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USINESS MODEL INNOVATION: A BIBLIOMETRIC REVIEW

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ABSTRACT

Using bibliometric research, we analyzed the literature on innovation in Business Models. Concepts like Evolution of Business Models, Open Innovation, Value Acquisition and Architectural Innovation group the articles included in the analysis. Innovation in Business Models is a field of study still under development that lacks unicity and depends on Business and Innovation Models studies. We concluded that the absence of a research agenda and unicity on the studied concepts generate, besides the collateral effect of field misunderstanding, opportunity to those that present themselves as icons on Business Models innovation, despite the methodological deficiencies in the proposals they presented.

Keywords: Business Model Innovation; Open Innovation; Bibliometric Review; Innovation

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I

NOVAÇÃO EM MODELO DE NEGÓCIO: UM ESTUDO BIBLIOMÉTRICO

RESUMO

Avaliamos por meio de uma pesquisa bibliométrica a literatura a respeito de Inovação em Modelos de Negócios. Os artigos incluídos na análise se agrupam em torno de conceitos como Evolução do Modelo de Negócios, Inovação Aberta, Captura de Valor e Inovação Arquitetônica. Inovação em Modelos de Negócios é um campo de estudo em desenvolvimento, carente de unicidade e dependente de estudos sobre Modelos de Negócios e Inovação. Concluímos que a ausência de agenda de pesquisa e unicidade nos conceitos estudados geram, além do efeito colateral do desentendimento na área, oportunidade àqueles que se apresentam como ícones da inovação em Modelos de Negócio, apesar da carência metodológica de suas propostas.

Palavras-chave: Inovação em Modelos de Negócios; Inovação Aberta; Estudo Bibliométrico; Inovação

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INTRODUCTION

Innovation and Business Model studies began to call the attention in the 2000 decade, after the intensive growth in the Business Model literature in the 1990's. The conceptual integration process between Innovation and Business Models, however, demanded unicity, as well as they more reliant on the alignment of researchers' intentions than the development of a conceptual basis. This article intends to present, through a bibliometric study, the concepts of Business Model Innovation (hereafter, Business Model Innovation) and how the lines of research cluster in this field.

Business Model Innovation refers to the creation and value acquisition by companies, based on the organization of their internal processes and external relations with customers and suppliers. Internal processes and external relations are organized in a more unique way and also more adequate to the market the company plays on than the ones adopted by competition, hence composing potential sources of competitive advantage.

This study starting point focuses on identifying the authors more often referred on literature review studies and on the concepts with their distinctiveness and similarities, based on a bibliometric research. Using co-citation mapping, we assessed how authors group around their research lines, hence forming factors. Next, we complemented the identification of the factors with a content analysis of the articles' abstracts through proximity of words occurrence. Finally, we compared factors and the content analysis, with the objective of supplying an overview about lines of research and references in Business Model Innovation.

In the next sections we introduce the theoretical background, methodological procedures, as well as discuss results and present our conclusions.

Theoretical Background

Before covering Business Model Innovation it is imperative that we define, **according to the literature, what is a Business Model about?**

In an extensive literature review about Business Models between 1995 and 2005, Zott and Amit (2011) identified both a diversity of definitions provided by academics and the existence of research silos, based on researchers' interests. The main areas of interest on the Business Models field in the period were e-business and the use of information technology in the organizations, value creation focused strategy and competitive advantage and innovation and technology management. Themes that have Business Models as an analysis unit are also found. These common themes comprise a holistic view of how companies conduct their businesses, the emphasis in activities and their importance for value creation. However, despite common themes being in place, the definitions demanded unity, one that involved architecture, representation, conceptual tool, structural model and standard model. Due to such diversity, we noted that Business Models studies were carried on without a formal definition of its concept.

