

Schiavi, Giovana Sordi; Behr, Ariel

Article

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Emerging technologies and new business models: a review on disruptive business models

Giovana Sordi Schiavi and Ariel Behr

Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

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Abstract

Purpose – This paper aims to conduct a review on disruptive business models. Considering that competition among companies will not only happen through new products, services or technologies but also through innovative business models, the disruptive business models arise to replace the existing business models, adapting the organizational structures to the products and services offered and emphasizing the proposition of unique value.

Design/methodology/approach – The literature on this topic was revised, allowing the obtaining of the state of the art and the construction of a research agenda. The analyzed literature was obtained from systematic searches by the term disruptive business model in some databases. For the analysis of the data, the content analysis strategy was used through categorizations in the material exploration phase, and, later, for the processing of the results, the authors made use of inference and interpretation regarding the content analyzed.

Findings – The collected literature made it possible to obtain a set of data formed by different views of authors on disruptive business models, which was analyzed and categorized to make new inferences and interpretations.

Originality/value – Considering that the literature on the disruptive process of business models is emerging and addressing an important phenomenon in the market that lacks the theoretical basis to sustain it, this paper contributes by presenting a consolidated examination on this subject, thus deepening the theoretical analyzes on this topic and reducing this lack in the literature. This study also presents a research agenda, which clarifies the disruptive business model gap and reveals some opportunities for future empirical researches.

Keywords Innovation, Business models, Emerging technologies, Disruptive business models

Paper type Literature review

1. Introduction

Organizations, regardless of the sectors in which they operate, face a variety of new technologies, which, at the same time, generate business opportunities and challenges for companies (Tongur and Engwall, 2014). Thus, organizations' focus on emerging technologies provides the steady supply of new products, services and processes, influencing business and market structures (Sainio, 2004; Bueno and Balestrin, 2012). In this sense, several studies point out that the changes provided by the new technologies reflect positively on the performance of the companies, allowing competitive advantage through



innovation and, consequently, their distinctiveness in relation to their competitors (Hamel and Prahalad, 1994; Kassicieh *et al.*, 2002; Hwang and Christensen, 2008; Lui *et al.*, 2016).

Then, it is identified that organizational transformations have benefited from the agility of new technologies, providing the development of new ways of creating value for the market through an innovation process, which expands the boundaries of organizations and contributes to the generation of new business models (Zott *et al.*, 2010). Nevertheless, in addition to the possibility to innovate in the offering of products and services, companies need to be concerned with the adequacy of their business models in relation to the new technologies (Pacheco *et al.*, 2016). This is because recognizing the possibilities or threats of new technologies introduced in the market for the business model allows the company to react by realigning its products or services, processes, skills, logical forms of profit and value network relationships (Sainio, 2004), as the essence of a business model is in defining the manner by which the enterprise is organized to delivers value to customers (Teece, 2010).

However, several companies do not understand this need to adapt their existing business models to the new technologies arising (Markides and Oyon, 2010). In this sense, Gassmann *et al.* (2013) point out that competition among companies in business ecosystems will not only happen through new products, services or technologies but also through innovative business models, as business model innovation is one type of innovations that have the potential to strongly impact the market and the competitors (Zhang *et al.*, 2018) and may help to establish a differentiable competitive advantage (Teece, 2010). In this context, the disruptive business models arise at a stage in which emerging technologies and innovations become critical, requiring new organizational structures to the products and services offered, which emphasize the proposition of a unique value to the market and replace the existing business models (Hwang and Christensen, 2008; Markides, 2006; Mitchell and Coles, 2004; Moore, 2004; Osiyevskyy and Dewald, 2015; Santos *et al.*, 2009; Wu *et al.*, 2010).

Considering the relevance of the subject addressed, this article aims to conduct a review on disruptive business models, using articles from scientific journals as basis. To this end, the literature on disruptive business models was collected and revised to obtain the state of the art and construct a research agenda related to this theme, also considering, for this purpose, an analysis related to business models and new technologies, which represent the key concepts and segmentation of the main theme of this review about disruptive business models.

Despite the relevance of this topic, there is still little research that seeks to present the theoretical aspects related to disruptive business models (Foss and Saebi, 2017), considering its importance in the creation new business models or the reconfiguration of an organization's existing business model, with the objective of creating new business structures to an innovative market, in which new products, services or processes will be offered, through the redefinition of what exists in the market, aiming at proposing a unique value to the customer (Markides, 2006; Santos *et al.*, 2009; Habtay, 2012; Amshoff *et al.*, 2015). Besides that, their exact meaning and conceptual boundary, in relation to the aspects of the disruptive and innovation process to business models, are still imprecise in the literature (Wu *et al.*, 2010; Foss and Saebi, 2017).

