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Disruptive Innovation: A Systematic Literature Review

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Master's in Computer Science and Business Management

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TECNOLOGIAS
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Department of Information Science and Technology

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Resumo

A inovação disruptiva é crucial para alcançar o sucesso empresarial. No entanto, muitas vezes os dados são gerados após a inovação ter ocorrido na empresa, sendo difícil avaliar como as empresas podem implementá-la. A inovação disruptiva é amplamente implementada, sendo frequentemente um conceito mal compreendido. Esta revisão sistemática de literatura visa identificar as melhores práticas para implementar a inovação disruptiva e as suas barreiras. Para isso, foram selecionados e analisados 50 artigos publicados entre 2000 e o momento.

Este estudo indica que a inovação disruptiva implica um produto/serviço inovador que impactará a empresa e o mercado, alterando a atual disposição do mercado e as exigências de competitividade; a melhor prática para implementar a inovação disruptiva nas organizações é introduzir novos modelos de negócios, atender às mudanças permanentes no mercado e aumentar a competitividade do setor; uma das barreiras mais comuns à implementação da inovação nas empresas são as empresas estabelecidas, uma vez que a inovação disruptiva tem um impacto significativo sobre elas, alterando o mercado. Este estudo pode servir como o início da investigação, contribuindo para uma análise aprofundada do conceito de inovação disruptiva, sobretudo ao nível das boas práticas e barreiras à sua implementação nas empresas, que acabam por conduzir ao seu sucesso ou insucesso na atual era digital.

Palavras-chave: Inovação disruptiva; Melhores práticas; Barreiras; Revisão sistemática de literatura.

Abstract

Disruptive innovation is crucial to achieving business success. However, data is often generated after innovation has taken place within the company, being difficult to assess how companies can implement it. Disruptive innovation is widely implemented, being frequently a misunderstood concept. This systematic literature review aims to identify the best practices to implement disruptive innovation, and its barriers. To achieve this, 50 articles published between 2000 and now were selected and analyzed.

This study indicates that disruptive innovation implies an innovative product/service that will impact the organization and the market, changing the current market disposition and competitiveness requirements; the best practice to implement disruptive innovation within organizations is to introduce new business models, to address permanent shifts in the market and increase the industry's competitiveness; one of the most common barriers to the implementation of innovation in organizations is established firms, since disruptive innovation has a significant impact on them, changing the market. This study can be a starting point for research, contributing to an in-depth analysis of the concept of disruptive innovation, especially in terms of the best practices and barriers to its implementation within organizations, ultimately leading to their success or failure in the current digital and innovative era.

Keywords: Disruptive innovation; Best practices; Barriers; Systematic literature review.

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1. Introduction

One technological innovation that has been crucial to achieve business success is disruptive innovation, which represents a different, yet effective, way of evolving new markets, in addition to providing a new service/product (O'Reilly III & Tushman, 2004). This specific type of innovation defies the industry, leading companies by offering simpler, good-quality alternatives to a group of customers (Kitchin, 2014). In fact, any company's future success depends on its capability to innovate, considering that without innovation failure is almost inevitable mainly because it makes it more difficult for the company to keep up with its market competitors (Guttentag, 2015).

The state of the art of disruptive innovation is a topic of significant interest and debate in both academia and industry. Disruptive innovation refers to the introduction of a new product/service/technology that establishes a new market and inevitably displaces established market-leading companies, products, and partnerships (AISDL, 2022). It is distinguished by its capacity to create a new market by applying an alternative set of values, which eventually overtakes an existing market (Finch et al., 2023). Disruptive innovations can be technology-enabled or driven and typically have a limited performance initially but gradually improve over time (Montgomery et al., 2018).

One area of focus in the study of disruptive innovation is the role of platform-based ecosystems. Traditional disruptive innovation theory has primarily focused on the characteristics and value of end users, neglecting the broader interdependencies in the ecosystem of complement providers (Ozalp et al., 2018). However, recent research has extended the theory to the context of platform-based ecosystems, emphasizing the importance of disaffection on the part of technology complements as the main reason for disruption (Ozalp et al., 2018). Intergenerational platform-technology transitions have been investigated as instances of probably disruptive innovation at the ecosystem level (Ozalp et al., 2018).

The healthcare industry has also been a subject of study about disruptive innovation. Many hospital systems face challenges with disruptive innovation when introducing new technology, as it can create a new market and potentially overtake existing ones (Finch et al., 2023). Nevertheless, it is crucial to note that not all technological advancements in healthcare can be

considered disruptive innovations, as disruptive innovation involves more than just technological advancements (Finch et al., 2023).

Government policies, particularly those related to green development, can also influence the behavior of firms in terms of disruptive innovation. Local governments' green development policies have been found to affect firms' disruptive innovation behavior, particularly in the manufacturing sector (Xu et al., 2022). Start-ups are more prone to engage in disruptive innovation after the declaration of a green or sustainable development policy by the local government (Xu et al., 2022).

Disruptive innovation has also been studied in the context of retailing and internationalization. The prevalence of disruptive innovation practices, enabled by digital technologies, has significantly altered the way small and medium-sized enterprises (SMEs) innovate and compete in the retail industry (Liu & Si, 2022). Disruptive innovation offers a crucial means for latecomers to catch up to established leaders and expand their market presence internationally (Liu & Si, 2022).

In terms of research methodology, there have been efforts to explain the concept of disruptive innovation and address widespread misinterpretations (Guo et al., 2023). Bibliometric analyses have been conducted to map out the knowledge structure and evolution of disruptive innovation research, providing insights into the current state of the field and influential trends (Shang et al., 2019).

Overall, the state of the art of disruptive innovation is a complex and evolving field of study. It encompasses various industries and contexts, and researchers continue to explore its theoretical foundations, practical implications, and potential for societal impact.

Nevertheless, one of the greatest concerns regarding disruptive innovation is how can companies implement it since data is often generated after innovation has already taken its place within the company. In fact, there are some common misunderstandings about disruptive innovation, with some of the major research problems being the following: 1) to clarify this concept and prevent eventual misinterpretations; 2) to find out factors in the business that may be stopping companies from creating disruptive innovation; and 3) to identify possible changes that would help companies to implement disruptive innovation.

This study is divided into different sections: one about the theme's research process (Research Methodology); another two to clarify the concept of disruptive innovation and to explain its implementation in business companies (Results and Discussion); and a final one that concludes on the deep understanding of the techniques and factors within a company that will eventually enable disruptive innovation (Conclusion).