Nonetheless Chesbrough (2007) posits that Business Model Innovation is not limited only to the technology field, by emphasizing its importance on providing a model that accounts for value creation and acquisition in different business areas, Zott and Amit (2011) stresses its close relationship with information technology development. Such relationship raised from the new manners of conducting business, allowed by information technology, more precisely by the digital exchanges of information and the possibility of doing business electronically.

A second phenomenon recurrently studied, according to Zott and Amit (2011), concerns associating Business Models and Strategy, focusing on distinct models-based competition and potentially competitive advantage and value creation promoters. Empiric studies from this field evaluated the Business Model as an antecedent variable – mediated by the firm's business environment and performance –, as well as a mediator variable between product strategy and performance and as a mediator variable between the leadership team profile and organization performance.

Based on the different roles attributed to Business Model in the strategic environment, one reasons that the conceptual non-unicity also applies to empiric studies. The third phenomenon is the one about the relationship between Innovation and Business Models, topic that we will approach further ahead.

Given the difficulty on finding an aggregative concept within Business Models' studies, Zott and Amit (2011) resort to what a Business Model is not as a means of easing comprehension. Based on their review, they propose that a Business Model does not involve a linear mechanism for value creation that originates on organization suppliers and finishes with client delivery. It is also not the same as the strategy for a product within its market, so it cannot be reduced to the competitive positioning of products and services, as well as it cannot be constrained to an organization activities and internal processes. Business Models are complex structures that comprise internal and external aspects of organizations, whereas potential sources of value creation and delivery which could transform into competitive advantage (Zott and Amit, 2011).

Amongst the authors Zott and Amit (2011) studied, two stand out due to the extent of their contributions to Business Models conceptualization: Henry Chesbrough and Clayton Christensen. Those authors allow for a possible definition of a taxonomy for Business Models.

In an article named "What Are Business Models, and How Are They Built?", Christensen and Johnson (2009) propose there are four interdependent elements in a Business Model:

1) A value proposition – defined as product or service development that help customers solve a problem in a more effective, convenient and accessible manner, what translates into helping customers tackling a job to be done.

2) Resources – defined as making the necessary resources available for solving the problem, including people, technology, products, services, distribution channels, equipment, brands and others.

3) Processes – creating processes, both internal and external, and coding and managing them in a way to promote the necessary product and service delivery to solve the problem or the job to be done.

4) Profit Formula – defining margins the organization demands for sustaining and developing its activities and reward owners or shareholders.

Christensen and Johnson (2009) underline new products or services not necessarily demand a new Business Model. On one hand, new products could succeed in the existing model providing they do not require new structure, knowledge or incongruent channels to the model in use. On the other hand, a model adopted for a long time could be an inhibitor factor for disruptive product and service development and adoption. Thus, the importance of the convergence between Business Models and Strategy could be verified.

Chesbrough (2010) taxonomy or conceptualization is similar to Christensen's, as it is also based on an interrelated network of factors:

1) The articulation of a value proposition – how value is created for customers or users;

2); A sales model for the identified market segment – what will be offer and for whom;

3) The value chain for creating and delivering the offer – internal and external structures, necessary assets for the offer;

4) Details on the sales mechanisms and firm revenues;

5) The necessary cost structure definition for the offer and the profit model.

6) Definition of the company's positioning in the value chain;

7) Creating a competitive strategy.

Despite Chesbrough (2010) conceptualization being more detailed, each one of the factors Christensen proposed can be placed within Chesbrough's. Both begin with a value proposition. Christensen's resources comprise Chesbrough's value chain and company's positioning. Chesbrough's sales models and mechanisms and revenue model can

be related to Christensen's processes. Finally, Chesbrough's cost and revenue structures are equivalent to Christensen's profit formula. Hence, the fundamental difference between the two models is how they elaborate on creating a competitive strategy: while it is a part of Chesbrough's Business Model, it permeates Christensen's factors.

Even with the conceptual diversity found by Zott and Amit (2001) and the proposals mentioned before, we conclude that a Business Model is an instrument by which companies make available the resources, using internal and external structures and processes, aiming at creating value proposals that solve their customers' existing problems or jobs to be done. Those proposals allow for the companies to capture part of the value to sustain and further develop their activities and to reward their owners or shareholders.

