

Open Innovation and Business Model in Brazilian Small Business

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Abstract

Open innovation and business model are two fields of research that has been growing the interest of practitioners and scholars. Although academic papers continue to increase in both fields, the open innovation literature remains far from the business model literature, with few articles investigating the connections between the two fields. One of the research avenues is the investigation whether open innovation practices change the business model process configurations of small and medium-sized enterprises (SME). There are no academic papers that seek to analyze whether open innovation practices change the business model process configurations of SMEs. The present research is addressed to the gap. The research objective is to analyze open innovation practices and business model process configurations. In particular, it seeks to analyze how open innovation practices change business model process configurations of small enterprise. The research is exploratory and descriptive, anchored in empirical data obtained from 5 Brazilian small enterprises. The results show that R&D outsourcing embedded in technology exploration is the open innovation practice that fosters the use of the business model ontology and structured list of business model process configurations. The business model ontology allows: 1) to develop the mapping of the current business model; 2) to select new business model process configurations from the structured list of business model process configurations, anchored in the best practices; 3) to design and to generate companies' new business model in order to promote activities of innovation. Results provide innovative contributions and practical implications.

Keywords: Open innovation; Business model; Small Business; Creation Value.

1. INTRODUCTION

Open innovation has been growing within companies and has been included into the research agenda of several universities around the world over the past ten years. In the recent definition, open innovation consists of a distributed process involving knowledge flows, crossing organizational boundaries and in tune with the business model (Westa, Salter, Vanhaverbeke, Chesbrough, 2014).

Although the term business model is mentioned in the recent definition of open innovation, the number of academic papers that seek to establish links and approaches between open innovation and business model is still incipient. From the initial review of the literature, it is verified that open innovation and business model are two fields of research that has been growing the interest of practitioners and scholars. However, academic papers continue to increase in both fields, but open innovation literature remains far from the business model literature, with few articles investigating the connections between the two fields.

As a result of the incipient academic production of open innovation linked to business model, several gaps are opened in literature. One of the research avenues is the investigation whether open innovation practices change the business model process configurations of small and medium-sized enterprises (SME). There are no academic papers that seek to analyze whether open innovation practices change the business model process configurations of SMEs. The present research is addressed to the gap. The research objective is to analyze open innovation practices and business model process configurations. In particular, it seeks to analyze how open innovation practices can changes business model process configurations of small enterprises.

The study is structured in seven sections. The second and third section presents open innovation and business model literature review. In the fourth section we introduce the methods and techniques. The fifth section contains the data analysis. The sixth section presents the results. Finally, the last section is addressed to the final considerations.

2. OPEN INNOVATION

By proposing open innovation as an open system as opposed to the prevailing closed model of innovation by the year 2000, Chesbrough (2003a, 2003b) aroused the interest of the academic and business community for open innovation. In the first decade, there was a wide academic articles and the appropriation of the concept of open innovation by several practitioners at the global level (Westa, Salter, Vanhaverbeke, Chesbrough, 2014). The initial definition of open innovation emphasizes the path or flow of value ideas that may come from within or outside the company and into the marketplace (Chesbrough, 2003a).

The most recent definition proposes open innovation as a distributed process involving knowledge flows, crossing organizational boundaries aligned with the business model (Westa, Salter, Vanhaverbeke, Chesbrough, 2014). This definition reinforces the notion that open innovation embeds three essential aspects: internal acquisition of knowledge sources; External acquisition of knowledge sources; deep relationship (Lichtenthaler, 2010, Anderson, Narus, Narayandas, 2009, Chen, Chen and Vanhaverbeke, 2011; Aranha, Garcia and Correia, 2015). The changes that have been included into the definitions of open innovation in the last decade represent new angles and perspectives resulting from the operation of the concept in different organizations.

Part of the vast academic papers of open innovation has been dedicate to investigate small and medium-sized companies (Ahn and Mortara 2015; Brunswicker and Vanhaverbeke 2014; Hamdani and Wirawan, 2012; Pooran, 2013; Pooran, Piperopoulos and McAdam 2013). The 59 published articles about open innovation focusing on small and medium-sized companies between 2006 and 2013 had a strong concentration of publications from 2010 to 2013 (Hossain and Kauranen, 2016j). These publications show at least two points. First, open innovation in small and medium-sized enterprises is linked to six important aspects: searching strategies and networking; Collaboration; Transforming SMEs from a closed to an open approach; Innovation and technology management; Open innovation performance of SMEs; And challenges of SMEs in open innovation and how to overcome the challenges (Hossain and Kauranen, 2016).