2. Research Methodology

The present research aims to conduct an exploratory study based on the existing literature about disruptive innovation, aiming to detect the best practices (Saunders et al., 2009). The protocol that was followed in this systematic literature review was the one suggested by Kitchenham and Charters (2007), which comprehends the following steps:

- 1) Planning the literature review
 - a. Identification of the need for the literature review
 - b. Identification of the research issues
 - c. Developing the research protocol
- 2) Conducting the literature review
 - a. Identification of the studies
 - b. Selection of studies
 - c. Conducting a quality assessment
 - d. Data extraction and synthesis
- 3) Conclusions of the literature review (the present report).

Moreover, the strategy described above will be used to summarize the evidence about the use of disruptive innovation strategies in business, with the main goal of answering this study's research question. Table 1 presents an adaptation of the methodology suggested by Kitchenham and Charters (2007), which was followed during this research.

Table 1 – Methodology followed in this study (adapted from Kitchenham & Charters, 2007)

Planning	
Identification of the need for a review	To bring awareness towards the use of disruptive innovation when it comes to business transformation

Specification of the research question(s)	How important is disruptive innovation to a company? Is disruptive innovation a must in business?
Development of a review protocol	Search strings, datasets, and inclusion/exclusion criteria
Conducting	
Identification of the research	Disruptive innovation strategies in business
Selection of primary studies	Disruption innovation strategies in business – 50 filtered articles
Study quality assessment	Verify if all the questions were answered, based on the filtered articles
Data extraction and monitoring	Select all data from the articles and apply it accordingly
Data synthesis	Verify if all data is accurate and not redundant
Reporting	
Specifying dissemination mechanisms	Divide data into research topics
Formatting the main report	Prepare data to be presented

2.1 Research Questions

With this research, it is intended to gather meaningful information in the literature about disruptive innovation. Therefore, the research questions are the following:

RQ1: What exactly is the definition of disruptive innovation?

RQ2: What is stated in the literature so far regarding the best practices and techniques that allow to successfully implement and manage disruptive innovation?

RQ3: What factors could be preventing companies from implementing disruptive innovation successfully?

2.2 Research Process

The research process begins with the literature research, using some search strings in a set of a chosen database, aiming to get the maximum number of studies that address the proposed research questions. The chosen database that will serve as the source of information is Scopus. The selected keywords for this research were “disruptive innovation”; the used filters in our search, and the respective criteria, are listed in Table 2; the inclusion and exclusion criteria used in this research are listed in Table 3; and the quality criteria is to accept only Q1 and Q2 journals, as well as A/B conferences.

Table 2 – Filters used in the search and respective criteria

Filter	Criteria
No Filter (F0)	Original search of selected keywords without any filter

Filter	Criteria
Title, abstract, and keywords (F1)	Search for selected keywords within the title, abstract, and keywords
Scientific Area (F2)	A search of selected keywords into Scientific Areas (Business Management OR Computer Science)
English (F3)	A search of selected keywords in articles written in English

Table 3 – Inclusion and exclusion criteria used in this research

Inclusion Criteria	Exclusion Criteria
Papers written from 2000 until now (IC1)	White papers
More than 100 citations (IC2)	Less than 100 citations
Q1 and Q2 quality journal (IC3)	Q3 or Q4 quality journal

2.2.1 Study selection

This section aims to review the protocol that was previously defined and to perform an analysis of the extracted studies. Thus, after applying the filters to the database (Scopus) the obtained results were those listed in Table 4.

Table 4 – Results obtained after applying the filters to the database (Scopus)

Database	Keywords	F0	F1	F2	F3	IC1	IC2	IC3
Scopus	“Disruptive innovation”	14220	2501	935	927	826	55	50

To avoid redundancy of information, the research was only based on one database. After applying all the filters to the database (Scopus), 50 articles were extracted. These results already reflect the research’s filters, as well as the verification of the inclusion and exclusion criteria, meaning that the 50 articles were written between 2000 and now, have more than 100 citations, and belong to a Q1 or Q2 quality journal. After reading all articles, it was concluded that they all fit this research, being directly related to the research questions previously presented, thus adding meaningful insight into the present study. Table 5 summarizes the data extraction and synthesis processes, namely by referring to the selected articles after concluding the research in the database (Scopus).

Table 5 – Summary of the data extraction and synthesis processes

No.	Author(s)	Year	Quality Journal	Journal Title	Citations
1	O’Reilly III & Tushman	2004	Q1	<i>Harvard Business Review</i>	1385
2	Johnson, Christensen & Kagermann	2008	Q1	<i>Harvard Business Review</i>	1377

No.	Author(s)	Year	Quality Journal	Journal Title	Citations
3	Kitchin	2014	Q2	<i>Big Data and Society</i>	1121
4	Guttentag	2015	Q2	<i>Current Issues in Tourism</i>	1021
5	Markides	2006	Q1	<i>Journal of Product Innovation Management</i>	684
6	Kivimaa & Kern	2016	Q1	<i>Research Policy</i>	483
7	Christensen, Bohmer & Kenagy	2000	Q1	<i>Harvard Business Review</i>	450
8	Lee & Shin	2018	Q1	<i>Business Horizons</i>	412
9	Christensen, Baumann, Ruggles & Sadtler	2006	Q1	<i>Harvard Business Review</i>	397
10	Guttentag, Smith, Potwarka & Havitz	2018	Q1	<i>Journal of Travel Research</i>	374
11	Karimi & Walter	2015	Q1	<i>Journal of Management Information Systems</i>	305
12	Guttentag & Smith	2017	Q1	<i>International Journal of Hospitality Management</i>	295
13	Yu & Hang	2010	Q1	<i>International Journal of Management Reviews</i>	280
14	Assink	2006	Q2	<i>European Journal of Innovation Management</i>	275
15	So, Oh & Min	2018	Q1	<i>Tourism Management</i>	253
16	Pagani	2013	Q1	<i>MIS Quarterly: Management Information Systems</i>	239
17	Govindarajan & Kopalle	2006	Q1	<i>Journal of Product Innovation Management</i>	225
18	Ansari, Garud & Kumaraswamy	2016	Q1	<i>Strategic Management Journal</i>	213
19	Christensen, McDonald, Altman & Palmer	2018	Q1	<i>Journal of Management Studies</i>	212
20	Henderson	2006	Q1	<i>Journal of Product Innovation Management</i>	212
21	Bergek, Berggren, Magnusson & Hobday	2013	Q1	<i>Research Policy</i>	201
22	Slater & Mohr	2006	Q1	<i>Journal of Product Innovation Management</i>	197
23	Schmidt & Druehl	2008	Q1	<i>Journal of Product Innovation Management</i>	191
24	Renko, Carsrud & Brännback	2009	Q1	<i>Journal of Small Business Management</i>	183
25	Frizzo-Barker, Chow-White, Adams, Mentanko, Ha & Green	2020	Q1	<i>International Journal of Information Management</i>	180
26	Christensen, Johnson & Rigby	2002	Q1	<i>MIT Sloan Management Review</i>	180
27	Riffai, Grant & Edgar	2012	Q1	<i>International Journal of Information Management</i>	176
28	Osiyevskyy & Dewald	2015	Q1	<i>Strategic Entrepreneurship Journal</i>	165
29	Anagnostopoulos	2018	Q2	<i>Journal of Economics and Business</i>	153