Therefore, considering that the literature on the disruptive process of business models is emerging and addressing an important phenomenon in the market that lacks the theoretical basis to sustain it, this article contributes, through a review, to the mapping of the literature on disruptive business models, thus deepening the theoretical analyzes on this topic and reducing this lack in the literature. Although there is this conceptual lack in the literature, most of the research on disruptive business models are still theoretical and report superficially a few practical examples of disruptive business models. Thus, the research

agenda of this article contributes to clarifying the disruptive business model gap and revealing some opportunities for future researches in an empirical way.

This research is structured to present the methodological procedures used in the mapping of the review in the section below. Subsequently, in the third section, the results obtained from the analysis of literature on disruptive business models are discussed. Finally, in the fourth section of this article, the main aspects related to the state of the art are discussed, afterwards, the research agenda is presented in the final considerations.

2. Methodology

To contribute to the existing literature on disruptive business models, this research, essentially qualitative and descriptive, proposes the construction of a review on this subject under debate, presenting its state of the art and suggesting a research agenda. A review, as well as other types of review studies, is a form of bibliographic research that uses published material on a given subject as a source of data (Webster and Watson, 2002). Therefore, the scope of the review consists of the identification and analysis of articles from scientific magazines and journals, which serve as relevant sources for the investigation of the subject in question.

The articles selected for the review deal specifically with disruptive business models, both in theoretical research and in empirical research. This set of articles – that constitute the analysis units of the review – was obtained from searches conducted in databases. To carry out these searches, the following scientific databases were chosen: CAPES Journal Portal, EBSCO, SCOPUS and Web of Science. This selection is justified by the influence of these bases in the academic area, considering the number of accesses to several journals and magazines of all areas of knowledge, such as those related to business management, which focus their studies on disruptive business models.

After choosing the scientific databases, a search term was defined to obtain the set of articles to be explored. Four searches were performed, one in each database, by the term *disruptive business model* (without quotes) only in peer-reviewed titles of scientific articles with no period limitation (search filters), to obtain researches that discuss this subject both specifically and in-depth. The searches in the databases were performed at the beginning of the second semester of 2016 (July). Excluding duplicate articles in the same database, as well as excluding repeated articles from one database to another, a total of 19 articles has been obtained for analysis. No other exclusion criteria for the articles has been used.

Initially, each of the articles resulting from the searches was thoroughly verified, with the purpose of ensuring its relevance for this research, as well as confirming that the topic about disruptive business model was being explored in-depth. To do this, each one of the 19 articles was read by one of the authors, seeking to analyze the relevance of the article and how the topic of disruptive business models was approached. No article was excluded in that stage, being all articles considered important for a more detailed analysis. This is because, in a preliminary reading, it was observed that the articles contained important elements about disruptive business models, which were exposed, especially, in the articles theoretical background and the results.

With these 19 references, the articles data were organized in electronic spreadsheets with the purpose of subsequently carrying out the reviews and analyzes intended in this research. Therefore, all the elements of the selected articles (problem question, objectives, justification, theoretical reference, methods, fields of application, results, final considerations, contributions and other aspects that might be featured in the studies) were catalogued in an Excel worksheet, with the purpose of establishing a consistent review on disruptive business models, which points to the motivations of research on this topic, explain the

contributions of existing literature, describe key concepts, guide future research and present implications for managers and academics (Webster and Watson, 2002).

To do so, for the data analysis, we opted for the content analysis strategy (Bardin, 2011), through categorizations (initial, intermediate and final) in the material exploration phase; and, later, for the processing of results, we used inference and interpretation of the content analyzed. The categorization can be classified as hybrid (Bardin, 2011), as it used criteria defined prior to the collection of data for the initial categorization (in this case, the analysis of the definition of business model, the emerging technologies and innovation processes and the conceptualization of disruptive business models) and criteria defined after the collection for the intermediate and final categorizations, based on the contents of the research data. The categorizations are present in the Table I.