The second point deals with open innovation practices that are being adopted by small and medium-sized companies. The study of 605 small and medium-sized Dutch companies identified a total of 8 open innovation practices. Among the 8 practices, 3 refer to the sources of the company's internal resources that move towards the market and 5 practices are linked to sources of external resources that are captured by the company and then directed to the market (Van de Vrande, De Jong, Vanhaverbeke, De Rochemont, 2009). The practices are presented in table 1.

Table 1 - Open Innovation Practices in Small and Medium Enterprises

Practice	Definition
Technology Exploitation	
Venture	Starting up new organizations drawing on internal knowledge, and possibly also with finance, human capital and other support services from your enterprise.
Outward Intellectual Propertylicense	Selling or offering licenses or royalty agreements to other organizations to better property from your intellectual property, such as patents, copyrights or trade marks.
Employee involvement	Levering the knowledge and initiatives of employees who are not involved in R&D, for example by taking up suggestions, exempting them to implement ideas, or creating autonomous teams to realize innovations.
Technology Exploration	
Customer Involvement	Directly involving customer in your innovation process, for example, by active market research to check their needs, or by developing products based on customers' specifications or modifications of products similar like yours.
External networking	Drawing on or collaborating with external network partners to support innovation process, for example for external knowledge or human capital.
External participation	Equity investments in new or established enterprises in order to gain access to their knowledge or to obtain others synergies.
Outsourcing R&D	Buying R&D services from other organizations, such as universities, public research organizations, commercial engineers or suppliers.
Inward Intellectual Property licensing	Buying or using intellectual property, such as patents, copyrights or trade marks, of others organizations to benefit from external knowledge.

Adapted from Van de Vrande, De Jong, Vanhaverbeke, De Rochemont (2009)

The open innovation practices highlighted in Table 1 have at least two relevances to the present study. The first relevance deals with the utilization of open innovation practices as a starting point and reference point to analyze open innovation practices in small Brazilian enterprises. The second relevance is linked to the first. We intend to identify one or several open innovation practices, in Brazilian companies grounded in table 1. After, we intend to analyses how open innovation practices identified in small enterprises change business model.

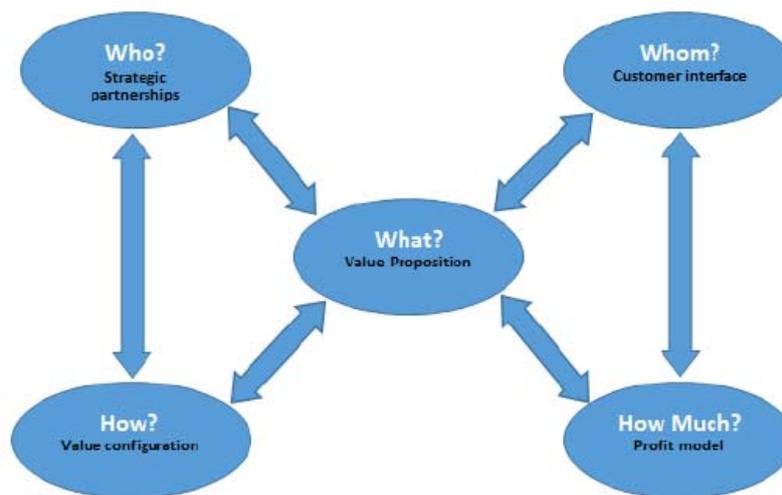
3. BUSINESS MODEL

At the beginning of 2001 the diffusion of the term business model between scholars and practitioners was driven by e-commerces companies (Rainer and Zimmermann, 2001). Technology companies boosted the business model popularization, which was included into of others companies. The term business model meant success for e-commerces companies. The various definitions of the term business model have differences of meanings, which stimulates the lack of understanding. There is no consensus on the definition of business model in literature