No.	Author(s)	Year	Quality Journal	Journal Title	Citations
30	Voelpel, Leibold & Tekie	2004	Q2	<i>Journal of Change Management</i>	149
31	Yeh, Talwar, Wu, Himayat & Johnsson	2011	Q1	<i>IEEE Wireless Communications</i>	148
32	King & Baatartogtokh	2015	Q1	<i>MIT Sloan Management Review</i>	145
33	Rao	2013	Q2	<i>Technology in Society</i>	144
34	Akamavi, Mohamed, Pellmann & Xu	2015	Q1	<i>Tourism Management</i>	139
35	Sultan	2015	Q1	<i>International Journal of Information Management</i>	133
36	Govindarajan, Kopalle & Danneels	2011	Q1	<i>Journal of Product Innovation Management</i>	129
37	Agarwal, Grottke, Mishra & Brem	2017	Q2	<i>IEEE Transactions on Engineering Management</i>	126
38	Alles	2015	Q1	<i>Accounting Horizons</i>	123
39	Nagy, Schuessler & Dubinsky	2016	Q1	<i>Industrial Marketing Management</i>	119
40	Dogru, Mody & Suess	2019	Q1	<i>Tourism Management</i>	117
41	Paap & Katz	2004	Q2	<i>Research Technology Management</i>	117
42	Wan, Williamson & Yin	2015	Q1	<i>Technovation</i>	116
43	Ray & Kanta Ray	2011	Q1	<i>Technovation</i>	115
44	Lettice & Parekh	2010	Q2	<i>International Journal of Technology Management</i>	115
45	Sedlmeir, Buhl, Fridgen & Keller	2020	Q1	<i>Business and Information Systems Engineering</i>	114
46	Dewald & Bowen	2010	Q1	<i>Entrepreneurship: Theory and Practice</i>	111
47	Cozzolino, Verona & Rothaermel	2018	Q1	<i>Journal of Management Studies</i>	109
48	Sultan	2013	Q1	<i>International Journal of Information Management</i>	109
49	Blal, Singal & Templin	2018	Q1	<i>International Journal of Hospitality Management</i>	108
50	Wainstein & Bumpus	2016	Q1	<i>Journal of Cleaner Production</i>	104

3. Results

The selected articles were thoroughly analyzed to identify common trends. Overall, the articles were published between 2000 and 2020, even though there are some gaps in some specific years (such as 2001, 2003, 2005, and 2007, with 0 articles selected for this study) (Figure 1). The selected articles were mostly published in 2015 (8), 2018 (7), 2006 (6), 2013 (4), and 2016 (4). However, by assessing Figure 1 it is possible to argue that almost every year is represented by at least one article, thus representing a wider scope under analysis, more precisely a period of 20 years. Hence, this significant time representation of the selected articles helps to establish a sense

of evolution in the issue under investigation, thus providing an evolutionary perspective about disruptive innovation in general, as well as about the best practices and techniques for its implementation in organizations, which have changed throughout the years.

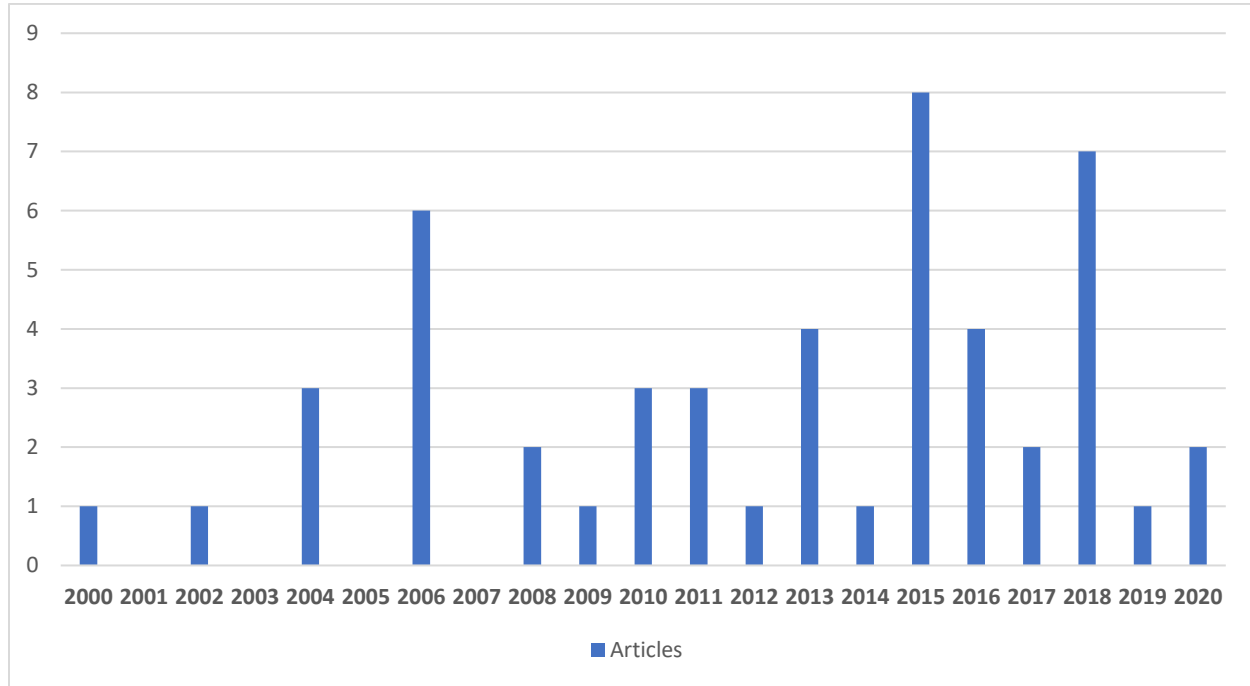


Figure 1 – Number of articles published per year

Moreover, the articles were published in 32 different sources (scientific journals), being mostly included in journals that focus on specific topics, such as Management, Innovation, Economics, Business, and Technology (Table 6).