The initial categories are presented in the ‘Analysis’ subsections, considering the importance and the amplitude of this subjects for the review construction of disruptive

Initial	Intermediate	Final
Business model	Elements for the elaboration of the concept of business models Business models' components	Company's strategy Company's articulation Value proposition Central strategy, resources, value network and client interface Strategy, value chain, value network, cost structure, target market segment and value proposition Strategies, resources, value network and client benefits Resources, processes, profit formula and value proposition Value context (market opportunities), value creation and value capture Strategy, resources and capabilities, revenue model, value network and value proposition
Emerging technologies and innovation processes	Characteristics of disruptive technologies and innovations Influences of technologies and disruptive innovations on the market Required competencies for disruptive technologies and innovations	Simpler, more convenient and more affordable products and services Value proposition Lower cost and lower profit margin products and services Products and services with lower performance Change business structures To create new markets To cause the failure of the dominant companies of the market To generate great competitive advantage Strategic skills Skills to produce new disruptive products and services Skills to make changes in partner networks
Disruptive business model	Business model Emerging technologies and innovation processes	Forms of business organization to explore technologies and innovations properly Emerging technologies and innovation processes cause changes in business models

Table I.
Categorizations
(initial, intermediate
and final)

business model. The intermediate and final categories are found in the columns of the Tables (subsections 3.1 and 3.2) and the figure (subsection 3.3) that systematize the results in the following subsections of this article. The “processing of results inference and interpretation” phase is represented in the inferences made prominently close to it each systematization and resulting interpretive analyzes, which emerged from the analysis of the documents.

3. Analysis

In this section, the analysis of the 19 articles selected for the review is presented. The complete references of the 19 articles analyzed are present in the [Appendix](#). A first noteworthy finding, referring to the literature reviews presented in the articles analyzed, are the elucidations related to the concepts of emerging technologies and business models, which serve as a basis for the elaboration of explanations about the disruptive business models. As a result, the description of key concepts was defined based on the analysis of three initial categories: business models, emerging technologies and disruptive business models.

The analyzes of each of these initial categories are shown afterwards, based on the results verified and supported by the examination of intermediate categories. Furthermore, in the discussion of disruptive business models, inferences are made about research motivations, the contributions of current literature and the implications for managers and academics, thus constructing a review for the state of the art on this theme.

3.1 Business models

Despite the use of features of business models even when society engaged in exchange markets, this term was only explicitly highlighted in the mid-1990s with the advent of the Internet ([McGrath, 2010](#); [Teece, 2010](#); [Zott et al., 2011](#); [Fielt, 2014](#)). During this period, the process of globalization and the insertion of new information and communication technologies in the market pressured the corporate ecosystems in such a way that many organizations, to meet these demands, focused on their business models, so as to find ways to adapt their structures to this growing online marketplace ([Kinder, 2002](#)).

Later, other studies indicated the use of the concept of business models in different types of trades, sectors and companies, whether or not they were acting on the Internet ([Mahadevan, 2000](#); [Magretta, 2002](#); [Zott et al., 2010](#)). In this sense, although the expansion of business models in the management process of several companies has been observed, the explanations about this theme remain diffuse in scientific research and are being discussed under different perspectives ([Shafer et al., 2005](#)). In this perspective, [Gordijn et al. \(2005\)](#) point out that the researches related to the business models present five different phases:

- (1) the definition and classification of business models;
- (2) the complementation and proposition of the components of business models;
- (3) the detailed description of the components;
- (4) the component modeling, culminating in ontologies of business models; and
- (5) the application of these models in management and information systems environments (up to mid-2000s).

Taking these phases into account, it is possible to notice that, in the articles analyzed for this review, many authors, when describing business models, focus initially on their definition and, then, on the proposition and description of their components. Given the various approaches to presenting concepts related to business models in literature, [Morris et al. \(2005\)](#)

analyzed different definitions to present a general concept for the subject. According to them, a business model represents an integrated set of decision variables in the strategic, operational and economic areas, and it is directed to generate sustainable competitive advantage in defined markets.

Thus, considering this effort to consolidate different concepts and investigate the literature reviews pointed out in the analyzed articles, in general, it is verified that the elements most present in the definition of business models are related to the *strategy* of the companies in the *articulation of their activities and structures* aimed at *proposing value* to customers. [Table II](#) illustrates those elements and brings the references found in the review of literature of the explored articles.

After this conceptualization, the authors start with the proposition and description of the components of the business models. [Wu et al. \(2010\)](#) point out that a business model, as a conceptual tool, is constituted by a set of elements, which are related, allowing to express the business logic of a company. In light of this, several authors point to different sets of components and relations of a business model. Reviewing the collected articles, we found six different sets of business models' components, as shown in [Table III](#).

Looking at these six sets of components, there is a relative similarity in the composition of the elements of a business model and, consequently, in the functions performed. In general, these elements are proposed and articulated with a focus on following the *central strategy* of the organization, which in turn seeks the *value proposition* to customers through the definition and relationship of *resources, processes, chain and value network*, as well as the *profit and cost formula*.

