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**Why is Business Model Innovation so poorly innovative?
Uncovering the critical role of collective design in Business Model Innovation**

Maxime Thomas, Pascal Le Masson, Benoit Weil

60 boulevard Saint Michel, 75006 Paris
maxime.thomas@mines-paristech.fr
pascal.le_masson@mines-paristech.fr
benoit.weil@mines-paristech.fr

In this paper we propose to analyze two cases of business model innovation process: Uber and a French health care company - with the models developed by design theory. In particular we demonstrate, relying on C-K theory, how the traditionally unchallenged figure of a lone firm performing business model innovation has implications on the outcomes of the process, preventing innovative business models to emerge. In particular we show that the coordination structure chosen by the firms engaging in business model innovation has major consequences. Therefore we propose a categorization of business model innovation process based on the level of implication of each firm. We argue that a more collaborative approach in designing business models that overcomes the difficulties raised by collective design is needed so that the outcomes are innovative. We discuss the implications of this result for business model innovation literature, disruptive innovation theory and design theory.

Introduction

In this paper, we propose, using recent advances in design theory, to discuss the innovative power of business model innovation. We thus propose analyzing two business model innovation processes: the case of Uber business model and an on-going business model innovation project in a French Health care company. The first case is famous among practitioners as it is used as an example of current disruptions occurring in several industries. The second project is an example of such a process in an incumbent company.

Although the study of business models (Amit and Zott, 2001) and in particular business model innovation (Chesbrough, 2010) opens new fields for the innovation literature, the literature seems to focus on the model of a focal firm performing alone a business model innovation process (Amit and Zott, 2012; Casadesus-Masanell and Zhu, 2013; Chesbrough and Rosenbloom, 2002; Enkel and Mezger, 2013; Holloway and Sebastiao, 2010; Osterwalder and Pigneur, 2010; Smith et al., 2010). However this widespread model seems surprisingly too narrow and restrictive as several fields of innovation literature have for long acknowledged the interest of involving several heterogeneous designers in the innovation process (Agogu  et al., 2017; Connor, 2008; Van Lente et al., 2003; Valkenburg and Dorst, 1998). Therefore, in line with the literature of business model innovation which tries to categorize these processes (Massa and Tucci, 2014), we propose a categorization based on the level of implication of actors that the focal firm involve in the design of a new business model. In the situation of a “lonely designed business model”, we will see that the set of accessible business models is much narrower than in the case of a “collectively designed business model”. Furthermore, in the case of implementation of a “lonely designed business model” we shall see that the outcomes can be characterized as poorly innovative as they do not change fundamental properties of the dominant business model. Therefore there seem to be a “hidden” contingent variable that characterizes both the business model innovation issues

and the coordination system adapted to these issues, thus proposing a mirroring hypothesis (Henderson and Clark, 1990) at the level of business model innovation processes.

In this paper, we use design theory to characterize the process of business model innovation conducted both in the case of Uber and of the French healthcare company. Indeed, recent theories, such as Concept-Knowledge (C-K) design theory (Hatchuel and Weil, 2003) allows us to overcome an essential methodology challenge by comparing existing business models to “thinkable” business models. C-K theory framework constitutes a powerful tool to follow complex design processes and map the different alternatives explored (Agogu   et al., 2012; Elmquist and Masson, 2009; Lenfle et al., 2016). Based on the C-K theory, this paper compares the different design paths when one faces a business model innovation problem and links them with the required actors to be involved in the process. In doing so, we hope to demonstrate that using tools provided by design theory constitutes a fruitful way to analyze business models, to raise the question of coordination processes that one should implement in these situations and to provide managers insights to conduct such processes.

The paper is organized as follows. The next section states the theoretical problem by reviewing the literature on business model innovation (BMI) and collective design for innovation and formulates two research questions that will be explored. The presentation of C-K theory and its use is provided in the subsequent methodology section. We then present a C-K framework in each case and discuss them in regard of our research questions in the results section. The final section discusses the implications of this research for the field of business model innovation, disruptive innovation and collective design for innovation as well as future research directions and managerial implications.

Literature Review: The mirroring hypothesis in Business Model Innovation as a research questions

From Business Model description to Business Model Innovation:

As shown by recent literature reviews based on peer-reviewed articles (Wirtz et al., 2016; Zott et al., 2011), in the last decade, interest for the topic of business model has raised among both scholars and practitioners. The concept of business model originates in the studies focusing on value creation and value appropriation by firms : it is a construct that helps scholars explain the underlying mechanisms in several situation such as e-business (Amit and Zott, 2001) or technology valorization (Chesbrough and Rosenbloom, 2002). Therefore, at first, the field aim at precisely describing those mechanisms leading scholars to look for the dimensions of a business model (Osterwalder, 2004). However, as it was shown that some business models can outperform others (Chesbrough and Rosenbloom, 2002; Zott and Amit, 2007), business model became a source of competitive advantage. Efficient business models were seen as examples that can be followed (Teece, 2010) and firms were advised to draw from them to change their business model (Casadesus-Masanell and Zhu, 2013; Doz and Kosonen, 2010; Enkel and Mezger, 2013). Thus, calls were made so that companies develop their capacities to innovate their business model (Chesbrough, 2010) opening the academic field of business model innovation (BMI).

In the following sections of our literature review we highlight three dimensions of business model innovation literature that will contribute to the formulation of our research questions: (1) define BMI, (2) assess the level of innovativeness of BMI and (3) who is in charge of designing a business model?