Table 6 – List of sources

Source Title	N. of articles	Source Title	N. of articles
Journal of Product Innovation Management	6	International Journal of Management Reviews	1
Harvard Business Review	4	Strategic Management Journal	1
International Journal of Information Management	4	European Journal of Innovation Management	1
Tourism Management	3	Journal of Cleaner Production	1
Research Policy	2	IEEE Wireless Communications	1
International Journal of Hospitality Management	2	MIS Quarterly: Management Information Systems	1
Journal of Management Studies	2	IEEE Transactions on Engineering Management	1
MIT Sloan Management Review	2	Journal of Small Business Management	1
Technovation	2	Strategic Entrepreneurship Journal	1

Source Title	N. of articles	Source Title	N. of articles
Big Data and Society	1	Journal of Economics and Business	1
Current Issues in Tourism	1	Journal of Change Management	1
Business Horizons	1	Industrial Marketing Management	1
Journal of Travel Research	1	Research Technology Management	1
Journal of Management Information Systems	1	International Journal of Technology Management	1
Accounting Horizons	1	Business and Information Systems Engineering	1
Technology in Society	1	Entrepreneurship: Theory and Practice	1
Total		50	

Figure 2 demonstrates the distribution of the selected articles based on the subject being approached. Even though most papers focus on business and management, there is also a considerable amount of research done on subjects such as technology, tourism, innovation, and information. Still, some articles are based on different subjects, namely policy, entrepreneurship, engineering, marketing, and production.

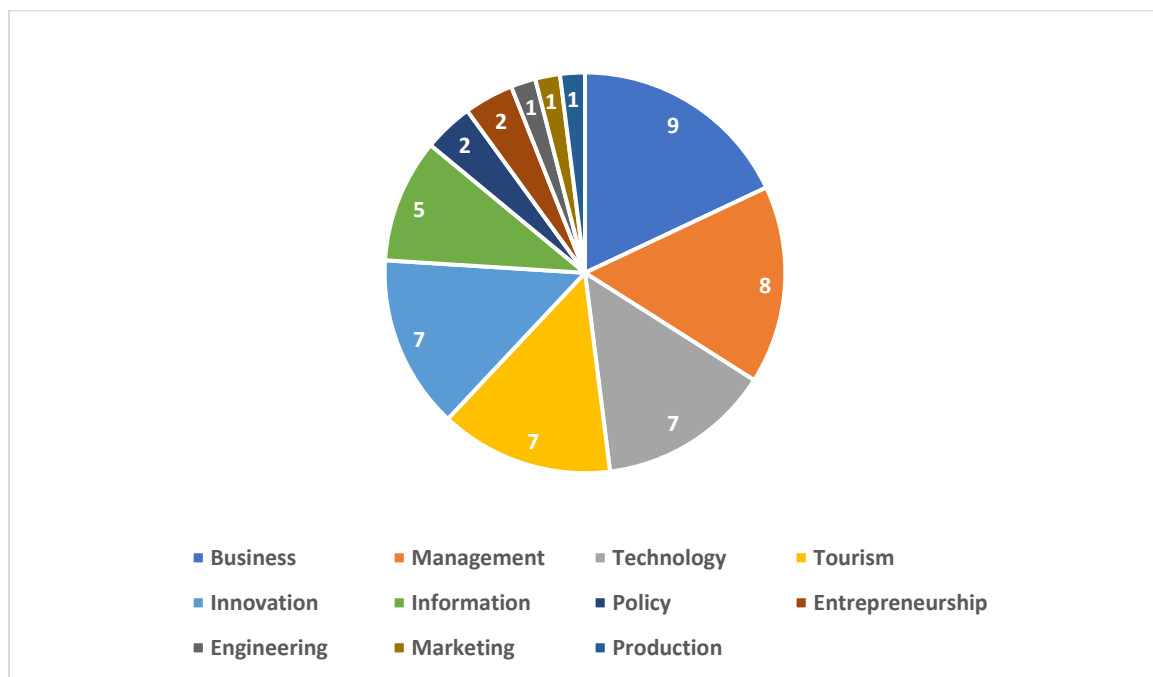


Figure 2 – Articles per subject

The analyzed articles include studies that were conducted in 14 different countries, thus proving a large diversity of contexts in terms of disruptive innovation. However, most of the studies were done in the United States (26) and the United Kingdom (6), as it is corroborated by Table 7.

Table 7 – Articles per country

Country	N. of articles
United States	26
Ireland	1
Canada	2
United Kingdom	6
Canada	2
Singapore	1
Netherlands	1
Italy	2
Sweden	1
Oman	2
India	2
Germany	2
China	1
Australia	1

After concluding a first reading of the articles, the used methodology was identified. Overall, there is a marked preference for conducting research/surveys (20) and reviews (19), even though some articles used different methodologies, such as analytical frameworks (5), conceptual models (4), and case studies (2) (Table 8).

Table 8 – Articles per methodology

Methodology	N. of articles
Review	19
Conceptual model	4
Research/survey	20
Analytical framework	5
Case study	2

In turn, when assessing the articles' focus industry-wise, it was found that they include several different industries (11 in total), proving that the concept of disruptive innovation is extremely widespread, and being applied in multiple areas, sectors, and industries. Among the 50 analyzed articles, 16 focus on the business industry, 11 on the management industry, 7 on the tourism industry, and 5 on the financial industry. Still, other industries are also emphasized in the articles, namely the commerce, computational sciences, policy, health, marketing, biotechnology, and technology industries (Table 9).

Table 9 – Articles per industry

Industry	N. of articles
Commerce	2
Business	16
Computational sciences	1
Tourism	7
Policy	1
Health	2
Financial	5
Management	11
Marketing	1
Biotechnology	1
Technology	3

After analyzing the selected articles, they were distributed into three different categories, even though most of them are included in more than one topic (Table 10). The selected categories are: 1) Definition of disruptive innovation; 2) Best practices and techniques of disruptive innovation; and 3) Barriers to the implementation of disruptive innovation. These categories were selected because they all refer to this study's research questions, which ought to be answered after analyzing all fifty articles.