Another finding in the review of the researched articles revolves around the initial theorization about business models, which characterizes them *as a way of shaping business practices in the face of an analysis of the environment* ([Simmons et al., 2013](#)). This is because

Elements	Authors
Company's strategy	Chesbrough and Rosenbloom (2002) , Sainio (2004) , Osterwalder et al. (2005) , Sabatier et al. (2012)
Company's articulation	Chesbrough and Rosenbloom (2002) , Sainio (2004) , Osterwalder et al. (2005) , Demil and Lecocq (2010) , Wu et al. (2010) , Sabatier et al. (2012) , Bashir et al. (2016)
Value proposition	Chesbrough and Rosenbloom (2002) , Magretta (2002) , Sainio (2004) , Morris et al. (2005) , Osterwalder et al. (2005) , Zott and Amit (2007) , Hwang and Christensen (2008) , Johnson et al. (2008) , Demil and Lecocq (2010) , Teece (2010) , Wu et al. (2010) , Sabatier et al. (2012) , Simmons et al. (2013) , Gassmann et al. (2014) , Bashir et al. (2016)

Table II.
Elements for the elaboration of the concept of business models

Authors	Components
Hamel (2000)	Central strategy, resources, value network and client interface
Chesbrough and Rosenbloom (2002)	Strategy, value chain, value network, cost structure, target market segment and value proposition
Sainio (2004)	Strategies, resources, value network and client benefits
Hwang and Christensen (2008)	Resources, processes, profit formula and value proposition
Phaal et al. (2011)	Value context (market opportunities), value creation and value capture
DaSilva et al. (2013)	Strategy, resources and capabilities, revenue model, value network and value proposition

Table III.
Business models' components

several authors discuss the importance of business models in assessing the *opportunities and challenges present in the environment* (such as those presented by the introduction of new technologies, for example), which allows the *structuring of the business to comply with the requirements of the environment* (Sainio, 2004; Downing, 2005; Cohen and Wimm, 2007; Franke *et al.*, 2008; Sabatier *et al.*, 2010; George and Bock, 2011). In this sense, it is possible to perceive the influence of the constant changes of the market and the demands of the clients regarding business models, which cause *continuous alterations in the organizational structures* (Sabatier *et al.*, 2010).

This final finding is related to a new phase, which was pointed out by Taran *et al.* (2016) and has been discussed and based on business models. This new phase refers to the innovation of *business models and other aspects of this innovation process*. Regarding this phase, a subject that is being discussed deals with the disruptive business models, which will be analyzed and discussed later in another subsection.

3.2 Emerging technologies and innovation processes

The organization of business structures for the generation of innovation, aiming at the launch of new products or services and the development of new processes or new organizational configurations, has become a constant concern of managers in recent years (Bueno and Balestrin, 2012). This is because, in the midst of continuous market changes, business strategies focused on innovation management are key factors for gaining competitive advantage and distinction in the business environment (Pereira *et al.*, 2015; Gavião *et al.*, 2016). At this stage, emerging technologies play an important role in business models (Bashir *et al.*, 2016), as they create business opportunities and, at the same time, challenges for companies (Sainio, 2004).

In this context, recognizing the possibilities or threats of new technologies introduced in the market for the business model allows the company to react by realigning its products or services, processes, skills, logical forms of profit and value network relationships (Sainio, 2004). This early reaction enables the company to be ready to seize opportunities and to guard itself against the imminent dangers of constant market changes. Considering this scenario, it is possible to see, throughout the literature reviews of the articles analyzed, the insertion of concepts related to disruptive technologies and innovation, which affect the existing business models of the organizations and create new business models for the exploration of these aspects.

This disruptive impact focuses on the discontinuation of the normal course of a process and on the interruption of established performance trajectories, thus causing a strong market shock and the *reconfiguration of business structures*. This is explained by the fact that disruptive technologies and innovations bring a very different *value proposition* to the market, especially when it is compared to the options previously available, in view of the result of the new products and services offered. These *perform poorly* in terms of *simplicity*; however, in relation to other indicators, they bring superior benefits for the target market segment, such as *convenience, accessibility and lower costs*. These characteristics were highlighted in literature reviews from the perspective of different authors, as shown in Table IV.

