THE ROLE OF PATH DEPENDENCE IN THE BUSINESS MODEL ADAPTATION: FROM TRADITIONAL TO DIGITAL BUSINESS MODELS

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Abstract

The digital context has driven new prospects of value creation and capture thus challenging and disrupting the traditional business models. Organizations need business models to transform the specific inherent logic of digital information products into new ways of creating economic value creation and appropriation. Thus, the business model change is an imperative for organizations to exploit value creation opportunities and to survive. Over time, however, business models become deeply embedded and they represent the dominant logic of the organization. Moreover the shift to the digital context poses additional cognitive constraints due to the characteristics inherent in digital information products that are quite distinct from the conventional ones, hence requiring a fundamental shift of dominant logic. This proposed study aims to explore the role of cognitive path dependencies originating in the non-digital context as an isolating mechanism in the process of creation of new digital business model.

Keywords: Business models, digital business models, business model adaptation, path dependence.
1 Introduction

This paper presents a research proposal that focuses on the business model adaptation in incumbent organizations. It specifically aims to explore the role of cognitive path dependencies originating in the non-digital context in the process of creation of new digital business model.

Evolution of Information and Communication Technologies (ICTs) is creating novel business opportunities for organizations. The relation between organizations and ICT has undergone through several shifts, from the designing of information systems for businesses, to the designing of IT enabled business processes and recently focusing on the design of business models for services through digital platforms (El Sawy and Pereira, 2013). Business model encapsulates a novel way to understand how the use of ICT can help to generate economic value. We adopt the definition of business model as provided by Zott and Amit (2010) that business models depicts “the content, structure, and governance of activity systems designed so as to create value through the exploitation of business opportunities”. ICT has introduced new prospects of information value creation and capture (Bharadwaj et al. 2013, Pagani, 2013) and organizations are faced with the challenge of business model adaptation (Pateli and Giaglis, 2005). Adaptation of business models is an imperative for organizations to exploit value creation opportunities and to their overall success (Achtenhagen, Melin and Naldi, 2013). Nonetheless business model adaptation is highly complex, uncertain and difficult to achieve. It is characterized with a process of continuous experimentation and trial and error learning (Morris, Schindehutte and Allen, 2005) that not always succeeds. With time business models become inert and resist change.

For example, in 2012 Kodak failed for Chapter 11 of bankruptcy protection, after 130 years of being a leader and dominating the market of photographic film in the USA. Kodak with over 140 000 employees is an example of a company being ‘locked-in’ in success and glory that resisted to adapt to digital transformations that were taking place. Digital photography did not fit to the traditional business model of Kodak which was product oriented and the company could not overcome its dominant logic. On the other hand, in the exact same year Instagram, a new start up with 13 employees was sold to Facebook for over one billion dollars. The contrasting fate of Kodak and Instagram shows that the scale of organizations and its previous success is not a guarantee for success anymore. More importantly it speaks up about the necessity and importance of adaptation of business models.

Research shows that incumbent organizations are less flexible to adapt compared to the entrepreneurial firms (Johnson, Christensen and Kagerman, 2008, Bohnsack, Pinske and Kolk, 2014). This is attributed to path dependence where a central dependence among others is constituted by cognitive constrains or ‘dominant logic’ of how organization creates and captures value. This path-dependent behaviour, which is otherwise useful for organizations is a great barrier to business model change that results in ‘blindness’ of organizations to exploit new opportunities (Chesbrough and Rosenbloom, 2002; Chesbrough, 2010). As an isolating mechanism it has a crucial role in shaping the business model (Chesbrough and Rosenblom, 2002). To our knowledge no empirical studies have explored the cognitive dependencies of creation of new digital business model within an incumbent non-digital organization considering the inherent logic of digitalized information products.