Table 10 – Categorization of the selected articles

Category	Articles
Definition of disruptive innovation	O'Reilly III & Tushman (2004); Kitchin (2014); Guttentag (2015); Markides (2006); Kivimaa & Kern (2016); Christensen, Bohmer & Kenagy (2000); Lee & Shin (2018); Christensen, Baumann, Ruggles & Sadtler (2006); Guttentag, Smith, Potwarka & Havitz (2018); Karimi & Walter (2015); Guttentag & Smith (2017); Yu & Hang (2010); Assink (2006); Govindarajan & Kopalle (2006); Ansari, Garud & Kumaraswamy (2016); Christensen, McDonald, Altman & Palmer (2018); Henderson (2006); Bergek, Berggren, Magnusson & Hobday (2013); Slater & Mohr (2006); Schmidt & Druehl (2008); Osiyevskyy & Dewald (2015); Anagnostopoulos (2018); King & Baatartogtokh (2015); Rao (2013); Sultan (2015); Govindarajan, Kopalle & Danneels (2011); Agarwal, Grottke, Mishra & Brem (2017); Nagy, Schuessler & Dubinsky (2016); Dogru, Mody & Suess (2019); Wan, Williamson & Yin (2015); Ray & Kanta Ray (2011); Lettice & Parekh (2010); Dewald & Bowen (2010); Cozzolino, Verona & Rothaermel (2018); Sultan (2013); Blal, Singal & Templin (2018); Wainstein & Bumpus (2016)
Best practices and techniques of disruptive innovation	O'Reilly III & Tushman (2004); Johnson, Christensen & Kagermann (2008); Markides (2006); Kivimaa & Kern (2016); Christensen, Bohmer & Kenagy (2000); Lee & Shin (2018); Christensen, Baumann, Ruggles & Sadtler (2006); Guttentag, Smith, Potwarka & Havitz (2018); Karimi & Walter (2015); Guttentag & Smith (2017); Yu & Hang (2010); So, Oh & Min (2018); Pagani (2013); Govindarajan & Kopalle (2006); Ansari, Garud & Kumaraswamy (2016); Christensen, McDonald, Altman & Palmer (2018); Henderson (2006); Slater & Mohr (2006); Schmidt & Druehl (2008); Renko, Carsrud & Brännback (2009); Frizzo-Barker, Chow-White,

Category	Articles
	Adams, Mentanko, Ha & Green (2020); Christensen, Johnson & Rigby (2002); Riffai, Grant & Edgar (2012); Osiyevskyy & Dewald (2015); Anagnostopoulos (2018); Voelpel, Leibold & Tekie (2004); Yeh, Talwar, Wu, Himayat & Johnsson (2011); King & Baatartogtokh (2015); Rao (2013); Akamavi, Mohamed, Pellmann & Xu (2015); Sultan (2015); Govindarajan, Kopalle & Danneels (2011); Nagy, Schuessler & Dubinsky (2016); Paap & Katz (2004); Wan, Williamson & Yin (2015); Ray & Kanta Ray (2011); Lettice & Parekh (2010); Sedlmeir, Buhl, Fridgen & Keller (2020); Dewald & Bowen (2010); Cozzolino, Verona & Rothaermel (2018); Sultan (2013); Blal, Singal & Templin (2018); Wainstein & Bumpus (2016)
Barriers to the implementation of disruptive innovation	Johnson, Christensen & Kagermann (2008); Guttentag (2015); Markides (2006); Kivimaa & Kern (2016); Christensen, Bohmer & Kenagy (2000); Lee & Shin (2018); Yu & Hang (2010); Assink (2006); So, Oh & Min (2018); Govindarajan & Kopalle (2006); Ansari, Garud & Kumaraswamy (2016); Henderson (2006); Bergek, Berggren, Magnusson & Hobday (2013); Frizzo-Barker, Chow-White, Adams, Mentanko, Ha & Green (2020); Riffai, Grant & Edgar (2012); Osiyevskyy & Dewald (2015); Sultan (2015); Agarwal, Grottke, Mishra & Brem (2017); Alles (2015); Paap & Katz (2004); Ray & Kanta Ray (2011); Lettice & Parekh (2010); Dewald & Bowen (2010); Cozzolino, Verona & Rothaermel (2018)

3.1 Definition of disruptive innovation

The selected articles presented eighteen different definitions for the concept of disruptive innovation (Table 11). A consensual perspective that is presented in fifteen studies proposes that disruptive innovation describes how businesses can fail by ignoring the advancement of a disruptive product that misses conventionally preferred features (such as performance) yet provides alternative advantages; it alters the current value proposition, attracting new consumers, and potentially launching a new market; at first, it is thought to be inferior to the established, prevailing product or service providers (Agarwal et al., 2017; Blal et al., 2018; Christensen et al., 2018; Dewald & Bowen, 2010; Dogru et al., 2019; Govindarajan et al., 2011; Guttentag, 2015; Guttentag & Smith, 2017; Guttentag et al., 2018; Karimi & Walter, 2015; Lettice & Parekh, 2010; Ray & Kanta Ray, 2011; Schmidt & Druehl, 2008; Wainstein & Bumpus, 2016; Wan et al., 2015).

Still, the remaining articles present other definitions of the concept, focusing on distinct aspects, either related to its industry or to the elements that it involves. For instance, some authors define disruptive innovation based on the distinction between low-end disruptions (cheaper and inferior (lower quality) products/services that don't increase performance) and new market disruptions (offer improved performance on attributes that are not a priority to current customers, thus attracting new or different customers) (Henderson, 2006; Sultan, 2013, 2015). Others consider

disruptive innovation as comprising more affordable, simpler, and more practical products/services that at first satisfy the requirements of less-demanding customers (Christensen et al., 2000; Rao, 2013); as a means to expand existing markets and create new ones, in addition to providing new functionalities, thus potentially disrupting current market connections (Govindarajan & Kopalle, 2006; Yu & Hang, 2010); and as innovative goods, services, or business methods that are less lucrative for market leaders (Ansari et al., 2016; Osiyevskyy & Dewald, 2015).

On a more individualized analysis, several other articles present a unique definition of disruptive innovation, addressing different specificities and characteristics of the concept. In fact, for O'Reilly III and Tushman (2004), disruptive innovation is associated with revolutionary progress that can significantly change an industry's competitiveness, while for Kitchin (2014) the focus of disruptive innovation relies on Big Data, which offers a fresh perspective on science. According to Markides (2006), the concept comprehends (1) business model innovation, related to finding a new business model within an existing company, and (2) radical innovation, associated with new products and value propositions, which ultimately disrupt the current customer's habits and conduct.

When it comes to the institutional environment, disruptive innovation can diminish the value of existing procedures, processes and technologies and generate transitions that encourage incumbents to participate actively in the transformation process (Kivimaa & Kern, 2016). In turn, in the financial industry, disruptive innovation can be associated with financial technology (Fintech), which offers specialized services, solutions based on data, an innovative atmosphere, and an agile organization (Lee & Shin, 2018). Considering the social context, especially societal changes, disruptive innovation can either be catalytic, focusing on social transformation on a national scale, outperforming the status quo by offering acceptable solutions to social issues that have not been properly handled (Christensen et al., 2006), or a well implemented revolutionary new idea, product, technique, or concept that profoundly alters the demands and requirements of an existing industry or market, displaces its key players, and establishes completely new commercial practices or marketplaces with substantial societal impact (Assink, 2006).