Business Model Innovation: Designing an innovative work-sharing

In spite of the growing interest for this field, the concept of Business Model Innovation is still ill-defined: the different specific literature reviews point out its high ubiquity (Schneider and Spieth, 2013), fuzziness (Spieth et al., 2014) or lack of construct

clarity (Foss and Saebi, 2017). This lead scholars to put forward several definitions : for (Berglund and Sandström, 2013; Gambardella and McGahan, 2010), BMI occurs when one company finds a new way of doing business (see for instance the definition given by (Markides, 2006) : “Business Model Innovation is the discovery of a fundamentally different business model in an existing business”). Other scholars, such as (Bucherer et al., 2012), build on the dimensions of BM stating that a BMI occurs when at least one dimension of a business model is changed (see for instance the definition given by Abdelkafi (2013) “A business model innovation happens when the company modifies or improve at least one of the value dimensions”). The last stream focuses (Santos et al., 2009) its definitions on the reconfigurations needed within the set of activities performed (see for example (Amit and Zott, 2012) who claims that one could innovate its business model by “adding new activities”, “linking activities in novel ways”, “changing one or more parties that perform any of the activities”).

In line with this stream of literature we propose to refer to Business Model Innovation as “the process of designing an innovative work-sharing both within the company and among partners to create and extract value from a product or service”. The intention in this paper is not to propose a holistic definition of what is Business Model Innovation. Our goal is to raise awareness on the link existing between the outcome of the process (the work-sharing) and who is in charge of designing a business model (design-sharing). From this research perspective, the central points in the above definition are that (1) Business Model Innovation is a design process and that (2) the outcome is an innovative work-sharing at a systemic level. Some calls have been made to look upon business model innovation as a design problem (Osterwalder and Pigneur, 2013; Teece, 2010) but few papers take explicitly this approach (Gudiksen, 2015). For the second point, empirical examples lead to consider the effects of Business Model Innovation at a systemic level. For instance in the drug development industry, (Sabatier et al., 2010) show that by focusing on specific development phases, start-ups atomize the historic highly integrated development process. Therefore, implementing a new business model is not only about reshaping the work-sharing within a company but could also extend to the work-sharing of an entire value chain.

Level of innovativeness of BMI

Our definition of business model innovation specifies that the new work-sharing should be “innovative”. This aims at segregating our research subject - business model innovation - from business model change. However in the existing literature how one does assess the level of innovativeness of a BM?

Some scholars focus on the novelty of a business model, thus (Zott and Amit, 2007) notably measure the innovativeness of a business model by thirteen questions asked to managers to assess if the new business model is novelty-oriented. Building on the theory of disruptive innovation (Christensen, 1997), others scholars tries to assess the disruptiveness of a Business Model Innovation (Markides, 2006). However, the theory of disruptive innovation was initially develop from a product innovation point of view (Christensen, 2006), leading this stream of literature to precise the notion of disruptive business model (Christensen et al., 2015) and to recognize the difficulty of assessing the disruptiveness of a business model (Habtay, 2012). Taking another approach, (Spieth and Schneider, 2016) operationalized the measure of innovativeness of a business model with three dimensions - value offering, value creation architecture and revenue model logic – perpetuating a dimensional approach of business model.

One of the promises of BMI was to enable new dimensions for firms to innovate (Amit and Zott, 2012). This section of our literature reviews demonstrate that in spite of several endeavors it is still difficult for scholars to assess the level of innovativeness of a Business

Model Innovation and that the relevant metrics are yet to be found, tested and validated. In our methodological section, we will put forward our metric stem from design theory.

Who is performing Business Model Innovation? The unchallenged figure of a lone firm

(Zott and Amit, 2010) define a firm's business model as "a system of interdependent activities that transcends the focal firm and spans its boundaries". As we showed, if the objective of organizing a innovative work-sharing during a Business Model Innovation process is clear and repeatedly stated, little is explicitly said on who is in charge of designing such a work-sharing. However, when one reviews it, there is a clear figure in the literature of a lone company setting up a new business model to disrupt an existing sector. Of course, throughout the implementation of the new work-sharing, this company interacts in a new way with other actors – but in these interactions the relationships are limited to providing/acquiring products or services. However an interaction between two companies to co-design their business model is seldom studied as several fields within BMI literature rely on the implicit model of a lone company designing a new business model.

When looking for the root-causes that could prevent the success of BMI, the literature mainly focuses on issues occurring within a focal firm. For instance, scholars put forwards issues concerning lack of shared vision on the actual business model (Van Der Meer, 2007), resource allocation conflicts between old and new BM (Amit and Zott, 2001; Doz and Kosonen, 2010), cognitive inertia (Chesbrough and Rosenbloom, 2002), development of additional technological capability (Brink and Holmén, 2009), appropriateness of given learning approaches (Andries and Debackere, 2013) or lack of leadership (Smith et al., 2010). All this reasons are centered on a focal firm making the field implicitly sharing a common model of lone actor conduction a BMI.

The implicit model of a lone actor conducting a BMI also echoes in the different tools aiming at helping managers handle BMI such as ontologies (Osterwalder, 2004; Osterwalder and Pigneur, 2010) or visual tools (Täuscher, 2017) that are designed to represent the business model of one focal firm and therefore preventing the idea of a co-design business model.

Nevertheless there is an emerging trend in the literature that is not yet formed and that call for a more holistic approach of business model in particular regarding who is designing a new business model. (Berglund and Sandström, 2013) consider BMI challenges that come from across the firm boundaries. (Gudiksen, 2015) puts forward serious games to improve the capabilities of firms to take into account partners' view when designing a business model. (Spieth et al., 2014) raise the question of "to which degree can fir co-create business model?" In line with this opening trend in the literature, we will build on the idea that there is a design-sharing in the case of business model innovation and therefore that a business model could be designed by several partners to formulate our research question.