The need to adapt to a dynamic, constantly changing business environment is the companies' push for Business Model Innovation (Chesbrough, 2010; Gambardella & McGahan, 2010). However, as strategy and business models compose an almost inseparable connection, it is usual to take one concept for the other. It is then appropriate to point out the contextual and immediate feature of strategy from the more permanent format of a business model. On that regard, it is possible to understand strategy as a way of exploring a business model in order to obtain competitive advantages (Nielsen & Bukh, 2011; Sosna, Treviño-Rodríguez, & Velamuri, 2010; Teece, 2010).

As previously addressed, a business model involves understanding a target audience, customers, their needs and the necessary processes and resources to the contribution to a value proposition that differentiate a company from others (Bengtsson & Kock, 2000; Casadesus-Masanell & Ricart, 2009; Chesbrough, 2007; Chesbrough, 2010; Osterwalder & Pigneur, 2009). Freitas et al. (2017), on their research about open innovation, found 32 articles that cited Chesbrough's research on open innovation as their main reference. We note that open innovation could be considered a form of Business Model Innovation, but we will not cover specifically that area on this research. We will focus on what regards the differentiation against

competition as the drive of Business Model Innovation, but not taking into account specific models. .

Innovation seek creating growth opportunities for businesses. On one hand, sustaining innovation refer to those centered in products or services that aim greater levels of profitability in an existing business model. On the other hand, disruptive innovation holds a transformative power in an industry, by simplifying something complex or aggregating products from another industry in a market (Christensen & Johnson, 2009). Reaching new customers or markets in a different and effective manner is what characterizes Business Model Innovation (Christensen & Johnson, 2009; Osterwalder & Pigneur, 2009).

Business Model Innovation results of one of these four market objectives: 1) satisfying existing, but non attended market needs; 2) bringing new technologies, products or services to the market; 3) enhancing, defying or transforming an existing market with a better Business Model; or 4) creating an entirely new market (Chesbrough, 2010; Osterwalder & Pigneur, 2009).

In well-established companies, the effort for Business Model Innovation typically reflects the existing model and structure, motivated by market crises reaction, environment adaptation, market expansion or future opportunities exploitation (Osterwalder & Pigneur, 2009). However, planning new business models, regardless of their underlying motive, should take into account profit/loss potential, current model conflicts, implications to brands and other existing assets and possible reactions by customers (Osterwalder, 2004; Osterwalder, 2007; Osterwalder, Pigneur, & Tucci, 2005; Osterwalder & Pigneur, 2009). Questions about new model's independence before the present structure, resource sharing, culture adequacy and its internal or external development permeate the discussion about Business Model Innovation.

Thus, Business Model Innovation is a way of rethinking how businesses are made, either in a well-structured or in a chaotic manner, based on changes that demand reaction or adaptation, or on promoting change in a competitive arena (Osterwalder, 2004; Osterwalder, 2007;

Ostenwalder, Pigneur, & Tucci, 2005; Ostenwalder & Pigneur, 2009).

Method

A search for the term “Business Model Innovation” in titles, abstracts and keywords in the WEB OF KNOWLEDGE database obtained 219 published articles as a result (Figure 1). Filters were not in place for peer-reviewed articles, due to the possibility that part of the sample could be in non-academic journals.

The growth in the amount of publications and citations since early 2000’s reverberates the emergence of studies about Business Models in the 1990’s, when the development of online communication tools provided new ways of creating value for customers and their acquisition by companies (Zott e Amit, 2011). Hence, Business Model Innovation departs from the conceptualization and understanding of Business Models as instruments of value generation and capture.