The remainder of the paper is organized as follows. First, an outline of theoretical considerations that draw a synthesis of business models, digital business models and business model adaptation is presented. Next, we present an overview of the path dependence and dominant logic concept. We conclude by discussing the theoretical and practical implications of the study.
2 Theoretical considerations

2.1 Digital business models

Although the concept of business model has been present since pre-classical times (Teece, 2010), the concept of business model as such gained widespread importance with the advent of the Internet (Zott et al. 2011). Research on business models may be classified into two major streams: static and dynamic (Demil and Lecocq, 2010). The static view has put a lot of attention on what business are, what components they are made of and what are the business model taxonomies (Amit and Zott, 2011), whereas the dynamic or transformational view moves away from regarding business model as static, focusing on the creation, evolution and innovation of business models. Business model is defined as 'the rationale of how an organization creates, delivers, and captures value' (Osterwalder and Pignuer, 2010). Magretta (2002) considers BM as narratives that tell how an organization works. The business model depicts “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (Amit and Zott, 2001). This conceptualization of business models is comprehensive since it acknowledges the relevance of social and the mutual interdependence between a firm and its business environment. In this regards, there are two scholarly worldviews in terms of the business model as a unit of analysis. On the one hand, business model is conceptualized as a property of a firm (Magretta, 2002; Osterwalder and Pignuer, 2010) thus overlooking the interactions of the firm and its value network. On the other hand, few studies only (e.g. Amit and Zott, 2001; 2010; Mason & Spring, 2008; 2011) assume a broader network perspective. In this view business model is conceptualized as a system of interdependent activities that are performed by the firm and its partners, with transaction mechanisms that link these activities (Zott & Amit, 2010). Consider Ebay for example. A large network of buyer and sellers performing many functions and activities constitutes the business model of Ebay. Sellers place the products online along with photos and description of the products. Buyers choose the products they want to buy and do the payment through Paypal that enables the transactions. The products are delivered through Fed-Ex. All these network parties are woven together with Ebay and only by functioning together they represent the business model of Ebay. This means that Ebay business model cannot be reduced in any of these components.

Novel forms of exchange of digitalized information enabled by the ICT gave rise to new ways of economic value creation and the notion of digital business model can embrace it in a more comprehensive manner than other concepts. Rai and Tang (2014) build upon Amit and Zott (2001) and define digital business models as ‘elucidating how an organization is linked to external stakeholders and how it engages in economic exchanges with them to create value for all exchange partners’.

The value creation and capture in digital context requires a new set of assumptions, because the production, distribution and consumption of digital information products encompass a distinct inherent logic that differs from material products in several dimensions (Varian, 1998; Benkler, 2006). This logic implies that information as a commodity is difficult to translate and address in economic terms (Lester and Koehler, 2007). This has significant implications for digital business models specifically. Digital information products have a characteristic cost structure. The key costs arise mostly from the production, whereas reproduction of same products does not generate additional costs. Thus, production, reproduction and distribution of digital information products have very low marginal costs that in terms of resources are equal to zero. For example a Hollywood movie or a piece of music is highly costly to produce. However once it is produced, reproduction costs of extra copies is equal to zero (Varian, 1998; Benkler, 2006). Another distinctive feature between the logic of material products and information products, that is dependent on the cost structure is pricing. As we saw from the above, the pricing of digital information products cannot rely on cost structure. Moreover information
products are increasingly being produced and exchanged outside the formal market. Such an example is open source software. The product is developed by a community of individuals whose common denominator is the development of the product. They do this job for free and these activities are conducted outside the formal market and are not accounted by formal business transactions or GNP figures. Digital information products are both ‘nonrival’ and ‘nonexcludable’. This means that many people can consume the same information at the same time. When someone holds the information that does neither reduce the value of information nor prevent other parties from having the same information (Varian, 1998; Benkler, 2006). Moreover information is characterized by a network externality which is a spillover effect (Lester and Koehler, 2007). That refers when the value of a particular product is greater when many others use the same product.

Considering all these features that we briefly elaborated, the value creation and capture in digital context requires a new set of assumptions that make it very distinct from tangible products. Thus, we argue that the shift to the digital context poses additional cognitive constrains due to the above-mentioned characteristics inherent in digital information products that are quite distinct from the conventional ones, hence requiring a fundamental shift of dominant logic.

### 2.2 Business model adaptation and change

There is an overall agreement that business model adaptation is crucial for survival, nonetheless previous research has overlooked the underlying processes of business model change. Few studies (Sosna et al, 2010; Chesbrough and Rosenblom, 2002; Chesbrough, 2010; Mason and Leek, 2008; Mason and Spring, 2011) have focused on the business model creation or innovation.