Research questions: A mirroring hypothesis at the level of BMI ?

Thus, the BMI literature is mainly build on the hypothesis of a lone designer shaping a new work-sharing at an ecosystem level. However, on the other hand, innovation literature shows cases where deep changes in ecosystems involve multiple actors that contribute to the design process - and not only to the "production" process. In its Innovation Journey, (Van de Ven, 1999) describes the innovations that took place on cochlear implant : they required design actions by companies, health agencies, hospital, patients and patient association, service provider...

As a consequence, one can be impressed today by the power and efficiency of a "lonely designed business model". However one can also wonder whether this "lonely designed business model" could have been more creative and more innovative? The hypothesis comes from the fact that working "alone" limits the scope of exploration

(Chesbrough, 2003), give access to a limited type of competences and technologies (Laursen and Salter, 2006), prevent changing some design rules and increase the likelihood of fixation in the ideation processes (Agogu   et al., 2014).

Hence our first research question:

Research question Q1: In a BMI process, is a design process involving only one firm restricted to a limited set of Business Model alternatives and is this set leading to poorly innovative solutions?

In line with our first research question, one can ask whether a solution to widen the set of business process would be to include more firms in the design process. However, if the innovation literature recognizes that multiple designers can perform powerful innovation, it also points out that organizing the interaction is all the more critical.

Open Innovation literature recognizes the pertinence of opening the innovation process (Chesbrough, 2003) to cooperate with outside stakeholders in order to improve the quantity and the quality of innovations (Chesbrough and Crowther, 2006; Laursen and Salter, 2006). However these approaches still raise management difficulties (Giannopoulou et al., 2011) and have been shown to be limited to “problem solving” types of innovation (Sieg et al., 2010) limiting their direct application on Business Model Innovation which we showed to be closer to a design problem.

Furthermore, the literature on innovation intermediaries highlights the difficulties faced in collective design. By identifying numerous roles for innovation intermediaries, the literature has underlined the difficulties in collective design such as the lack of trust (Fawcett et al., 2012), incomprehension between partners due to the lack of knowledge (Van Lente et al., 2003) or difficult formulation of a common problem to solve (Sieg et al., 2010).

Thus, opening the innovation process to multiple actors is not enough to guarantee an innovative outcome: one should also consider the coordination system that structures the collective work. As show by (Agogu   et al., 2017), there are sophisticated forms of “open innovation” that support coordination between several designing actors towards innovation which must rely on well-structured tools (Agogu   et al., 2013). In line with this idea, the regime changes literature put forward sophisticated coordination systems that are implemented within firms (Connor, 2008) or at a system level (Nill and Kemp, 2009) to support the innovation process may it leads to technological (Hekkert et al., 2007) or societal change (Aggeri, 1999).

Therefore when one opens its design process during a Business Model Innovation, the question is not how many designers should one involve but rather how should they be coordinated? In the innovation literature the link between an organization and a design has been coined as the mirroring hypothesis. (Henderson and Clark, 1990) states that the organization of a company mirrors the product that could be designed. Extending the mirroring hypothesis to the design of Business Model and at an ecosystem level, we argue that depending on the way firms cooperate to design a new business model, the set of business model achievable will differ. This leads us to our second research question:

Research question Q2: In a BMI process, how to achieve a design-sharing so as to widen the set of accessible Business Models?

Methodology

This research relies on a case study analysis (Yin, 2014) of two Business Model Innovation processes. In order to enlarge our findings our research methodology involves the

analysis of a past and an on-going case of Business Model Innovation. As a past case, we chose to analyze Uber business model as this case has become an iconic business model (Mikhalkina and Cabantous, 2015) is emblematic among both practitioners and scholars. As an on-going case, we chose to analyze the project of a French healthcare company which aims at offering services in the field of wound care management. As described in this section, although the depth in data collection in the two cases is different due to the limited access to data concerning Uber, the two cases have been validated as relevant for the study due to their industrial context and have been analyzed with the same framework so as to compare the results.

Validity of the case study context: Taxi Industry and Healthcare Application as sectors where work-sharing design could be distributed among several actors

Our first case –Uber - is grounded in the taxi industry. The disruptions that has been occurring in the recent years in this sector are mainly due to the rise of the iconic business model (Mikhalkina and Cabantous, 2015) of Uber. As proven later in this paper, Uber designed *on its own* a new work-sharing allowing new type of drivers to offer taxi services. By doing so alone, Uber denied the others actors of this sector to take part into such a design. Today, all these actors (taxi drivers, taxi companies, local authorities...) are eager to work together to design new business models for the sector that suit better there interests. Consequently the taxi sector experiences (1) a powerful contestation of a BMI process performed by a lone firm and (2) challenges to design collectively BM to overcome the unsatisfactory results of Uber business model.

The second case study concerns an on-going project of BMI in a health care company in France to develop new wound care management services. This company has developed a tool that aim at helping nurses to provide wound cares in a hospital context. However, the dominant business model in this company has always been to sell products such as highly technical dressings. They now need to design a new business model to yield value from their technology (Chesbrough, 2010). The historically-grounded complex interactions between health care companies, practitioners and legislators are being reshaped by the rise of connected healthcare devices (Khan, 2016). However, business models of such objects are yet to be discovered. Therefore all these actors are collectively facing the challenge of designing together viable business models for ensuring the rise of safe and innovative healthcare applications.