Another aspect highlighted in the literature reviews concerns the influence that disruptive technologies and innovations end up having on the business environment, as this disruptive process does not only impact the business models of the companies that propose to be disruptive but also the competitors. This is because disruptive products and services have peculiar characteristics, as discussed above, and those are targeted at a specific segment of the market (usually that of non-consumers or less attractive customers), thus

Characteristics	Authors
Simpler, more convenient and more affordable products and services	Christensen (1997), Christensen and Raynor (2003), Sainio (2004), Hwang and Christensen (2008), Lindsay and Hopkins (2010), Wu <i>et al.</i> (2010), Pereira <i>et al.</i> (2015)
Value proposition	Bower and Christensen (1995), Christensen and Overdorf (2000), Sainio (2004), Yovanof and Hazapis (2008), DaSilva <i>et al.</i> (2013), Ángel <i>et al.</i> (2014), Murty and Kumar (2015)
Lower cost and lower profit margin products and services	Christensen and Raynor (2003), Sainio (2004), Utterback and Acee (2005), Lindsay and Hopkins (2010), Habtay (2012), Pereira <i>et al.</i> (2015)
Products and services with lower performance	Utterback and Acee (2005), Yovanof and Hazapis (2008), Amshoff <i>et al.</i> (2015)
Change business structures	Bower and Christensen (1995), Habtay and Holmén (2014), Karimi and Walter (2016)

Table IV. Characteristics of disruptive technologies and innovations

creating *new markets*. This situation generates a *great competitive advantage* for the companies adopting the technologies and disruptive innovations as well as the *failure of the dominant companies* of the market. Table V illustrates this discussion pointed out by some authors in the literature reviews analyzed.

Finally, there is also a discussion about the development of new entrepreneurial skills, leading to the breakdown of established trajectories related to the development, production, management and commercialization of disruptive products and services (Day and Schoemaker, 2000). As verified in the review of the articles (Table VI), it is necessary to make *changes in partner networks*, develop new competencies related to *strategic issues* to structure the business in the face of the disruptive potential, as well as mature skills for the *production of new disruptive products and services*.

Despite the authors' emphasis on the *relevance of disruptive technologies and innovations to the market, attention must be paid to business models*. This is because disruptive technologies and innovations are only well used when they are combined

Influences	Authors
To create new markets	Sainio (2004), Hwang and Christensen (2008), Lindsay and Hopkins (2010), Amshoff <i>et al.</i> (2015)
To cause the failure of the dominant companies of the market	Sainio (2004), Christensen (1997), Hwang and Christensen (2008)
To generate great competitive advantage	Kassicieh <i>et al.</i> (2002)

Table V. Influences of technologies and disruptive innovations on the market

Skills	Authors
Strategic skills	Henderson and Clark (1990), Sainio (2004), Smith (2007), Yovanof and Hazapis (2008), Klick (2011)
Skills to produce new disruptive products and services	Sainio (2004)
Skills to make changes in partner networks	Sainio (2004)

Table VI. Required competencies for disruptive technologies and innovations

with the *restructuring of the existing business model* (Christensen and Raynor, 2003; Johnson *et al.*, 2008), thus provoking a conflict between the business model that is already established for the existing technology and the one that *should be structured* for the disruptive technology or innovation (Christensen and Raynor, 2003). In this sense, new business models are needed to comply with the *changes in business logic* (Christensen *et al.*, 2009).

Considering this contextualization, which appoints for the influence of the emerging technologies and innovation in the disruption process of business models, the analyzed articles point out the promotion of discussions about disruptive business models, which will be examined in the following subsection.

3.3 Disruptive business models

Finally, by addressing the inherent aspects of disruptive business models in this analysis, a review on this theme is presented, focusing on the presentation of key concepts, research motivations, contributions of existing literature and implications for academics and managers. Initially, it is worth examining the concepts brought by several authors to the theme, found in the review of the analyzed literature, which characterize this type of model and contextualize it in the organizational environment.

The initial studies on disruptions in the market focused on the analysis of the previously highlighted technologies and discontinuous innovations (Christensen and Bower, 1996; Christensen, 1997). These initial analyzes were extended to the concept of disruptive business models, thus linking business models to technological and innovation ruptures (Christensen and Raynor, 2003). In this sense, the disruption of business models arises at a time when emerging technologies and innovations become critical through an existing business model (Moore, 2004). This is because the commercialization of a new technology or an innovation process requires companies to understand the cognitive role of business models, especially when the opportunities presented by them do not fit into existing business models (Chesbrough and Rosenbloom, 2002).