Based on some authors, disruptive innovation can also be defined at distinct levels. For instance, disruptive innovation can improve industry by presenting a distinct set of performance attributes,

often redefining the level, rate, and direction of performance in that same industry (Bergek et al., 2013); it can also redefine the marketplace expectations, namely by presenting radical innovation by revolutionary functionality and distinct technical standards (Nagy et al., 2016); and it can eventually challenge established sector-leading companies, especially when smaller businesses with little resources implement a disruptive innovation process (Anagnostopoulos, 2018).

For Slater and Mohr (2006), disruptive innovation is linked to technological innovations, producing new products that are based on new technological foundations, ultimately destroying the current technology. In turn, for Cozzolino et al. (2018) disruptive innovation both refers to technologies, that alter a predetermined course or performance improvement, or redefine performance, and to business models, which alter an existing framework or reinterpret what value generation and capture mean. Finally, from a more theoretical perspective, related to the disruptive innovation theory, King and Baatartogtokh (2015) describe its four main elements as being the following: 1) incumbents are developing along a path of sustained innovation; 2) they exceed client expectations; 3) they are skilled to react to disruptive threats; and 4) incumbents eventually fail due to the disruption.

Table 11 – Definitions of the concept of disruptive innovation based on the selected articles

Authors	Definition of disruptive innovation
O'Reilly III & Tushman (2004)	Revolutionary progress that can significantly change an industry's competitiveness.
Kitchin (2014)	Big Data , which offers a fresh perspective on science.
Agarwal et al. (2017); Blal et al. (2018); Christensen et al. (2018); Dewald & Bowen (2010); Dogru et al. (2019); Govindarajan et al. (2011); Guttentag (2015); Guttentag et al. (2018); Guttentag & Smith (2017); Karimi & Walter (2015); Lettice & Parekh (2010); Ray & Kanta Ray (2011); Schmidt & Druehl (2008); Wainstein & Bumpus (2016); Wan et al. (2015)	Describes how businesses may fail by ignoring the advancement of a disruptive product that misses conventionally preferred features (such as performance) yet provides different advantages; it alters the current value proposition, attracting new consumers, and potentially launching a new market; at first, it is thought to be inferior to the established, prevailing product or service providers.
Markides (2006)	Business model innovation : finding a new business model within an existing company; Radical innovation : new products and value propositions that disrupt current client behavior and conduct in significant ways.
Kivimaa & Kern (2016)	Disruptive policies can impact the institutional context, both reducing the value of current practices and technologies and creating transitions that incentivize incumbents to participate actively in the transformation process.
Christensen et al. (2000); Rao (2013)	More affordable, simpler, and more practical products/services that at first satisfy the requirements of less-demanding

Authors	Definition of disruptive innovation
	customers.
Lee & Shin (2018)	Financial technology (Fintech) , which offers specialized, tailored services, solutions based on data, an innovative atmosphere, and an agile organization.
Christensen et al. (2006)	Catalytic innovations: mainly focused on social transformation, frequently on a national scale; they can outperform the status quo by offering acceptable solutions to social issues that have not been properly handled.
Govindarajan & Kopalle (2006); Yu & Hang (2010)	Expands existing markets, creates new ones, and offers new functionalities, which can disrupt current market connections.
Assink (2006)	A well implemented revolutionary idea, product, technique, or concept that profoundly alters the demands and requirements of a current industry or market, displaces its key players and establishes completely new commercial practices or marketplaces with substantial societal impact.
Ansari et al. (2016); Osiyevskyy & Dewald (2015)	Innovative goods, services, or business methods that are less lucrative for market leaders.
Henderson (2006); Sultan (2013); Sultan (2015)	Low-end disruptions: cheaper and inferior (lower quality) products/services that don't increase performance; New market disruptions: offer improved performance on attributes that are not a priority to current customers.
Bergek et al. (2013)	It includes a distinct set of performance characteristics and tends to change the industry's definitions of performance improvement levels, rates, and directions.
Slater & Mohr (2006)	Technological innovations: produce new products based on fresh technological foundations, ultimately destroying the previous technology.
Anagnostopoulos (2018)	A method by which smaller enterprises with little resources can successfully take on established dominant companies.
King & Baatartogtokh (2015)	4 key elements of disruptive innovation theory: 1) Market leaders are developing along a path of sustained innovation. 2) They exceed client expectations. 3) They are skilled enough to react to disruptive threats. 4) Incumbents eventually fail due to the disruption.
Nagy et al. (2016)	A radical innovation that redefines market expectations with revolutionary functionality and distinct technical standards.
Cozzolino et al. (2018)	Disruptive technologies: alter a predetermined course or performance improvement, or redefine performance; Disruptive business models: alter an existing framework or reinterpret what value generation and capture mean.

3.2 Best practices and techniques of disruptive innovation

Based on an investigation of different contexts, several authors have identified the best practices and techniques of disruptive innovation, comprising twenty different perspectives (Table 12). According to eight studies, one of the best practices of disruptive innovation is to implement new business models in organizations, since they aim to accommodate ongoing market transformations and boost industry competitiveness (Akamavi et al., 2015; Christensen et al., 2018; Dewald & Bowen, 2010; Johnson et al., 2008; Osiyevskyy & Dewald, 2015; Voelpel et al., 2004; Wainstein & Bumpus, 2016; Yu & Hang, 2010).

Another practice of disruptive innovation implies the offer of a new value proposition to draw in customers. More precisely, this fresh value proposition is based on offering an alternative package of benefits, focused on being more affordable, compact, straightforward, and/or convenient. Some authors add the motivations that positively impact consumers' acceptance of disruptive innovation, such as the price value, authenticity, uniqueness, satisfaction, home benefits, and social interactions (Guttentag & Smith, 2017; Guttentag et al., 2018; Rao, 2013; Schmidt & Druehl, 2008; So et al., 2018).

Based on Ansari et al. (2016), Christensen et al. (2006), and Paap and Katz (2004), the best practice is to implement specific processes of disruptive innovation within corporations, focusing on these three guidelines: 1) identify signs of disruption in procedures; 2) detect specific catalytic innovations to decide if the development belongs to a catalytic innovation; and 3) evaluate the business models. In a different context, some authors suggest that the best practice refers to digital transformation, which aids the sector in using digital material to improve, expand, and redefine their physical and/or traditional products and services while also redesigning the value proposition to consumers and generating new revenue streams to guarantee the sustainability of the company (Karimi & Walter, 2015; Renko et al., 2009; Riffai et al., 2012).