Thus, both case studies are grounded in sectors where innovative business model are expected and where the lone figure of a business model innovator is challenged, offering relevant industrial contexts in which to study a mirroring hypothesis at the level of business model.

Data Collection:

In both business models innovation processes we collected data so as to gain an in-depth comprehension of the business model at stake and the vision each stakeholder has of it. Therefore, we tried to collect insights from different stakeholder in each cases.

To determine Uber vision of its business model, the leading authors apply to become Uber driver and attended two training sessions provided by the company dedicated to applicants. To determine Uber drivers vision of the business model, two interviews of Uber drivers were conducted in order to validate what was presented in the training sessions. To determine the vision of Uber competitors, we gathered archive materials through official company web site. As the results presented in the next session demonstrate, the main point here was to determine whether Uber was the first to implement a specific service comparing to competitors. The results were confirmed by two interviews of taxi drivers belonging to a French taxi company.

To determine the vision of authorities on the evolution of business model in the taxi industry, we rely on official reports from the French government concerning the taxi industry (Attali, 2008; Chassigneux, 2008; Thévenoud, 2014). We also went through an English judgment concerning the status of Uber drivers (London, 2016a). Our research in the innovation field of taxi service expands also to the AutoLib project in Paris in which one of the authors participated actively in the tender process. All this materials was gathered through field notes. Concerning the analysis of the French healthcare company, we gathered documents presented in project steering comities, documents representing the different business models possible, we visited two hospital facilities where the current solution is tested and conducting three interviews of nurses that use the system. We conducted two extended interviews of the managers responsible for the implementation of the system, making them validate our understanding of the product and the main future functions that it may have.

Although we gathered our materials through different means in each case, we adopted a common framework from design theories to compare findings across studies. The description of the framework is the subject of the following section.

Data analysis: overcoming the methodological issue of generating BM

To address our research questions, getting good insights of the Business Models at stake is not enough. We want to prove that there is a mirroring hypothesis at the level of BMI and more specifically that (Q1) a “single firm designer” model prevents a large exploration of alternatives and leads to restrictive forms of innovation; and that (Q2) more disruptive innovations require more collective endeavor in design, i.e. co-design processes involving multiple firms and institutions that design a new BMI. There is clear methodological issue here since we need to be able to compare the final outcome of BMI to a set of “thinkable” alternatives - including alternatives that were designed by other actors. The difficulty is to be able to generate and characterize these “thinkable” alternatives.

To do so, we relied on recent advance in design theory in particular in the C-K (Concept-Knowledge) theory framework since it enables to characterize a reference baseline of thinkable alternative on an innovation field. C-K theory states that the design process is “an interplay between two interdependent spaces” (Hatchuel and Weil, 2003), the space of knowledge (K) and the space of concept (C). The K-space contains the knowledge of the designer. The C-space is composed of propositions that are neither true nor false considering the available knowledge in K. During the design reasoning, the designer will refine the initial concept into other concepts (concept partitioning) and/or into new knowledge. The design process ends when one concept is so well defined that it becomes a new knowledge. C-K theory framework models the reasoning of a designer by representing the two spaces. This framework has been showed to be suitable to map the design path experimented in radical innovation projects (Elmqvist and Masson, 2009; Lenfle et al., 2016) and to provide a baseline to compare ideas generated in specific situation with “thinkable” ideas (Agogu   et al., 2012, 2014). We therefore constructed this baseline in our two Business Model Innovation fields (a collective transport system using cars and a wound care management system) to compare them with the solution that Uber chose and those considered by the French Health care company. By identifying which business models could be implemented by a single designer and comparing this set to the generated set, we get results for our first question. Then, widening our analysis to the other business model generated, we provided evidences that they could only be reached by a group of designing firms willing to modify their own business models to fit in the new one, thus answering our second research question.

The following picture illustrates the general structure of our framework and how we address our research questions with it.