One of the first definitions establishes business model as ‘an architecture’ (Timmers 1998). In architecture contains the description of product, service, process, technology, information flows and several ‘business actors and their roles’ and how company get profit (Timmers 1998). The term architecture embodies the notion of structured design and alignment of information with specific objectives. Timmers (1998) provide a framework of e-commerce business model, including several classifications, that help in understanding. Business Model is a term that describes the logical value chain of how an organization understands value, creates it and deliveries it (Fiel, 2013; Anderson, Narus, Narayandas, 2009). The notion of value from the Marketing field is intrinsically included in the business model definition. The notion of value comprises the sum of all the economic, technical, service and social benefits that the customer receives in return for a price paid for a value offering (Anderson *et al.*, 2009). The business model highlights logical and aligned decisions and strategies that change according to market response and internal capabilities, always towards the creation and delivery of value (Linder and Cantrell, 2000).

Taran, Nielsen, Thomsen, Montemari, and Paolone (2015) provided a business model ontology composed of five components aligned in a logical structure. The five components are: customer interfaces, strategic partnerships, value proposition and revenue model. In each ontology component they define decisions and strategies that aim the understanding value, creating value and delivering value.

Figure 1: Business Model Ontology



Taran, Nielsen, Thomsen, Montemari, and Paolone (2015)

From the business model ontology, Taran *et. al* (2015; 2016) have developed a structured and comprehensive list of business model process configurations, anchored in best practice experiences Taran *et. al* (201). This structured list aims to facilitate the redesign of business models, selection and implementation of new business model process configurations. This list is also considered a tool, which could boost open innovation practices in the company. Then it can help the current business model mapping, as well as to understand what needs to be changed in terms of value proposition, customer interface, strategic partnership, value configuration and profit model. Finally, foster to design of a new business model.

The inclusion in our study of the business model literature review, highlighting the business model process configurations approach has three objectives. First, business model process configurations approach facilitates the understanding of the business model ontology and its respective components that contribute to the value creation process. Second, the business model ontology can help in describing and mapping the company's current business model. Third, approach offers a structured and comprehensive list of business model process configurations, anchored in best practices experiences Taran *et. al* (2015) . This structured list can help in the redesign and generate new business model in company to promote activities innovation

4. METHODS AND TECHNIQUES

The research is exploratory and descriptive, based on studies of multiple cases (Yon, 1993). The research seeks to analyze how open innovation practices change business model process configurations of small companies and adopted the analytical framework, according to figure 2. The framework provides general guidelines for research in the following order: First, we intend to identify one or several open innovation practices, according to table 1. Second, it examines how practices can help in describing and mapping the current business model. Third, it analyzes how the practice changes the old business model generating a new business model. Considering the analytical framework, the study was developed in 7 steps. The first step was the literature review on open innovation and business model, seeking to identify what the literature describes in terms of practices implemented in small companies. In the open innovation literature, one of the articles selected was written by Van de Vandre *et. al.* (2009) highlighting the analysis of open innovation practices in 605 micro and small Dutch companies. In the business model literature review, it stands out the articles by Taran *et. al* (2015) and Taran *et. al* (2016) that offers a set of conceptual resources for understanding business model ontology and business model process configurations.

In the second step, five small Brazilian companies were selected and data were collected during 3 months, from August to October, 2016. The classification of the Brazilian Micro and Small Business Support Service (SEBRAE) was adopted regarding the size of the company and number of employees, according to Table 2.

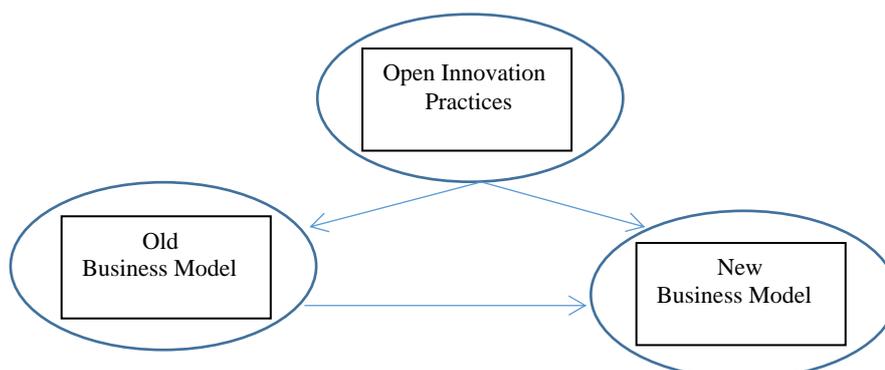
Table 2 - SEBRAE Classification

Size	Commerce and Services	Industry
Microenterprise	Until 9 employees	Until 19 employees
Small Enterprise	From 10 to 49 employees	From 20 to 99 employees
Médium Enterprise	From 55 to 99 employees	From 100 to 499 employees
Big Companies	100 or more employees	500 or more employees