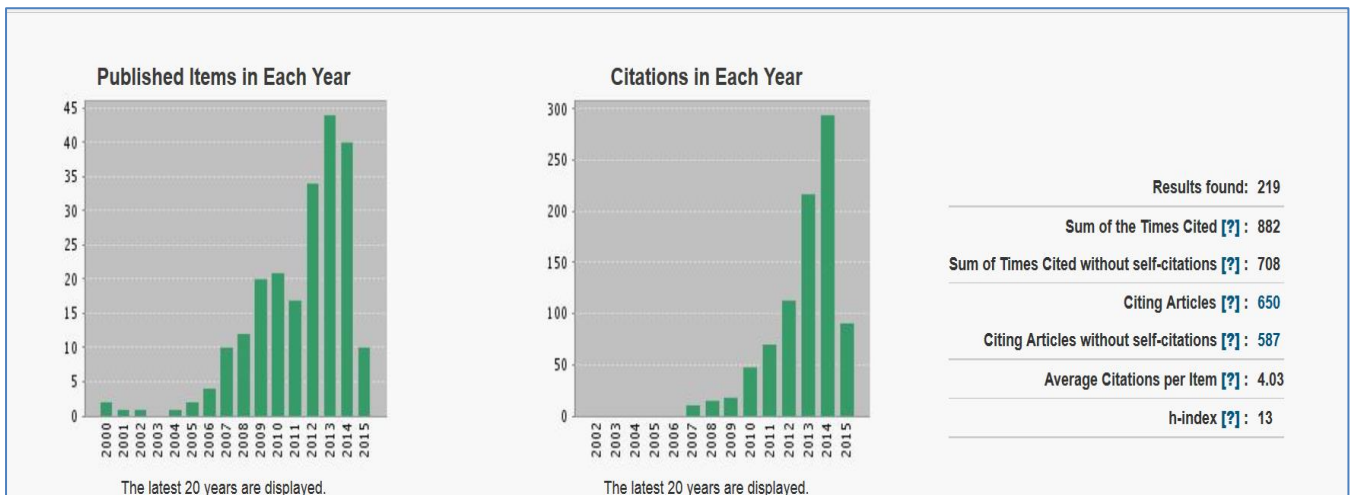


Figure 1 – Publications and Citations.
Source: Authors.

The selected articles generated 7,656 citations that formed this research’s database, which was assessed using Bibiexcel software. For data treatment, we kept only authors’ initials, with capital letters, thus preventing that we considered multiple citations for the same author separately due to different citation models. Next, we organized the authors’ list in descending order, based on the number of citations and excluded methodology books from the database, regardless of their citation amount, as they were not within our research focus, as well as authors with less than five citations.

For that analysis, we took into consideration the amount of co-citation cells, thus calculating factors, and the need to identify the main lines of research, according to how authors grouped within those factors. Worthy of note, we could have ruled out, by doing such selection, studies that point out new trends in the

field or even early stage ones. However, our objective is to identify and analyze consolidated authors and concepts in the study of Business Model Innovation.

We elaborated a co-citation matrix with 47 authors with at least five citations. Through exploratory factor analysis using SPSS software, we identified four factors around which the authors grouped, based on the correlations of the co-citations.

We analyzed the abstracts’ content of all the articles using Iramutech software, hence identifying, through the conjoint occurrence of terms, how groups formed. We then compared those terms’ groups with the factors we found.

Analysis of Results

In this section, we present the results of the exploratory factor analysis for the selected

articles, how we described each of those authors groups factors and lines of research involved in each one of the factors. The factor analysis procedures in the bibliometric study, using co-citation, aim at identifying the fields of knowledge through the affinity of citations and was also used in the work of Mazieri and Soares (2015). In that paper, the objective was to evaluate the group factors of authors in the Big Data field. Mazieri and Soares not only assessed the group factors by affinity and citations, but also proposed a discussion based in the Resource-Based View to theorize and conceptualize Big Data. We understand a similar approach could be used to analyze the Business Models theme, aim of this investigation.