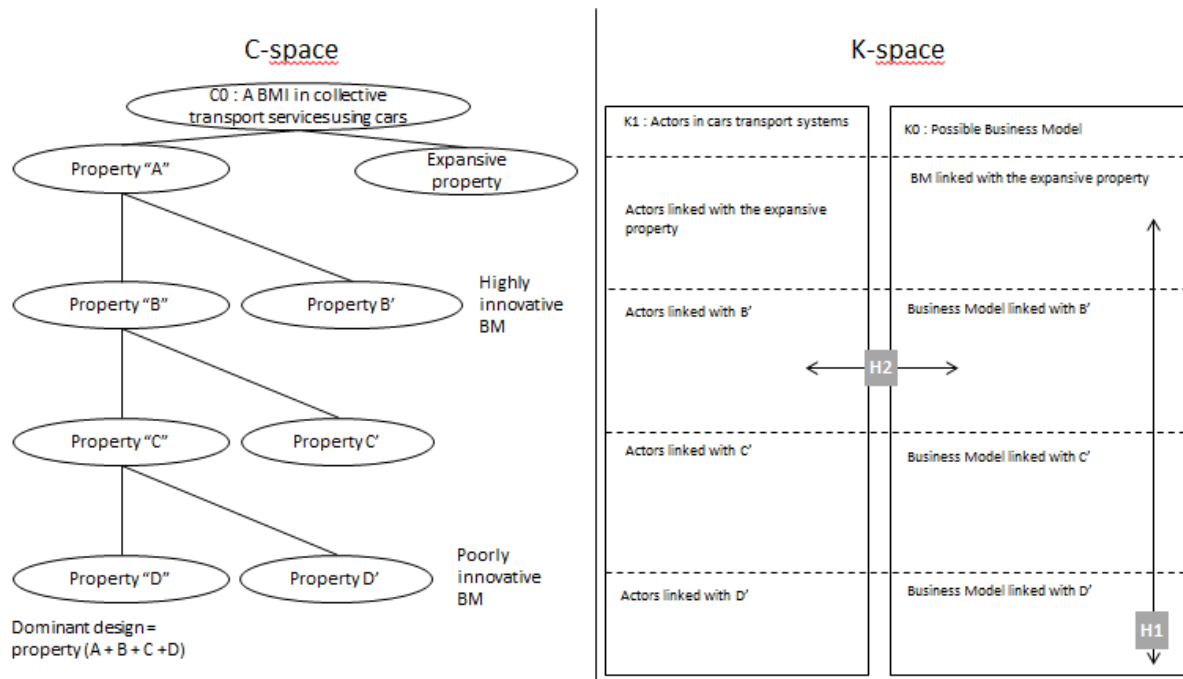


Figure 1 : General structure of C-K framework in the paper

To fill our framework, we first rely on our data to establish the dominant design of the business models at stake. In C-K framework, the dominant design appears in the left side of the C-space and is defined by its main properties. Then we systematically break these properties to generate new business models. The less fundamental the challenged property, the less innovative the generated business model is.

The K-space is organized by two main boxes. In one, we described the business models that could be used to capture value of a service describe in the C-space. The other box is composed with the actors that need to take part in the design of the Business Model to implement it.

Therefore, to answer (Q1) we focus on the business models that require the move of a single actor – such as Uber. We compared them with the “thinkable” business model to demonstrate that many other business models could be generated. Then we assess their position in the C-space. As shown by the following section, all the business models that required only one firm design are situated in the bottom-left side of the tree i.e. with a low level of innovativeness. To answer (Q2), we need to prove that the most innovative Business Models –i.e. those on the upper right side of the tree requires other actors to modify their own business models.

Results:

Business Model Innovation in collective service in transport using cars:

The starting point of our analysis of this innovation field is the business model of taxi service that is our dominant design.

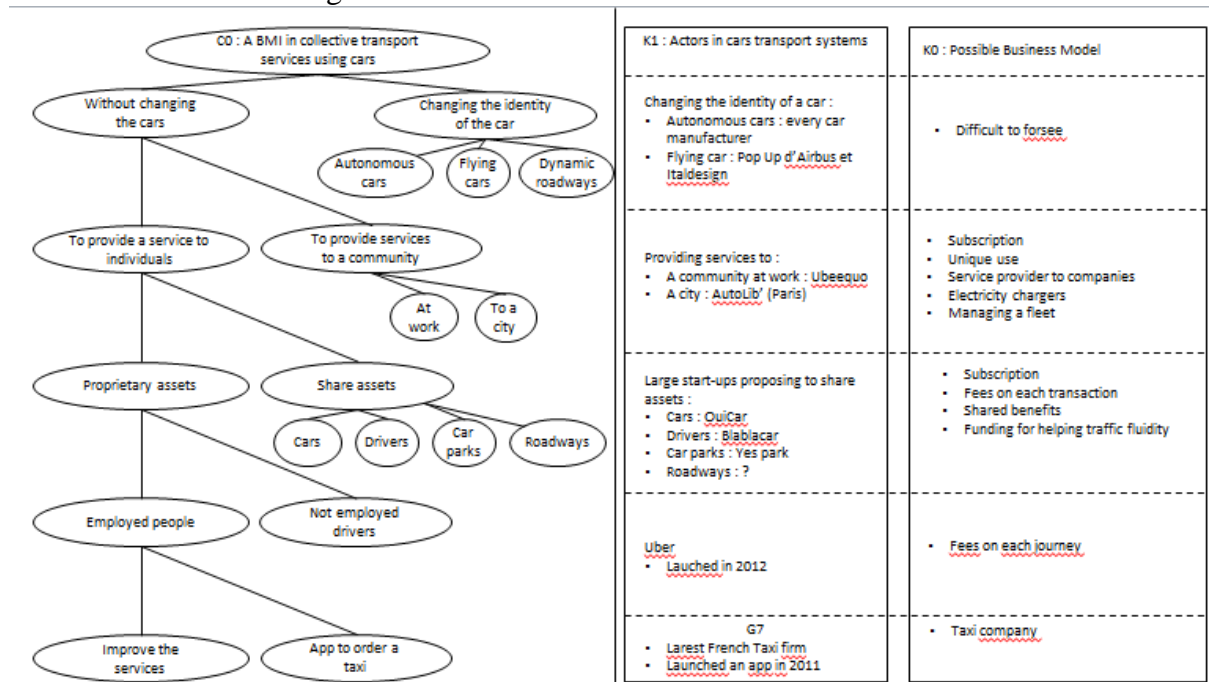


Figure 2 : C-K for a BMI in collective transport services using cars

General description of the C-K framework:

Our C-K framework is built on the dominant design of a taxi service. To generate a large variety of possible business models, we listed some “hidden properties” of the taxi service such as the fact that taxis provide a service to individuals or that the cars are owned by the firm providing the service. By partitioning in the C-space on these properties, we generated several new paths to build some new business models.

For example, AutoLib' which is a service of electric car sharing in the area of Paris and its suburbs appears when one challenges the property of a service to individual clients. AutoLib' aims at providing services to a community – here the community of Paris inhabitants – and is managed more as a public transport service than as an electrical car rental system.