The data collection consisted of interviewing the business owner, customers, potential client and company reports aiming to map the current business model. In the data collection, the BMOPE / 1 (Business Model and Open Innovation Ecosystem) methodology developed by the research center of the Brazilian public university was used. The methodology offers solutions to improve the performance of the company, integrating methods, techniques and various tools.

In the third step, based on the previous step, the open innovation practice was identified. In the fourth step, the data collected was analyzed to map and describe the current business model. The mapping and the description of the current business model were developed using the business model ontology (figure 1). In the fifth step, the business model process configurations were selected, using the structured list of best practices. In the sixth step, the redesign and mapping of the new business model were carried out, based on the selection made in the previous step. The seventh stage was developed the verification and validation of all the results obtained.

Figure 2. Analytical Framework



5. DATA ANALYSIS

The analyzed companies' owners do not know the definition of business model and mains components. These companies do not have a formal description of the current business model and do not have tools for mapping and describing the current business model. Therefore, the business model ontology was the tool used to describe and map the current business model, as showed in table 3. The business model ontology helped in understanding the key components of the current business model. The business model ontology has the following components: The value proposition, customer interface, value configuration, strategic partnership and profit. The term old business model described in the table 3 represents the current business model.

Table 3 – Old business Model

Company	Old Business Model				Inical Revenue (R\$)
	Value Proposition	Customer Interface	Value Configuration	Strategic Partnership	
Company A	Low Price / Tradition	Bars and Restaurant owners	Delivery in Itajubá and Region / Tradition and Competence	There are no partnerships	1,462,284.98
Company B	Quality / Variety / Customer Service	20 to 30 years old customer / workers	High quality raw-material / Customer Machines / High added value products / Low lead time	Advertising Partner / Academic Directory / Elementary Middle Schools	63,326.58
Company C	Full service provider / No frills	Men (61%) Women (32%) / 20 to 50 year old / 1 to 3 minimum wages	Place and physical structure / Workout session, Studio Cycle classes, Dance classes, Martial Arts, Personal trainer services / personal contact (85%), Facebook page (15%)	Freelance teachers / Physical Evaluators / Maintenance team	-
Company D	Reliability / High performance in the quality / Pesonalized service	male (70,4%) / 20 to 30 year old (39,3%) / 5 to 10 minimum wages (33,3%) / residents in Itajubá (77,8%) / Coffee Shops	The existing site was not used to its full potential, nor did it correspond to the level of competitors	Coffee Farmers / Cocarive Coperative of Coffee	25,741.95
Company E	Best customer service	Very economicaly broad, 90 % are men and 75% are aged 18 to 40	Good localization and physical structure / Good seller provide high value service	Stop Motopeças - provide products and services in need	75,000.00

The conclusion of the mapping step of the current business model made it possible to understand the gaps, problems and opportunities of the company. We identified and selected new business model process configurations from the structured list of business process configurations. The structured list is anchored in the best business model process configurations. We identified and selected new business model process configurations from the structured list that will lead the company to the innovation process. From the current business model of each company, the business model process configurations was identified and selected, according to table 4.

Table 5 presents the new business model redesign, incorporating the process configurations.

Table 4 – Selection of Business Model Process Configurations

Company	Value Proposition	Customer Interface	Value Configuration	Strategic Partnership
Company A	Low price / Fast deliveries	-	Delivery every week	-
Company B	Incomparable produts and services / New technologies to offer unique produtcs	Opening new market to gain at least a temporary monopoly / premium market / low price products	High quality raw-material / Sales process / Premium products	-
Company C	Full Service Provider / Price Reduction Bundling / Fast Follower	-	-	-
Company D	Sale of Premium Subscription Packages	-	Sales by e-commerce	-
Company E	Best customer service	-	-	-

The business model process configurations identified and selected were essential to foster the redesign and generation of the new business model, according table 5.

