Business Model Innovation in Incumbent Firms: Cognition and Visual Representation

Working Paper Series

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Business Design Lab
Aalborg University
Working paper
05 / 2020
Rev. April 2020

Business Model Innovation in Incumbent Firms: Cognition and Visual Representation

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Forthcoming in

'Business Model and Cognition'
Marcel Bogers (guest editor), and Kristian J. Sund and Robert J. Galavan (series editors).
New Horizons in Managerial and Organizational Cognition

Abstract
Business Model Innovation (BMI) constitutes a priority for managers across industries, but it represents a notoriously difficult innovation, with several challenges, many of which are cognitive in nature. The received literature has variously suggested that one way to overcome challenges to BMI, including cognitive ones, and support the cognitive tasks is using visual representations. Against this background, we aim at offering a contribution to the emerging line of inquiry at the nexus between business models (BMs), cognition and visual representations. Specifically, we develop a new method for visual representation of the BM in support of simplification of the cognitive effort and neutralization of cognitive barriers. The resulting representation – a *network-based representation, anchored on the activity system perspective and offering*

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complementarity and centrality/periphery measures - allows to visually represent an existing BM as a network (nodes and linkages) of interdependent activities and to express information related to the degree of centrality/periphery of single activities (nodes) with respect to the rest of a BM configuration. These information, we argue, are potentially very valuable in supporting the cognitive tasks involved in business model reconfiguration (BMR). We guide the reader to progressively appreciate how the development of the proposed method for visual representation is anchored to two main characteristics of BMR, namely the discovery-driven nature of BMR and the path-dependent nature of BMR. We offer initial insights on the cognitive value of such a type of representation in relationship to the simplification of the cognitive effort and the neutralization of cognitive barriers in BMR.

Keywords: business model innovation, business model reconfiguration, cognitive view, visual representation, activity system, network-based representation

*Preview of the abstract and introduction of the forthcoming contribution titled "**Business Model Innovation in Incumbent Firms: Cognition and Visual Representation**" Massa, Lorenzo and Hacklin, Fredrik in 'Business Model and Cognition'**,*** Marcel Bogers (guest editor), and Kristian J. Sund and Robert J. Galavan (series editors).

Introduction

Business Model Innovation (BMI) constitutes a priority for managers across industries (Amit and Zott, 2012), but it is a notoriously difficult innovation activity (see, e.g., Johnson, Christensen and Kagermann, 2004) that is affected by numerous challenges (see, e.g., Koen, Bertels and Elsum, 2011; Björkdahl and Holmén, 2013; Sund, Bogers, Villarroel and Foss, 2016), many of which are cognitive in nature.

At a general level, these challenges range from sensing opportunities (Teece, 2007) and generating visions for BMI (Martins, Rindova and Greenbaum, 2015; De Reuver, Bouwman and Haaker, 2013) to the need to overcome dominant logic traps (Chesbrough, 2010; Zott et al., 2011) and reduce the cognitive load associated with BMI (Doz and Kosonen, 2010). This last task is accomplished by simplifying the complexity inherent in business models (BMs) (Massa, Viscusi and Tucci, 2019), including dynamic complexity that results from interdependencies among BM components (Casadesus-Masanell and Ricart, 2010). In addition to these difficulties, BMI is generally characterised by considerable uncertainty (Thompson and MacMillan, 2010), whether perceived or inherent, which creates challenges from the point of view of scanning, interpreting and acting upon external environments (Sund, 2015). In a nutshell, BMI involves many distinct types of cognitive tasks and relative barriers, making the study of BMI and cognition extremely rich, interesting and, simultaneously, challenging.

The received BM literature has variously suggested (see, e.g., Chesbrough, 2010; Tausher and Abdelkafi, 2017; Henike, Kamprath and Hölzle, 2019) that one way to overcome challenges to BMI – including cognitive ones – and support the cognitive tasks involved in BMI is to use visual representations of the BM. Visual representations have several general cognitive merits, as well as communicative and collaborative ones, that can, in many ways, support overcoming not only cognitive but also general barriers to BMI (Osterwalder and Pigneur, 2010; Gordijn and Akkermans, 2003; Chesbrough, 2010; Täuscher and Abdelkafi, 2017; Eppler and Platts, 2009; Eppler et al., 2011; Eppler and Hoffmann, 2012; Snihur et al., 2018). Visual representations can support creativity and idea generation (Eppler and Hoffmann, 2012); they can reduce cognitive load (Doz and Kosonen, 2010), promote knowledge sharing (Doganova and Eyquem-Renault, 2009), support collective understanding and stimulate collaborative innovation (Eppler and Hoffmann, 2012). Importantly, visual representations can also be used to articulate, challenge, transfer and reassemble the tacit knowledge at the background of implicitly understood mental schemata, heuristics, narratives and other organisationally embedded manifestations of BMs as cognitive and linguistic instruments (Massa, Tucci and Afuah, 2017). Thus, research on visual representations represents a fruitful area of inquiry for BMs and cognition, and for BMI in general (Foss and Saebi, 2017), across a broad spectrum of possible cognitive tasks. These include ideation, collective sense-making, and simply neutralising dominant logic traps. Arguably, these cognitive tasks are distinct

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or only partly overlap, but this heterogeneity is rarely discussed, and its implications for research at the nexus between BMI, cognition and visual representations may not be sufficiently recognised.