By challenging another main property of the usual taxi business model which is that one of the main assets (the car) belongs to a firm, the opening branch in the C-tree is related to the sharing economy. In that branch of concept, one could for example find Blablacar, an internet platform providing car-sharing services.

Last but not least, this model accounts also for the business model of Uber by challenging the property of the usual business model stating that drivers are employed by the taxi company.

Thus one can see that the model can represent a huge variety of innovative business models. However one should note that the dominant design of taxi's business model is also evolving. As an example, G7 – the main taxi firm in France – launched in 2008 an application for its client to book a taxi. Therefore, when Uber get into the market in 2012, it has been four years since the app had been used by G7. A second example of evolution in the dominant

design of taxis' business model was the possibility for a client to share his taxi with another person. This was implemented by G7 in 2012 and by Uber in 2014. Therefore, one can see that the dominant design of taxi services is also evolving. Therefore, our model accounts for the changes occurring in the dominant design, for the business model of Uber and for several other paths to innovate in the field of collective services in transport using cars.

Validation of the first hypothesis:

Our first hypothesis states that in a BMI process conducted by a single designer, he faces the constraints of others players in his field and therefore have only an access to a limited set of business models which lead to poorly innovative solutions.

First one can note that Uber conducted a business model innovation without involving other designers. Uber was at first a start-up. Neither the taxi industry, nor the local authorities, nor the clients, nor the future Uber drivers were much involved in the design of Uber business model. As Uber grew, its business model met the others players' constraints making the taxi industry (Schor, 2014), legislators (Lobel, 2016), institutions (Laurell and Sandström, 2016) and Uber's drivers (London, 2016b) express their reluctances on Uber business model. These reluctances are the results of the deliberate choice of Uber to design alone its business model.

Therefore, in line with our hypothesis, Uber is a single designer and therefore neglects several paths to design new business models. This is clearly shown by the C-K framework in which several possibilities of business models differ significantly from Uber business model. The accessible set of business models accessible for Uber is therefore limited. The C-K framework also reveals that the implementation of Uber business model is poorly innovative. In our C-K framework, one can see that the main change that occurred with Uber compared with the taxi industry was that the person driving the car is not an Uber employee anymore. However, the other properties subsisted: clients pay based on the time and on the numbers of kilometers, they still sit in the back, the drivers still own the car, he is still working for small groups of clients (not forming a community)... Furthermore, some properties of Uber business model (client can order a taxi from an application, clients can share the ride...) that could be seen as innovative are not really as the incumbent companies implemented them before Uber. Therefore, by comparing property by property, we can conclude that Uber business model is globally poorly innovative (Christensen et al., 2015). Uber business model is still an iconic business model (Mikhalkina and Cabantous, 2015) that causes disruptions for the taxi industry but it is an iconic "lonely designed" business model whose outcomes are poorly innovative. By analyzing Uber Business Model with the C-K framework, we confirm our first hypothesis.

Validation of the second hypothesis:

Our second hypothesis states that to open the set of business models available, the focal company must involve other players in the design of the overall business model. However, the hypothesis also underlines that including new players is not enough and that one should carefully look into coordinating these actors so that they would not be overwhelmed by their own constraints.

Our C-K framework indicates clearly that the more original paths for business models required the design of several actors. For example, when the property "the cars used in the business are not owned by the client" is challenged, one can imagine a business model that helps people find car parks in congested cities. To do so one can provide a service enabling its customers to park during the day on parking spaces providing –for example- by hotels which use them overnight. However, to do so, one should build a strong relationship with hotels so that the business model of hotels and the one of the focal company could be compatible. Another example of the need for collaboration is AutoLib'. The concept of "an electrical car sharing service at the scale of several cities including Paris" lead to different business models

and revenue streams such as subscription for accessing the service, subscription to charge one's personal electric car, funding by the cities... However, to implement such a business model, the focal company must involve several actors in addition of itself. Some of these actors will be part of the future business model such as the cities, the car manufacturer, car parks operators, the battery manufacturer, an electricity provider, an insurance company and some of these actors bring only their constraints such as the firemen, gaz suppliers with pipe below the road, geologists...(Sempels and Hoffmann, 2013). Therefore the design of such a business model should be shared among several actors. The last example of the importance of collaboration when one wants to open the set of possible business models is given by the expansive partition of a business model that would use a "flying car". Today, this kind of business model is clearly not implementable. However, some actors are trying to materialize it through prototypes such as the PopUp project which is a project between Airbus –the plane manufacturer- and ItalDesign – an industrial design company for cars. One cannot foresee which business model will be successful with this car but the founders of the project insist on taking on board legislators, city officials and other players within the car industry so that the business model could be implemented as well as the technologies needed could be developed. Therefore, our three examples extracted from the C-K framework show that more innovative business models are possible and that they need an implication of several actors.

However, adding actors is not enough to build successful innovative business models. An addition of actors could mean an addition of constraints, leading the process to fail as every actor is not ready to make its business evolve. To overcome these constraints one should implement some coordination tools. In the case of AutoLib' for example, the tender process was organized to encourage firms to apply among a consortium and to propose innovation paths that could be implemented beyond those specified by the city tender. Therefore, to implement such business models, a particular coordination system must be adopted by the different stakeholders so that it could succeed. Thus, through the analysis of more innovative business models we validate our second hypothesis.

Business Model of a wound care management system

Our second approach to confirm our hypothesis is more experimentally-driven as we consider an incumbent company trying to implement new business models in relation with wound care management. In this situation our hypothesis can be formulated as such: the incumbent company can either chose to design alone the new business model but in that case it must be very knowledgeable of the other players' constraints to find a business model that fit well (H1) or it can chose to design the new business model in cooperation with others actors but in that case they must cooperate in a way that foster and unlock innovative ideas (H2).