On that subject, Hwang and Christensen (2008) highlight the fact that many companies fail to be able to unite disruptive technologies and innovations to new business models. In this way, it is understood that disruptive business models arise to replace existing business models, either by their restructuring or by the creation of new models, aiming at a unique value proposition to the market (Mitchell and Coles, 2004; Hwang and Christensen, 2008; Wu *et al.*, 2010). In this line, it should be noted that innovations in business models are not enough to discover new products or services but simply to redefine what an existing product or service is and how it is delivered to customers (Markides, 2006). In this way, in the context of the innovation of business models, it is possible to notice that the attention is focused on the customer (Magretta, 2002), in search for new ways of creating value for consumers, rather than the pure delivery of a new product, service or process (Bashir *et al.*, 2016).

In view of this context where the concept of disruptive business models is found, it is possible to notice, through the review, that one of the motivations of the researches, both theoretical and practical, is to explain some tensions caused by the innovation process of business models. One of the basis of this tension is the conflict between the maintenance of existing business models (for companies that had an established business model but want to exploit the new opportunities brought by disruptive technologies and innovations) and the creation of new business models needed to exploit disruptive technologies and innovations, a completely new business opportunity (Christensen, 1997; Amit and Zott, 2001; Christensen and Raynor, 2003; Chesbrough, 2010). In this line, another motivation found in researches on this theme is the presentation of studies that show the dominant logic of maintaining

existing business models, which seriously limit innovation potentials, ignore new technologies because they do not fit into the current business model and cause business to fail. (Christensen, 1997; Gilbert, 2005; Chesbrough, 2010). A final motivation lies in the market transformation opportunity that disruptive business models offer (Bashir *et al.*, 2016).

The construction and dissemination of research motivated by different aspects about disruptive business models end up having relevant implications for managers and academics. Bashir *et al.* (2016) argue, for example, that managers can use the innovation of business models not only as a source of value proposition to the market but also as a way to gain competitive advantage, causing improvements in the financial performance of the company. In this sense, it can be understood that the introduction of new business models by managers is an effective way to disrupt market leaders by making existing business models obsolete (Johnson *et al.*, 2008; Yovanof and Hazapis, 2008; Gassmann *et al.*, 2014; Osiyevskyy and Dewald, 2015).

Thus, managers must assume an entrepreneurial behavior and analyze the business beyond their traditional perspectives, looking for new ways of creating and capturing value through new business models (Chesbrough and Rosenbloom, 2002; Bashir *et al.*, 2016). About this, Tripsas and Gavetti (2000) warn that disruptive business models can go against managerial beliefs about success factors in the industry, resulting in strong opposition to business model innovation. Another important implication highlighted by the review is that managers are aware that it is not enough to incorporate emerging technologies and innovation processes into existing business models. In these cases, it is necessary to evaluate and re-adapt business models (Dasilva and Trkman, 2014).

The presentation of these implications revolving around disruptive business models to managers and academics becomes crucial with the purpose of contributing to the field and theory, because when it comes to designing new business models for disruptive technologies and innovations, there is generally, a lack of knowledge about these issues (Amshoff *et al.*, 2015). Therefore, the dissemination of discussions and theoretical and practical studies contribute to illustrate the different situations in the context of disruptive business models, which underpin the decisions of managers and allow different forms of reaction and innovation of business models (Chesbrough, 2007; Osiyevskyy and Dewald, 2015).

Figure 1 illustrates the review, presenting a systematization of the relationship of business models, new technologies and innovation processes with disruptive business models. In this sense, it is possible to see the *breadth of the concept* of disruptive business models, which *encompasses aspects related to the influence of emerging technologies and innovations on the organization's existing business models*.

This is because this theme focuses on *replacing business models*, either by reconfiguring existing models or by creating new models, when the *exploration of emerging technologies and innovation processes is not adequately leveraged in today's models, requiring new forms of business organization*. Thus, the *delivery of differentiated value* to consumers, *competitive advantage*, the opening of *new markets* and the *obsolescence of existing business models* are characteristics observed with disruptive business models in the business environment.

3.4 Research agenda

Through our comprehensive review of the disruptive business model literature, we developed a future research agenda, based on the reviews carried out around the research investigated and on the findings described in the analysis of results. As already described, although there is a conceptual lack in the business model disruptive literature, most of the research on disruptive business models are still theoretical and report superficially a few