This is perplexing, given the quantity of research that has now accumulated. Since the beginning of research on BMs, much work has been published (albeit not always in top-ranked journals) on visual representations of BMs. This work has resulted in a plethora of tools, design artifacts and instruments that offer visual representations of BMs (see, e.g., Henike, Kamprath and Hölzle, 2019, for a recently published review). Yet there has been a potential disconnect between these visual-representation instruments and research on BMs and cognition, as recently noted by Tausher and Abdelkafi (2017). This disconnect, we suggest, manifests in two main ways: notably, in 1) the design of the instruments themselves, in relation to the specific tasks under investigation, and 2) the validation of their cognitive value.

The first manifestation refers to the fact that the design of the instrument – i.e., the process followed to generate the instrument itself – may have not been sufficiently accompanied by efforts to understand the specific sub-phenomena behind BMI. Within the domain of conceptual modelling, these efforts are referred to as requirements engineering. Many tools for visually representing BMs claim to be useful for BMI (or parts of BMI), but it is difficult to understand what specific features of the BMI process have informed the design of such tools. How to use them and under what conditions to do so are similarly unclear. As previously noted, BMI involves several different activities with different cognitive manifestations. This heterogeneity of activities and cognitive manifestations suggests that it is unlikely to find a universally valid instrument that would work effectively for all activities. However, the prevailing literature at the nexus between visual representations and cognition seems to be relatively silent on this matter. We are left without knowledge of how to ground a tool's design in the specific cognitive tasks involved in a given phenomenon – in our case, BMI in its different delineations (see later).

The second way in which the disconnect has manifested refers to the fact that the cognitive values of different instruments – their abilities to overcome cognitive barriers and biases resulting from taken-for-granted heuristics, or to support collective sense-making or ideation, for example – have not been subject to empirical validation and testing. It could be that a method to visually represent the BM has the potential to support certain activities or specific BMI tasks by intervening in the cognitive process underlying them, but this potential does not ensure that it actually does. Given also that organisation-level interpretation and cognition are affected by a number of boundary conditions (including modes of search) and various types of uncertainty (Sund, 2015), a fact that would further invite embracing a contingent approach, this lack of validation is a particularly strong qualifier of claims that a tool can effectively support certain tasks. Validation requires the testing of specific hypotheses in carefully designed experiments and other forms of empirical investigation. In turn, the ability to validate a tool requires that the specific phenomena and cognitive tasks for which the tool is employed are understood and delineated and that the design choices that led to the generation of a given visual representation are made explicit. This specificity is largely lacking.

Building on these premises, this paper aims to contribute to the emerging line of inquiry at the nexus between BMs, cognition and visual representations. Specifically, we illustrate the process that we followed in developing a new method for visual representation of the BM in support of the simplification of the cognitive effort in, and the neutralisation of cognitive barriers to, the innovation of *existing* BMs.

We differentiate between BMI in existing organisations, or Business Model Reconfiguration (BMR), and BMI for newly formed organisations, or Business Model Design (BMD) – arguably related yet distinct phenomena (Massa and Tucci, 2013) – and focus on the former.

Our proposed method culminates in a new tool for visual representation of BMs. The result, a *network-based representation, anchored on the activity-system perspective and offering complementarity and centrality/periphery measures*, allows the visual representation of an existing BM as a network (nodes and linkages) of interdependent activities and the numerical (but also visual) expression of information related to the degree of centrality/periphery of single activities (nodes) with respect to the rest of the BM configuration. This information, we argue, is potentially very valuable in supporting the cognitive tasks involved in BMR. We guide the reader to progressively understand how the development of the proposed method for visual representation is anchored to two primary characteristics of BMR, namely its discovery-driven nature and path-dependent nature. We offer initial insights on the cognitive value of such a representation as regards simplifying the cognitive effort involved in BMR and neutralising cognitive barriers to it.

Thus, our main contribution is to offer an illustrative example of the process involved in grounding the development of a visual tool for BMI in a specific instance of BMR (innovation of *existing* BMs) and in a relationship to specific cognitive tasks: simplifying cognitive effort and neutralising cognitive barriers. This is a small yet potentially important initial step towards a more consolidated scholarship of BM, cognition and visual representations.

We do not offer to test hypotheses related to the cognitive value of the proposed instrument but offer some insights and considerations which could be taken as a basis for future research.

This article proceeds as follows. We begin by offering a discussion on the BMR phenomenon, specifically emphasising its discovery-driven and path-dependent nature. Building on the main insights that emerge from this first step, we highlight four main design criteria motivating the proposed method, namely i) network-based representation, ii) activity system perspective, iii) complementarities and fit, and iv) centrality/periphery measures/visuals. Next, we illustrate how to embed each of these in a methodology for visual representation in BMR. Finally, we illustrate the application of this methodology to produce a representation of the BM. We exemplify the illustration using the iconic case of Ryanair, as its low-cost BM has been well documented in the accepted literature (e.g., Rivkin, 2000b; Casadesus-Masanell and Ricart, 2010), making analysis, comparison and understanding of this example easier and less ambiguous. We conclude by discussing our proposed approach's meaning and significance for research on BMs and cognition, and we detail ideas for future research.

References

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