Review of this literature suggests several impetuses for business model change. Considering that organizations do not operate in isolation but are part of a larger ecosystem that is digitally intertwined (Bharadwaj et al. 2013) and given that business models transcend the boundaries of the firm, they cannot be conceived independently of the context. Thus, the environment has a great impact on business models and on creation and transformation processes (Linder & Cantrell, 2000). Changes in the business environment for example market deregulation may require organizations to change or transform business models (see Sosna et al. 2010). Moreover competitive pressures, emergence of new technologies, customers’ needs drive how the company does business and interact with its network (George and Bock, 2011).

Sosna et al. (2010) for example argue that business models evolve and change through experiential trial and error learning. Their case study showed that business model evolution went through two stages of exploration and two in exploitation. In the exploration stages the business model innovation choices are highly grounded on prior knowledge and cognitive schemes. The company learned from failures during the trial error learning and this phase involved a big deal of knowledge acquisition. The exploitation process is characterized with emergence of a business model and institutionalization of learning as routines into organization in a large scale. Thus process of business model innovation is a significant point of organizational change. It is a starting point that changes the core logic of the entire organization (Sosna et al. 2010).

In their study Mason and Leek (2008) argue that inter-knowledge transfer plays a crucial role in the dynamics of business model. The transfer of knowledge is enabled through structures, routines and problem solving activities that are a part of the business model. Authors identify two types of knowledge: hard and soft knowledge as drivers of dynamic business model. The interaction between hard and soft transfer mechanisms is what makes the business model dynamic. In this regard structures and routines are argued to represent the ‘hard’ inter-firm knowledge transfer mechanisms. On the other hand soft inter-firm knowledge transfer is manifested in changes to structures and routines.
Mason and Spring (2011) took another perspective towards business model change. Through lenses of strategy as practice theory they argue that business models are frames for action created through practice. Thus business models represent a bundle of practices that become institutionalized through evolution and mix with others in the business network and create multiple sites to create a market.

### 2.3 Path Dependence

Path dependence theory (e.g. Arthur, 1989; David, 1985) is considered as a theoretical construct that sheds light in understanding why persistence of organizations towards change occurs in the first place. However, the theory has expanded to account and explain the path creation (Garud and Karnøe, 2001) and de-locking path dependencies (Sydow, Schreyögg and Koch, 2009). During the past years there has been an increasing scholarly interest on the path dependence theory. Path dependence metaphorically refers to ‘history matters’. The choices and decisions we made today are all shaped by the past choices. Path dependence is ‘a property of a stochastic process which obtains under two conditions: contingency and self-reinforcement and causes lock-in in the absence of exogenous shock’ (Vergne and Durand, 2010).

The process that result in path dependence is characterized by three phases: preformation phase, formation phase and lock-in phase (Sydow, Schreyögg and Koch, 2009). During the ‘preformation phase’, the past influences choices meaning that choice is not completely free, however they are yet unpredicted based on any prior events and the situation implies a broad range of actions. Small events may counterweight self-reinforcing processes, which means that random or deliberate choices lead to increasing returns. Subsequently this narrows down the options for further choices. Self-reinforcing processes are the social mechanisms that are responsible for one alternative to take a lead over others (Vergne and Durand, 2010). Often the concept ‘positive feedback’ is used instead.

In the second phase or ‘formation phase’ choices are progressively restricted as a result of self-reinforcing mechanisms. Eventually, the development of this stage results in locking-in on path that is extremely difficult to escape. This represents the third phase where the range of options reduces dramatically that eventually gets locked-in. Lock in is an important concept of path dependence theory. It refers to situations where actors are stuck in a state and are unable to move to a new state, despite all involved preferring to do so. ‘When a process possesses the property of path dependence, then lock-in will occur on one of the possible outcomes if no exogenous shock disturbs the system’ (Vergne and Durand, 2010). Nonetheless, this perspective is very deterministic focusing only on exogenous effects. In this regards Garud et al (2010) criticize this perspective arguing that it overlooks and shadows the agency that actors posses.