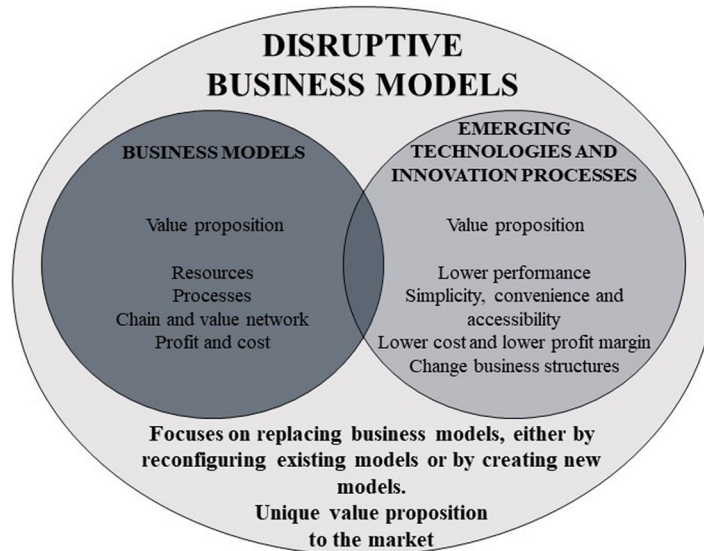


Figure 1.
Disruptive business model concept

practical examples of disruptive business models. Thus, this research agenda reveals some opportunities for future researches, predominating the possibilities of empirical research on this subject under review.

The first opportunity for future research concerns the development of empirical research in areas that have not yet been studied in relation to disruptive business models (Murty and Kumar, 2015; Pereira *et al.*, 2015). Discussions about the implementation of disruptive business models have been registered in different areas of knowledge, such as the aviation sector (Pereira *et al.*, 2015), the taxi service industry (Bashir *et al.*, 2016), the newspaper industry (Karimi and Walter, 2016) and the health sector (Hwang and Christensen, 2008; Sabatier *et al.*, 2012). Consequently, the accomplishment of studies that go deeper in the analyzes related to the organizations that are innovating in their business models and to the specific scenario of other segments allow the expansion of this theme through research applied to the field, allowing to identify similarities and differences between the cases of different sectors.

Another possible future research that has been identified is the construction of empirical researches that investigate the development of corporate behavior for the adoption of innovations of business models. In the literature, it is pointed out the importance of the figure of managers to identify the need for reconfiguration or innovation of business models (Chesbrough and Rosenbloom, 2002; Bashir *et al.*, 2016). However, in some cases there is strong resistance on the part of managers to these changes (Markides and Oyon, 2010). Therefore, research that investigates the motives that facilitate the adoption of corporate behavior for the implementation of innovations of business models can help to modify the hostile behavior of some managers in relation to changes (Karimi and Walter, 2016).

From another point of view, a possible future study is the elaboration of empirical researches featuring the social motives related to the innovation of business models. Analyzing the market and what the customer wants and needs becomes essential to develop business models that meet these requirements through a unique value proposition to the customer (Magretta, 2002; Bashir *et al.*, 2016). Therefore, understanding how companies

carry out these investigations and how they develop new business models from these findings will contribute to the expansion of the topic under discussion through studies that fill this gap (Habtay, 2012).

Finally, another future research is the development of empirical research that shows the relationship between the dominant logic of maintaining business models versus the innovation of business models in the face of disruptive technologies or innovations. As presented in this research, this subject is often discussed by several authors, who point to the consequences of not adopting new business models in the face of new technologies or another process of innovation in theory (Markides and Oyon, 2010). Therefore, research that reports in practice this relationship between maintaining existing models and adopting new models will be excellent examples to be consulted by other managers in similar situations with their companies (Christensen, 1997; Gilbert, 2005; Johnson *et al.*, 2008; Chesbrough, 2010; Markides and Oyon, 2010).

The next section will retrieve the main points of the constructed research agenda, indicating some implications for literature and practice.

4. Final considerations

Business models have traditionally been considered a management tool that enables the organization of business structures, ensuring the flow of business (Simmons *et al.*, 2013). Nevertheless, the maintenance of an original business model in the face of the commercialization of a disruptive technology or innovation causes several limitations in the conduction of business (Christensen, 1997). In this sense, the new business structures or the reconfiguration of existing structures provide new ways of managing the value attributes offered, focusing on meeting the new demands made by customers (Rodrigues *et al.*, 2013). Thus, with the constant changes in the market, it is clear that innovation in business models has become a key factor to be considered in the strategies of companies (Pereira *et al.*, 2015).

In view of this context, this article sought to review the literature on disruptive business models, with the purpose of constructing a review that portrays the state-of-the-art and presenting a research agenda related to this theme; despite its relevance, there is still little research that seeks to present the theoretical aspects related to disruptive business models (Foss and Saebi, 2017). In this sense, starting from the content analysis of the collected material, we analyzed theoretical and practical researches that pointed to discussions of concepts related to business models, new technologies and disruptive business models. Also, the research motivations, the contributions of the existing literature and the implications for managers and academics about disruptive business models were evidenced.