Nevertheless, some studies focus on certain organizational characteristics as the best practice to implement disruptive innovation, namely:

- Understand the needed organizational abilities to develop disruptive innovation;
- Consider customers and technology as the key abilities that drive innovation;
- Key design variables for innovation: incentives, culture, and structure;

- Value on entrepreneurship, risk-taking, flexibility, and creativity;
- Adhocracy culture promotes disruptive innovation;
- Distinct organizational units can promote disruptive ideas (Govindarajan & Kopalle, 2006; Henderson, 2006; Wan et al., 2015).

On a macro level, Govindarajan et al. (2011) and O'Reilly III and Tushman (2004) emphasize that the best practice refers to ambidextrous organizations, meaning that firms must create teams to be structurally separate units, with their procedures, structures, and cultures, even though they will be integrated into the current organizational management hierarchy, especially considering their client orientation. Within this context, the studies conducted by Pagani (2013) and Yeh et al. (2011) are important, since they add that companies must be aware in terms of value creation and capture points to implement disruptive innovation. In more detail, they must try to tackle the following value points: 1) value in client access; 2) value in conventional infrastructure; 3) value in modularity; 4) value in content access; and 5) value in planning.

Still, the remaining articles suggest different practices for disruptive innovation, such as:

- Distinction between traditional and innovative markets, requiring different activities and key success factors (Blal et al., 2018; Markides, 2006);
- Policy mixes, aiming to combine original and destruction functions to accomplish sustainability transitions (Kivimaa & Kern, 2016);
- Research funding, in the sense of gaining knowledge of how to meet people's needs more cheaply, conveniently, and quickly without sacrificing effectiveness or quality (Christensen et al., 2000; Sultan, 2015);
- Specific components within the company's ecosystem, in this case in the financial technology (FinTech) industry (Lee & Shin, 2018);
- Development/creation and commercialization of technological innovation (Slater & Mohr, 2006; Sultan, 2013);
- Blockchain as a disruptive technology for organizations (Frizzo-Barker et al., 2020; Sedlmeir et al., 2020);
- Development of a fresh market for disruptive innovation (Christensen et al., 2002);
- Financial innovations, comprising several key factors (Anagnostopoulos, 2018);

- Diagnostic focused on authenticated modes of analysis, centered on the estimation of the value of succeeding, leveraging on existing expertise, and cooperating with other corporations (King & Baartartogtokh, 2015);
- Focus on innovation (Nagy et al., 2016) ;
- Groundbreaking leadership and management (Ray & Kanta Ray, 2011);
- Social innovation/changes (Lettice & Parekh, 2010) ;
- Combination of disruptive technologies with disruptive business models (Cozzolino et al., 2018).

Table 12 – Best practices and techniques of disruptive innovation based on the selected articles

Best practices and techniques	Authors
Ambidextrous organizations: teams that are structurally separate units and that constitute their procedures, architecture, and cultures, but are incorporated into the current organizational management hierarchy, considering their client orientation (mainstream and emerging customer).	Govindarajan et al. (2011); O'Reilly III & Tushman (2004)
New business models: Relevant organizational innovation is needed to accommodate ongoing market transformations and boost industry competitiveness.	Akamavi et al. (2015); Christensen et al. (2018); Dewald & Bowen (2010); Johnson et al. (2008); Osiyevskyy & Dewald (2015); Voelpel et al. (2004); Wainstein & Bumpus (2016); Yu & Hang (2010)
The distinction between traditional vs. innovative markets: emerging and innovative businesses have different key success factors, necessitating different operations and clients from established/traditional markets.	Blal et al. (2018); Markides (2006)
Policy mixes: a mixture of original and destruction functions is effective to accomplish sustainability transitions.	Kivimaa & Kern (2016)
Research funding: to gain knowledge of how to meet people's needs more cheaply, conveniently, and quickly without sacrificing effectiveness or quality.	Christensen et al. (2000); Sultan (2015)
Ecosystem: components of the fintech ecosystem should involve – 1) Fintech companies (startups); 2) Technology developers; 3) Government; 4) Financial clients; 5) Conventional financial institutions	Lee & Shin (2018)
Processes of disruptive innovation: 1) Identify signs of disruption in procedures; 2) Detect specific catalytic innovations to decide if the development belongs to a catalytic innovation; and 3) Evaluate the business models.	Ansari et al. (2016); Christensen et al. (2006); Paap & Katz (2004)
Offer fresh value propositions to draw in customers by offering alternative benefit packages that are focused on being more affordable, compact, straightforward, and/or convenient. Price value, authenticity, uniqueness, satisfaction, home benefits, and social interactions are some driving factors for consumers to accept disruptive innovation.	Guttentag et al. (2018); Guttentag & Smith (2017); Rao (2013); Schmidt & Druehl (2008); So et al. (2018)

Best practices and techniques	Authors
Digital transformation: aids the sector in using digital material to improve, expand, and redefine their physical and/or traditional products and services while also redesigning the value proposition to consumers and generating new revenue streams to guarantee the sustainability of the company.	Karimi & Walter (2015); Renko et al. (2009); Riffai et al. (2012)
Value creation and capture points: 1) Value in client access; 2) Value in conventional infrastructure; 3) Value in modularity; 4) Value in content access; 5) Value in planning.	Pagani (2013); Yeh et al. (2011)
Organizational characteristics: 1) Recognize the organizational skills required to create disruptive innovation; 2) Consider customers and technology as the two primary skills that fuel innovation; 3) Incentives, culture, and structure are important design factors for creativity; 4) Businesses must encourage initiative, risk-taking, adaptability, and originality; 5) Adhocracy culture encourages disruptive innovation; 6) Distinct organizational units can promote disruptive ideas.	Govindarajan & Kopalle (2006); Henderson (2006); Wan et al. (2015)
Creation and commercialization of technological innovation: relation between an organization's tactical orientation and (1) its choice of the target market; and (2) how its market orientation is carried out.	Slater & Mohr (2006); Sultan (2013)
Blockchain is a disruptive technology for companies: it carries multiple advantages – 1) It is trustworthy and open; 2) Promotes governance activities; 3) It features a protocol and a decentralized structure that guarantee truthfulness and safety; 4) It is consistent and durable; 5) It boosts operational effectiveness and brings down transaction costs; 6) It offers economic benefits; 7) It provides safety, privacy, and data ownership assurances.	Frizzo-Barker et al. (2020); Sedlmeir et al. (2020)
Development of a fresh market for disruptive innovation, centered both on the disruption of the previous business model from the bottom up and the creation of an innovation mechanism.	Christensen et al. (2002)
Financial innovations: factors to be well-thought-out by corporations – 1) Demographics and national internet and mobile diffusion; 2) Changes in expectations; 3) Readaptation of business models; 4) Cost-effectiveness; 5) Niche focus; 6) Cyber safety; 7) Regulatory growth and the financial crisis; 8) Broadening and disintermediation of financial services; 9) Regulation as a foundation of disruption.	Anagnostopoulos (2018)
Diagnostic centered on verified modes of analysis: 1) Evaluate the value of succeeding; 2) Leverage existing expertise; 3) Cooperate with other enterprises.	King & Baartogtokh (2015)
Focus on innovation: 1) Detect the innovation and its features; 2) Determine where innovation is applied in a company's value chain; 3) Contrast the possibly disruptive innovation with presently used technologies for that value chain sector.	Nagy et al. (2016)
Groundbreaking leadership and management: 1) To acknowledge the possibility for growth in disruptive innovation; 2) To comprehend the context and the features of the environment; 3) To use local skills in evolving markets; 4) To test with cheap logistics and distribution models.	Ray & Kanta Ray (2011)
Social innovation: they should be systemic and oppose the current	Lettice & Parekh (2010)