We followed the order recommended by the academic literature for the exploratory factor

analysis procedures: KMO analysis (above 0.5); analysis of the items KMO in the anti-image matrix (above 0.5); excluding items with communality below 0.5; excluding items with load in only one factor below 0.5; excluding items with load in a factor above its original factor's load; and excluding remaining items from a factor with reliability (Cronbach's alpha) below 0.6.

Those procedures follow Hair, Black, Babin, Anderson and Tatham (2009) recommendations.

For each extraction, using both principal components and Varimax rotation, the analysis of the results followed the order presented above, and for each eliminated item a new extraction was executed. Results showed on Table 1 indicate the sample adequacy for factor analysis (KMO>0.5).

Table 1

| KMO and Bartlett's Test | | |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .887 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1549.992 |
| | Df | 435 |
| | Sig. | .000 |

Source: Elaborated by the authors.

After fulfilling the demands within the analysis, thirty authors remained grouped in four factors in the rotated component matrix, as shown on Table 2. Based on the criteria for evaluating and excluding items, there were no KMOs below the

minimum requirement, as well as communalities below 0.5 (Hair et al., 2009). All exclusions were made due to cross-factor loadings, meaning, an item aligned with more than one factor.

Table 2

Rotated Component Matrix

| Rotated Component Matrix | Component (Factors) | | | |
|--------------------------|---------------------|---|---|---|
| | 1 | 2 | 3 | 4 |
| BadenFullerC2010 | .868 | | | |
| CasadesusMasanellR2010 | .704 | | | |
| ChesbroughHenryW2003 | .661 | | | |
| DemilB2010 | .823 | | | |
| DozY2010 | .887 | | | |
| GambardellaA2010 | .813 | | | |
| GeorgeG2011 | .759 | | | |
| JohnsonM2008 | .756 | | | |
| MarkidesC2008 | .671 | | | |
| McgrathR2010 | .826 | | | |
| MorrisM2005 | .643 | | | |
| OsterwalderA2004 | .677 | | | |
| OsterwalderA2010 | .673 | | | |

| | | | | |
|------------------|------|------|------|------|
| ShaferS2005 | .658 | | | |
| SosnaM2010 | .846 | | | |
| TeeceD2010 | .694 | | | |
| ZottC2007 | .713 | | | |
| ZottC2008 | .738 | | | |
| ZottC2010 | .740 | | | |
| ZottC2011 | .725 | | | |
| ChristensenC1996 | .669 | | | |
| ChesbroughH2006 | | .732 | | |
| LinderJ2000 | | .805 | | |
| HamelG2000 | | .876 | | |
| OsterwalderA2005 | | .633 | | |
| ChesbroughH2002 | | | .888 | |
| ChesbroughH2007 | | | .839 | |
| ChesbroughH2010 | | | .858 | |
| ChristensenC2003 | | | | .856 |
| HendersonR1990 | | | | .659 |

Source: Elaborated by the authors.

The factors cover 79.3% of the total variance in the sample, considerably above the 60% threshold for exploratory research (Hair et al., 2009). The first factor comprises 21 out of the 30 authors, reaching 62.2% of the total variance (Table 3). It is the more important group of authors for us to analyze. We did an additional

exploratory factor analysis with the 21 authors from Factor 1, seeking to identify new groups. However, the analysis resulted in only one factor, what highlights the strong correlation of each one of the authors with that factor. Finally, we named the factors based on the reading of each one of the articles related to them.

Table 3
Total Variance

| Total Variance | | | |
|----------------|-------------|--------------|-----------------|
| Component | Eigenvalues | | |
| | Total | % daVariance | Accum. Variance |
| 1 | 18.653 | 62.175 | 62.175 |
| 2 | 2.129 | 7.098 | 69.273 |
| 3 | 1.932 | 6.441 | 75.714 |
| 4 | 1.070 | 3.568 | 79.282 |

Source: elaborated by the authors.