Thus, the review made in this article summarizes the state of the art of the research about disruptive business models, from the perspective of the conceptualization and contextualization of this theme. This fact contributes to the theory by mapping the literature on disruptive business models, deepening the theoretical analyzes of this subject and reducing the conceptual lack in the literature, considering that the literature on the disruptive process of business models is emergent that lacks the theoretical basis to sustain it.

In addition, the presentation of research opportunities, through the identification of research gaps in this theme, becomes useful for academics interested in the exploration of studies on disruptive business models. This is because, although the literature on disruptive business models is increasing in the past years, there is a relative lack of attention to the empirical researches on this subject. To present a better understanding of disruptive business model in practice, future studies should draw on these different opportunities for research, presented in the research agenda in this article.

Thus, this article contributes to clarifying the disruptive business model gap and to reveal some opportunities for future empirical researches, although it should be noted, in this regard, some limitations in the research by the depth of data collection because of the databases used.

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Year	Author	Title	Journal
2004	Sainio, L. M.	A framework for analysing the effects of new, potentially disruptive technology on a business model case – Bluetooth	<i>International Journal Electronic Business</i>
2007	Smith, G. G.	Disruptive business models and the small or rural radiology practice	<i>Journal of the American College of Radiology</i>
2008	Hwang, J. and Christensen, C. M.	Disruptive innovation in health care delivery: a framework for business model innovation	<i>Health Affairs</i>
2008	Yovanof, G. S. and Hazapis, G. N.	Disruptive technologies, services, or business models?	<i>Wireless Personal Communications</i>
2010	Markides, C. and Oyon, D.	What to do against disruptive business models (when and how to play two games at once)	<i>MIT Sloan Management Review</i>
2010	Wu, X., Ma, R. and Shi, Y.	How do latecomer firms capture value from disruptive technologies? A secondary business-model innovation perspective	<i>IEEE Transactions on Engineering Management</i>
2011	Klick, A.	Managing through disruption: banks confronted by disruptive forces are reshaping operations to better serve their customers	<i>Financial Executive</i>
2012	Habtay, S. R.	A firm-level analysis on the relative difference between technology-driven and market-driven disruptive business model innovations	<i>Creativity and Innovation Management</i>
2012	Sabatier, V., Craig-Kennard, A. and Mangematin, V.	When technological discontinuities and disruptive business models challenge dominant industry logics: insights from the drugs industry	<i>Technological Forecasting and Social Change</i>
2013	Simmons, G., Palmer, M. and Truong, Y.	Inscribing value on business model innovations: insights from industrial projects commercializing disruptive digital innovations	<i>Industrial Marketing Management</i>
2014	Ángel, M. A. V. D., Rodríguez, M. M. and Tirado, Q. L.	Disruptive models of business of two latin companies that emerge from the network of value of bovine meat	<i>Custos e Agronegócio on-line</i>
2014	DaSilva, C.M. and Trkman, P.	Business model: what it is and what it is not	<i>Long Range Planning</i>
2014	Habtay, S. R. and Holmén, M.	Incumbents responses to disruptive business model innovation: the moderating role of technology vs. market-driven innovation	<i>International Journal of Entrepreneurship and Innovation Management</i>
2015	Amshoff, B., Dülme, C., Echterfeld, J. and Gausemeier, J.	Business model patterns for disruptive technologies	<i>International Journal of Innovation Management</i>

Table AI.
Complete references
of the 19 articles
analyzed

(continued)

Year	Author	Title	Journal
2015	Murty, D. N. and Kumar, B. V.	Internet of things (IoT): is IoT a disruptive technology or a disruptive business model?	<i>Indian Journal of Marketing</i>
2015	Osiyevskyy, O. and Dewald, J.	Explorative versus exploitative business model change: the cognitive antecedents of firm-level responses to disruptive innovation	<i>Strategic Entrepreneurship Journal</i>
2015	Pereira, S. A., Imbrizi, F. G., Freitas, A. D. G. and Alvarenga, M. A.	Business model as an inducer of disruptive innovations: the case of Gol Airlines	<i>International Journal of Innovation</i>
2016	Bashir, M., Yousaf, A. and Verma, R.	Disruptive business model innovation: how a tech firm is changing the traditional taxi service industry	<i>Indian Journal of Marketing</i>
2016	Karimi, J. and Walter, Z.	Corporate entrepreneurship, disruptive business model innovation adoption, and its performance: the case of the newspaper industry	<i>Long Range Planning</i>

Table AI.

Corresponding author

Giovana Sordi Schiavi can be contacted at: giovanaschiavi@hotmail.com

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