An important instance of path dependence that this study focuses is cognitive path dependencies. In the literature it is often recognized as ‘dominant logic’. Prahalad and Bettis (1986) were the first who coined the concept of dominant logic. Later it began to be used widely in different studies to provide insights on organizational diversification and organizational adaptation (Franke and Knyphausen-Aufsess, 2014). In the literature several scholars, specifically in strategy, have used similar labels such as ‘paradigms’ (Johnson, 1987), ‘mindsets’ (Firsirotu, 1985), ‘organizational belief system’ (Donaldson and Lorsch, 1983), ‘interpretive schemes’ (Hinings and Greenwood, 1988) to explain the forces that make organizations to resist change. Dominant logic originally has been defined as “the way in which managers conceptualize the business and make critical resource allocation decisions” (Prahalad and Bettis, 1986). It acts as an information filter and in facts it represents the ‘DNA of the organization’ (Prahalad and Bettis, 1995). Dominant logic involves the belief system and mental maps that managers use for decision making (Prahalad and Bettis, 1986). These cognitive frames are shaped by previous experiences and the interactions in internal and external markets (Kor and Mesko, 2013).

Dominant logic acts as a double-edged sword, in one hand it helps sustain organizations and their...
business models but on the other hand it limits the ability of organization to change and seek new opportunities (Prahalad, 2004). Over time business models become so ingrained in the organization and changing that dominant logic is argued to be exceptionally difficult. Chesbrough and Rosenbloom (2002) discuss the role of dominant logic as a cognitive barrier to business model creation in the case of Xerox and its spin-offs business models. Dominant logic is a cognitive filter that prohibits the flow of information and is a great barrier to experimentation with new alternative business models. Xerox developed a very successful business model that focused in leasing the technology to companies instead of selling the rather expensive technology. Nonetheless, this dominant logic of Xerox proved to be a barrier for the development of new business models in some of Xerox PARC’s spin-offs. Similarly, Bohnsack, Pinkse and Kolk (2013) in their study argue that path-dependent behaviour shapes business models. At the same time it cognitively inhibits particularly incumbent organizations to search for new sources and new ways of value creation.

2.4 Summary of the related studies

To summarize this section of theoretical considerations, previous studies on the dynamic business models have provided several factors that shape and enable business model change. Few other studies have focused also on factors that hinder business model change and adaptation. Inter-knowledge transfer and organizational learning are argued to be crucial processes in shaping the business models. Moreover, business models are created through practice that evolve and become institutionalized through interactions with business network. Additionally, path dependence mechanisms and dominant logic as an instance of cognitive path dependence behaviour, constrain business model adaptation. Nonetheless at the same time they also play a crucial role in shaping the business model.

3 Discussion

This work presents a proposed research study, which we intend to expand both theoretically and empirically. It provides an outline of the main areas of concern regarding business model adaptation in incumbent organizations such as: digital business models, business model change and adaptation and path dependency. The purpose of combining these three areas of concern is to explore the role of cognitive path dependencies originating from the non-digital context in the process of creation of new digital business models.

In this paper it is argued that in the new digital context, dominated by the information, organizations need business models to transform the specific characteristics inherent in digital information products into new ways of creating economic value creation and appropriation. Given that this involve a fundamental reconsideration of the value creation, this shift into the new digital context poses additional cognitive constrains due to such characteristics inherent in digital information products.

We consider that this study can generate significant contributions, both to theory and practice in the area of digital business models. Firstly to theory, the study will contribute to the literature on the dynamics of business models that is rather in its infancy. While previous scholarly contributions have given some insights about the role of cognitive dependencies and path dependence in general (Chesbrough and Rosenblom, 2002; Sosna et al. 2010; Bohnsack, Pinkse and Kolk, 2014) as a mechanism that constrains and shapes business models, the study presented here takes into account the cognitive dependencies originating from the non-digital context. We consider that digital context exposes organizations to novel forms of value creation and capture that are quite distinct from the conventional ones, thus requiring a fundamental shift of dominant logic.

Secondly, given the expansion of digital businesses and their vital importance, this study will have
significant implications to the practice. It will inform organizations and managers that are planning to undertake business model change endeavours. It will be particularly relevant for incumbent organizations that plan to make a shift into a digital context.

This means that the study is delimited to incumbent organizations only. This limitation helps us to delimit the scope of analysis both theoretically and empirically. Despite this delimitation we acknowledge that new ventures are not totally free of path dependence, but are rather less constrained. Previous experiences, knowledge and mental maps of the owners shape the business model creation. Thus, we believe that it will also provide insights to entrepreneurs willing to engage in any business model.

References


