and empirically grounded insights regarding the continual design and redesign of the value proposition as a longitudinal process whereby digital entrepreneurs perform organised actions (Schatzki, 2002) that enable them to explore market opportunities across market boundaries without being forced to constantly innovate or solely focus on the technology behind their business idea (Giones and Brem, 2017; Brem et al., 2019).

7.3 Implications for practice

The insights gained from our study also have implications for practitioners who face the challenge of managing the development and commercialization of digital innovations (e.g., new app development, new wearable digital devices, smart appliances) in highly dynamic, complex and uncertain technological and market conditions and highlight the importance for digital entrepreneurs and innovators of understanding and managing the relationship between strategizing and value proposition development. We provide an understanding of how digital entrepreneurs and innovators can make sense of the design of a value proposition as a step towards understanding the rapid pace of the marketization of such innovations across multiple market spaces. Finally, our paper provides a step in understanding how digital entrepreneurs can facilitate innovation that transcends market boundaries, not only in a horizontal or vertical fashion (Narula and Hagedoorn, 1999) but also from the middle-out without the need to constantly innovate. Hence, they may regard this practice as a way to exploit opportunities within and across market boundaries to achieve a competitive advantage.

7.4 Limitations and future research

Our research also comes with limitations. First, the analysis is based on a single case study. The findings reported in the paper are therefore constrained to a degree by this choice and there is an obvious trade-off between in-depth insights and generalizability. However, this cannot be avoided in an exploratory investigation of a nascent area such as the one studied here and the type of insights generated should be seen as causal tendencies. Also, further future work may embark on comparative studies that cross-examine possible variations in how strategizing for digital innovations is instantiated in different settings. Second, this research is based on an investigation of a company where the researchers were able to follow only the digital entrepreneurs who were eventually involved in the innovation settings studied. Therefore, the perceptions of actors external to the firm are reflected through the interpretations of the digital entrepreneurs studied. Finally, the products of the company we investigated are highly digitized, which is an important enabler for such entrepreneurial activities. Further work should clarify whether these mechanisms underpinning the design of the value propositions for digital innovations may be different or even not applicable in more traditional technological ventures.

8. Conclusion

At the beginning of this article, we highlighted that digital entrepreneurs rapidly exploit multiple market opportunities without constantly innovating and developing new products. They continually design the value proposition to explore multiple opportunities. We proposed that the design and redesign of the value proposition is an important strategizing practice for transcending market boundaries and sought to investigate the mechanisms underpinning this practice. Our analysis of the empirical material showed that digital entrepreneurs draw on the following four mechanisms to design value propositions: (a) excogitating functionality; (b) self-reverberating benefits; (c) designating interdependencies and (d) conforming intentionalities. We also observed the presence of a reshuffling pattern which gives momentum to the mechanisms and facilitates the dynamic redesign of the value proposition.

Based on the above, this paper contributes to previous digital technology entrepreneurship literature and the wider innovation and information systems research by capturing and theorizing the value proposition as a strategizing practice. Second, we contribute to the views of strategizing for digital innovation by articulating the mechanisms underpinning the design of the value proposition and providing an understanding of the way the value proposition is continually redesigned to exploit multiple market opportunities. Finally, we introduce a new theoretical approach drawing on a practice perspective to the study of value propositions.

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