The second C-K framework that supports our approach is given below.

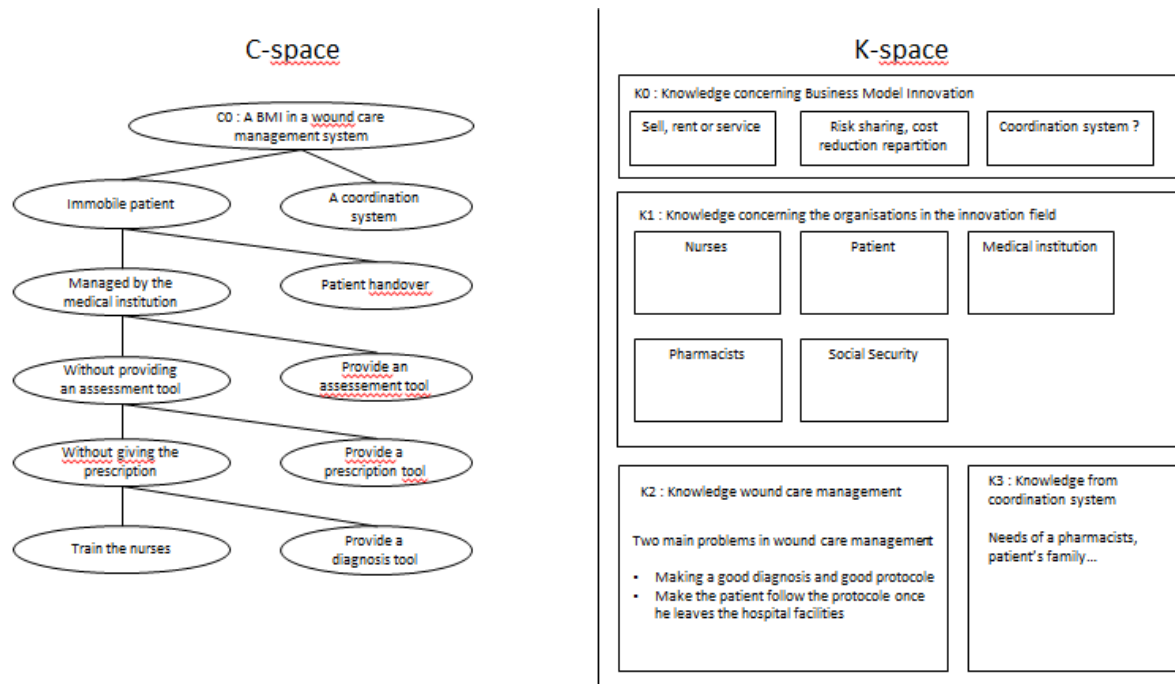


Figure 3 : C-K on a BMI on wound care management

General description of the C-K framework:

To understand this C-K framework, one should know that complex wounds are generally side pathologies. That raises two main problems. The first one is that nurses have difficulties to master the knowledge needed to be as efficient as possible when taking care of complex wounds. The second problem is that when a patient changes environment because his main pathology is getting better, the follow up of the wound is very difficult to achieved resulting in an inconsistent care path.

The dominant design in this area is trying to tackle mainly the first issue by providing tools for the nurses to make a better diagnosis and/or to set up a care protocol. However, if the service provided is only based on a tool that helps the nurses, there are few alternatives for business models as one can only sell or rent such a system. To expand the accessible set of business models one should be able to provide an assessment tool.

If one could provide such a system – ie providing Key Performance Indicators such as the healing time, the cost, the reason of the wound – he has an access to a wider set of Business Models as there could be some incentives in the relationship between the system provider and the medical institution. Therefore, beside selling or renting a system one could imagine different forms of business models based on the cost economies realized, the reach of targets (healing time, healing cost...) or the funding by institutions if the system is proven to be more efficient than the current situation. Furthermore, these business models could be combined to create more value.

Another business model approach is encompassed in the concept of patient “handover” (second partition in the C-tree). If a player is able to provide performance indicators that are indisputable, he can ask to manage directly patients and their wounds, providing special nurses trained to heal those kinds of diseases.

Last but not least, one could imagine a business model based on the capacity of a system to be an efficient coordination tool (first partition in the C-tree) between the different stakeholders of complex wound such as the patient, nurses, hospital, pharmacist, wound specialists... By allowing coordination between these heterogeneous actors, the system provider could be able to capture value from the system.

Therefore we see that when one considers the possibilities of new business models in a given environment, one is confronted to a huge amount of possibilities that the C-K framework helps to organize.

Validation of the first hypothesis

In this case, we see with the C-K framework that there are possibilities for the focal firm to implement on its own a new business model in providing the nurse a system that help them establish a diagnosis and take the right decisions concerning the care protocol to be followed. However if the company wants to avoid designing with other players (in particular nurses), it must be able to provide a system “off the shelf” whose design is robust enough to be adapted to all situations nurses face and to all medical institutions in which the system will be implemented. In that case, the available business models are to sell or to rent such a system. They are not particularly innovative and if implemented will only ensure that nurses follow the care protocol when they are with the patient and therefore prevent a focus on a more comprehensive approach. Therefore we confirm our first hypothesis (H1) by proving that the business models that could be implemented alone by a focal company are poorly innovative endangering its long term interest and revenue stream. These dangers were well-understood by the French Healthcare company that tries to open other accessible set of business model to capture value from its system.