We named the first factor “Evolution in Business Models”. The articles that comprise that factor concern understanding which are the antecedents of business models, how they could be studied and what kinds of theoretical schemes could be proposed based on known models. Those articles also focus on assessing how business models relate with other areas, specially Innovation and Technology and how they could evolve over time themselves. Hence, we evaluated the 21 articles that are part of the Evolution in Business Models factor and clustered

them in four subgroups, which we will introduce next.

The first subgroup contains components and theoretical frameworks connected with entrepreneurship. The articles of George (2011), Morris (2005) and Zott (2007, 2010) belong in this group. Apart from Zott (2010), the articles in this groups assess the relationship of business models with entrepreneurship, seeking the understanding which components of business models favor or threaten the entrepreneurial vein within organizations. George (2011), for

instance, searched for reassessing how the business model would look from the entrepreneurial perspective.

The second subgroup contains the articles that investigate the evolution and innovation of business models per se. The articles from Demil and Benoit (2010), Doz (2010), Sosna (2010) and Baden-Fuler (2010) are part of that group and discuss how business models evolved over time and which are the paths for their future evolution. Whilst Baden-Fuler (2010) and Sosna (2010) analyze specific markets in Germany and Spain, respectively, which allow for understanding the importance of evolution within business models in those realities. The other two authors analyze the subject from the point of view of companies strategies, relating that evolution with the interactions between the models' components and the internal stability of companies.

The third subgroup deals with the relationship of business models with other scientific or business-practice areas. Within that group, the authors and subjects are: Teece (2010), which relates business models with innovation, strategy and economic theories; Zott (2008), who studies the relationship between business models and product marketing; Christensen (1996) and his study about the influence of technology innovation over the business models of hardware companies; Johnson (2008) investigated the importance of innovation for the business models of big companies; and Chesbrough (2003), who broadly covers the relationship between business models with technology, as well as analyzes the elements that drive innovation of business models, based on a study of the semiconductors market. Those articles are central, as they push the business model field towards identifying its own strengths and understand in which way it could evolve.

The fourth and last subgroup in the first factor is formed by three articles – McGrath (2010), Casadesus-Masanell (2010) and Osterwalder (2004) – and contains works that deal with applying and implementing business models' tools. The first author does so by proposing that, differently from traditional strategies, in which analytical models are more important, effectively implementing business models is key to using them as part of the

strategy. The second article brings an empirical analysis of organizations and demonstrates that most of them had a business model in place. Finally, Osterwalder's book is considered the 'bible' of current entrepreneurs, with his step-by-step strategy planning tool, known as Canvas.

Finally, some articles ended up not fitting in any of the subgroups. Osterwalder (2004) himself presents an article about the perception of the big companies over business models. Shafer (2005) organized an extensive literature review, aiming at demonstrating that the business models components and identifying four main categories: strategic choices, value creation and acquisition. Markides (2008) evaluated the importance of diversifying the company's strategy, whereas not necessarily connect it with business models. And Zott (2011), in his fourth article within this first factor, stresses the issue of lacking a definition for business models, highlighting that the literature on that respect organizes itself in silos and suggests the main investigation themes for the field: that business models are a new analysis unit that holistically explain how companies do business, linked to the companies activities and that try to explain how value is created, not only acquired.

We named the second factor Open Innovation. The concept is about having knowledge in a more distributed, participative and decentralized way (Gassmann, Enkel, & Chesbrough, 2010). In Chesbrough articles (2007, 2010), open innovation is conveyed as the antithesis of the traditional vertical integration approach, which has internal R&D activities leading to developed products to be distributed by the company.

Gassmann et al. (2010) point out that open innovation could also be grasped as the usage of intentional knowledge input and output to boost internal innovation and expand markets so that external innovation is acquired.

Chesbrough's articles (2007, 2010) complement that idea by introducing open innovation as a more profitable way to innovate, as one could reduce costs, speed up selling timing, enhance market differentiation and create new revenue flows into the company.