Table 5 – New Business Model

Company	New Business Model				Final Revenue (RS)
	Value Proposition	Customer Interface	Value Configuration	Strategic Partnership	
Company A	Low price / Fast deliveries and to more customers	Bars, Restaurants, Bakeries and Snack Shops / Micro and small entrepreneurs / Itajubá and near towns	Delivery every week / Capital investment mainly in the stores physical facilities	Find new customers and improve relations with the old ones	1,623,136.33
Company B	Incomparable products and services / New technologies to offer unique products	Opening new market to gain at least a temporary monopoly / premium market / low price products	High quality raw-material / Customer Machines / High added value products / Low lead time / Sales process / Premium products	Advertising Partner / Academic Directory / Elementary Middle Schools	72,705.60
Company C	Full Service Provider / Price Reduction Bundling / Fast Follower	The customer interface didn't suffer any modifications because this target is the most attractive to the gym	Place and physical structure / Workout session, Studio Cycle classes, Dance classes, Martial Arts, Personal trainer services / personal contact (85%), Facebook page (15%)	Freelance teachers / Physical Evaluators / Maintenance team / Some partners in negotiation are fitness stores, nutrition clinics and vegan restaurants.	-
Company D	Sale of Premium Subscription Packages / Flipchart Frame, Coffee bullet, coffee cracker, gifts / Signature club	male (70,4%) / 20 to 30 year old (39,3%) / 5 to 10 minimum wages (33,3%) / residents in Itajubá (77,8%) / Coffee Shops	Sales by e-commerce	Coffee Farmers / Cocarive Coperative of Coffee	115,160.20
Company E	Best customer service / Creation of a virtual community / Services are backed-up by guarantees	Online store is being created / same gender and age	Trained employee responsible for the inventory / Mechanics are better trained to deal with service orders / Almost nonexistent bureaucracy	Stop Motors	134,700.00

6. RESULTS

From the data analysis, this study shows the following results.

- First, the outsourcing R&D included in the technology exploration (table 1) was the open innovation practice identified. Although the purchase of R&D services by the companies have not been held (as emphasized in this practice), it has been used the BMOPE/1 methodology (Business Model and Open Innovation Ecosystem) developed by the Brazilian public university research center. The methodology offers solutions to increase company's performance, integrating methods, techniques and several tools, including the Five V framework;
- According to the open innovation practice, R&D outsourcing (BMOPE/1 methodology) fosters the use of the business model ontology, providing a mapping of the current business model. We emphasize analyzed companies' owners do not know the definition of business model and mains components. These companies do not have a formal description of the current business model. do not have tools for mapping and describing the current business model.
- Third, the open innovation practice, R&D outsourcing (BMOPE/1 methodology) enabled the selection of new business model process configurations, from the structured list of business process configurations, anchored in the best practices experiences.
- Fourth, the open innovation practice, R& D outsourcing (BMOPE/1 methodology) made it possible to carry out the redesign, generating a new business model.

The four results showed previously are addressed to the gaps exposed in the literature. The four results indicate how open innovation practice can changes business model process configurations of small enterprise.

Conclusion

The study results are innovative and contribute in several directions. We will highlight only two contributions of the present paper to the literature and theory construction. First, the results contribute to fulfil the gap in the literature, by showing that open innovation practices exist in small enterprises.

The second contribution deals with the research agenda. The results encourage university researchers to start new research avenues in their agenda around the interface between open innovation and business model process configurations, particularly open innovation practices.

The results have several practical implications. We highlight only three of them. First, businesses' owners and leaders will be able to include the open innovation and the business model process configurations culture in their companies among the employees, in order to stimulate the idea generations, autonomous teams and innovation accomplishments.

Second, SMEs will be able to adopt the business model ontology and the structured list of business model process configurations to redesign and to generate a new business model. The new business model promote activities innovation

Third, Business School and Engineering course coordinators will be able to include in the curricula content linked to open innovation and business model process configurations aimed to increasing students' managerial skills development.

The present study has also limitations. The results are restricted to data collection from empirical observation of 5 SMEs. It becomes important to expand the amount of companies.

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