Validation of the second hypothesis

To validate our second hypothesis, we show that more innovative business models are available but they require more coordination between the involved parties. For example, the C-K framework indicates that providing an assessment tool opens the set of available business models. However, to provide an efficient assessment tool that is useful and meaningful for the medical institution the company must work closely with them. The French Health care company understood this need and worked closely with their partners in the medical institution to understand their assessment needs. They developed several types of relationship with different medical institutions that helped them improve their products. The questions that were raised was should the company keep a position of seller, if not how much should the system be embedded in the IT system of the medical institutions, should the company have access to the data generated by the system, should the medical institution be able to modify the system ? All these questions are related to the coordination system between the two actors during the process of designing the new business model.

In the case puts forward by the C-K framework of basing one’s business model on the concept of “patient handover”, the relationship between the medical institution and the focal company must be even stronger. Thus they have several points they should care about such as the compatibility of planning between nurses, the legal responsibilities concerning the patient, the coordination between several doctors (one for the wound, the other for the general disease)...

The last partition in the C-tree concerns the concept of a coordination tool between several actors. In this case, cooperating with these actors when one designs a new business model is compulsory if one wants to see its system adopted. If the proposed system is not compatible with one of the business model of the concerned actors, the system loses its value.

Thus, we see that in order to access more innovative business model, the focal company must involve the parties in a more sophisticated coordination mode, validating our second hypothesis.

Discussion and perspectives:

Our paper raises the question of how innovative is a process of Business Model Innovation. We analyze this question by validating two hypotheses. The first one (H1) comes from the analysis of the literature where the representation of a BMI process is dominated by the model of a single firm engaging in such a process. Our hypothesis (H1) states that this model prevents more innovative business models to appear as conducting the design of a business model alone is to optimize the constraints of the different players of the innovation field. Furthermore, the hypothesis underlines that implementing such a business model will be poorly innovative as it does not diverge clearly from the dominant design of the innovation field. Our second hypothesis (H2) states that in order to expand the set of accessible business models one should involve other firms in the design of the new business model. To be efficient, this involvement must put the other firms in a designing position where they can challenge their own constraints in order to find together a new business model. Otherwise, the addition of several firms in the process will strengthen the rigidities and prevent any new business model to emerge.

We validate our two hypotheses with two cases. First we show that the iconic business model innovation conducted by Uber within the taxi industry was a “lonely business model designed” and that the result is not far from the dominant design in this industry. Second we show that other business models could be accessible if coordination between several players could be built. Our second case is centered on an on-going business model innovation process in a French Health care company. In that case we show that if the company wants to build its business model on its own, it has to design a very specific one that fits perfectly with the constraints of other players. However we show also that other paths are possible and that they require coordination among the players.

Our research contributes directly to the BMI literature by providing a new categorization between “lonely designed business models” and “collectively designed business models”. Previously, only a few cautious attempts were made to distinguish BMI situations by the design activities involved in the process. (Teece, 2010) called for a separation between “BM selection” and “BM design” and (Osterwalder and Pigneur, 2013) differentiated the “decision attitude” and “design attitude” of managers facing BMI. A more structured categorization was provided by (Massa and Tucci, 2014) who distinguish whether the process is conducted in an incumbent firm – “business model reconfiguration” - or within a new firm – “business model design”. This categorization yields several insights on how to manage BMI processes (Bohnsack et al., 2014; Schneider and Spieth, 2013). We claim that our categorization is an additional perspective that could help managers enhancing the innovative aspect of their business model innovation processes and help them consider other actors in the design of a new business model. We hope new research on business model innovation could challenge this new categorization both theoretically and empirically. In particular, new case studies on collective business model design are needed to understand the managerial implications and the outcomes of such a process.

Our results help also to clarify the debate between disruptive innovation (Christensen, 1997) and business model innovation literature. The growing literature on business models leads scholars to question the notion of disruptive innovation through the lens of business models (Markides, 2006; Sandström and Berglund, 2014) leading to the incorporation of business model innovation in the definition of disruptive innovation (Christensen, 2006). Nevertheless the question of when is a business model disruptive remains (Christensen et al., 2015). We first claim that our framework provide a useful tool to determine the disruptiveness of a new business model by comparing systematically which properties are challenged with a new business model. In this situation, one has to be very knowledgeable concerning the business model dominant design to assess if a new business model is disruptive, and cannot rely on the disruption caused in the ecosystem to assess the disruptiveness of a business model

as shown by Uber example (Christensen et al., 2015). Second, we show that the figure emphasized by the literature - a lone firm conducting a business model innovation process – is probably restrictive and lead to poorly disruptive results. However we third highlight that there are business model innovation processes that can lead to a disruption but they require a strong coordination among actors.

Our research also confirm in the field of business model the work on collective design that states that a collective approach can lead to a more innovative outcome (Connor, 2008; Fawcett et al., 2012; Van Lente et al., 2003; Valkenburg and Dorst, 1998)(Van de Ven, 1999). It also reinforces the claim that this innovative outcome is achieved through a strong collaboration between actors organized with specific rules (Masson et al., 2013) and tools (Agogu   et al., 2012). In line with this literature, the use in this paper of a C-K framework that links the “thinkable” business models and the actors needed to design them is a draft of a managerial tool that could help and guide the collective exploration of such business models between several firms. More research and empirical cases are needed to validate the relevance this approach and provide managers with a practical tool.

To conclude, we hope by our research to give another analytical tool for the business model innovation literature that will also help managers to understand better the possibilities raised by a collective business model innovation process.

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