In the analysis, Gassmann et al. (2010) explain that the open innovation concept extends into two diverse forms. Innovation from the

outside into the company with ideas and external technologies brought into the company's innovation process; and innovation from the inside out, in which the inverse flow of internal underused ideas generate new revenue sources when other companies adopt them (Chesbrough, 2007; Chesbrough, 2010).

And it is the company's business model that determines which should be outside in and which should be inside out (Gassmann, Enkel, & Chesbrough, 2010). The company acquire ideas and technologies that fit in their business model. And its internal ideas and technologies that do not fit are logical candidates to be sent out (Gassmann et al., 2010). Thus, the business model is open innovation concept's key element (Chesbrough, 2007; Chesbrough, 2010).

We named the third factor as Value Capture. The articles included in this factor refer to how companies position themselves in the market, their business models and the way they seize part of part of the value they provide.

In Duhamel, Reboud and Santi's (2014) article, value proposition is a declaration of positioning that explains the benefit that will be provided, for whom, and how to make it exceptionally well. Chesbrough and Rosenbloom (2009) add on by elaborating that the value proposition describes the target customer, the problem to be solved and why the company would be sharply better than the existing alternatives.

In order to create a value proposition, Duhamel et al. (2014) suggest four steps- defining, evaluating, measuring and building.

- 1) Defining the problems set, to understand if it is worth solving.
- 2) Evaluating the problem or problems: is the problem solution viable? Is it an urgent problem? Is it immediate, latent or critic? Does it allow capitalizing over an open space opportunity (niche)? Immediate and critical problems get stuck in business and put careers and reputations at risk. Latent problems are not acknowledged.
- 3) Measuring: logical reasoning is about measuring the earnings delivered to customers versus the costs for the customers to acquire them. That is, delivering

technology that offer benefits with minimum modifications for the existing processes or environments.

- 4) Building the Value Proposition: after going through definition, evaluation and measurement steps, the company is ready to build its value proposition.

It should be part of the value proposition, according to Chesbrough and Rosenbloom (2009):

- a) For whom? (Target customers)
- b) Who is unsatisfied with current alternatives?
- c) Is the product new?
- d) Does it provide the solution for key issues?
- e)

Duhamel et al. propose that these are key questions for the value proposition (and, accordingly, for its capture). They represent the core of company's value proposition. Chesbrough and Rosenbloom's (2009) suggest more questions to be part of the value proposition: which problems the company fully understand? What solution could the company deliver in an adequate manner? What kind of disruptive business model could the company bring? All those questions and many others need to be answered for a value proposition to be adequately built (Chesbrough & Rosenbloom, 2009).

Architectonic Innovation characterizes the fourth and last factor. The concept of architectonic innovation was proposed by Henderson and Clark (1990). They define such innovation as: changing the way components of a product are connected amongst each other, while the concept of core design (therefore, the basic underlying knowledge) remain intact (Christensen & Johnson, 2009). Architectonic innovation involves a rearrangement of known pieces (components) for new patterns (architectures), so the systems reach higher performance levels in one or more dimensions (Christensen & Johnson, 2009; Henderson & Clark, 1990).

For Christensen and Johnson (2009), architectonic innovation depend on superior architectonic knowledge from innovation. In Henderson and Clark's (1990) work, architectonic

that were not applied in Business Model Innovation. However, before such increase, the studies of Business Model Innovation needs a research agenda and a new direction in order to form and develop researchers. That dependency is not only conceptual. It is also from the authors point of view, as key authors in business models and in innovation are the same that transit and publish in this new field. The lack of an agenda and unicity has a collateral effect besides misunderstandings: the opportunity given to those that, despite the methodological deficiency, introduce themselves as icons of Business Models Innovation.

As an example, a Google search using the words "Business Model Innovation & Consulting" resulted in 132,000 items. If compared to the 219 articles found in our research, it is clear that there are many more innovation consultancies for Innovation in Business Models than researchers capable of attending businesses' demands.

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