Best practices and techniques	Authors
status and the conventional belief.	
Disruptive technologies and business models: improve the broadness of the business model to take advantage of external economies of scale and externalities after disruption to production and distribution.	Cozzolino et al. (2018)

3.3 Barriers to the implementation of disruptive innovation

Regarding the major barriers to the implementation of disruptive innovation, the selected articles demonstrated that there are eighteen different challenges and/or obstacles that organizations might need to overcome (Table 13). According to four studies, one of those barriers refers to established/traditional firms (incumbents), in the sense that the implementation of disruptive innovation impacts them, consequently transforming the market (Ansari et al., 2016; Christensen et al., 2000; Markides, 2006; Riffai et al., 2012). In turn, Bergek et al. (2013) and Govindarajan and Kopalle (2006) claim that the main barriers are associated with two different aspects, more precisely with performance measures, with companies relying on market size, growth rate, and profitability ex-ante as a foundation for picking up incentives, which is inappropriate, and with customers' factors, especially related to the absence of understanding regarding the new customers' needs or with the incapacity to modify customers' conducts.

Based on a different perspective, some studies highlight that businesses may not value disruptive innovation technology when it comes to analytical power, or even lack valuable frameworks to lessen their impacts, thus resisting this type of innovation (Alles, 2015; Paap & Katz, 2004). Moreover, and in a more in-depth analysis, Assink (2006) and Henderson (2006) suggest that there are other types of barriers, such as organizational dualism, unnecessary bureaucracy, smothering of the status quo, deficiency of distinctive capabilities, outdated mental models, high risks and unpredictability, risk-averse environment, lack of inspiration, lack of market awareness and vision, innovation process mishandling, lack of required infrastructure and insufficient follow-up.

Nonetheless, some articles present a wider approach in terms of barriers to disruptive innovation, describing multiple areas that challenge its implementation within companies in general. For instance, Johnson et al. (2008) point out that there are financial barriers (gross margins, opportunity size, unit pricing, margins, and fixed cost investment), operational barriers (supplier

quality, end-product quality, customer service, channels, and lead times), and other barriers, especially pricing, performance demands, and brand parameters. In their study, Lee and Shin (2018) describe six different barriers: 1) investment management; 2) client management; 3) law; 4) technological integration; 5) safety and confidentiality; 6) risk management.

Based on the perspective presented by Yu and Hang (2010), the barriers associated with the implementation of disruptive innovation comprise several aspects of the organizational context, such as the company's culture, human resources, resource distribution, organizational structure, the context and environment, the client orientation, and the technological strategies. In turn, Frizzo-Barker et al. (2020) propose that the main barriers refer either to the technical level, the corporate level, or the societal level, thus focusing on a wider range of obstacles for organizations to overcome.

The remaining studies suggest other types of obstacles to the implementation of disruptive innovation in organizations, such as:

- Legality and tax duties (illegal or legal, and not paying taxes) (Guttentag, 2015);
- Governments, in the sense that each government takes a different approach to the difficulties of accelerating sustainability transformations (Kivimaa & Kern, 2016);
- Consumers' constraints, such as the perceived danger of consuming the product or service, doubt, unusualness, subjective norms, and sustainability and preference for the local community and economy (So et al., 2018);
- Perceived performance-decreasing threat and critical threats (Osiyevskyy & Dewald, 2015);
- Higher costs and public acceptability (Sultan, 2015);
- Low technology and resource-limited areas within the business/industry (Agarwal et al., 2017);
- Hesitant management, present market research tactics, and lack of design expertise (Ray & Kanta Ray, 2011);
- Social innovation and changes (in terms of thinking, working, and overcoming complex circumstances in new ways) (Lettice & Parekh, 2010);
- Disruptive business models (reluctance to change and limitations in consolidating or exploiting existing business models) (Dewald & Bowen, 2010);

- And strategic management (resource dependence upon mainstream consumers, rigidity of practices and skills, demand uncertainty, financial incentives, reliance on established value networks, and institutional pressures) (Cozzolino et al., 2018).

Table 13 – Barriers to the implementation of disruptive innovation based on the selected articles

Barriers to implementation	Authors
Financial: gross margins, opportunity size, unit pricing, and margins, fixed cost investment; Operational: end-product quality, supplier quality, customer service, channels, lead times; Others: pricing, performance demands, brand parameters.	Johnson et al. (2008)
Legality and tax duties: can be either illegal or legal, and not paying taxes.	Guttentag (2015)
Established/traditional firms (incumbents): disruptive innovation influences existing firms and changes the market.	Ansari et al. (2016); Christensen et al. (2000); Markides (2006); Riffai et al. (2012)
Governments: each government takes a different approach to the difficulties of accelerating sustainability transformations.	Kivimaa & Kern (2016)
1) Investment management; 2) Client management; 3) Law; 4) Technological integration; 5) Safety and confidentiality; 6) Risk management.	Lee & Shin (2018)
Human resources: managers' abilities and executive incentive programs; Organizational culture: avoiding cultural change; Resource allocation: organized procedures and dependence on resources; Organizational structure: lack of self-directed corporations and the size is inversely correlated to the achievement of disruptive innovations; Context and environment: companies are devoted to specific individuals and goals and some contextual aspects vary through time; Client orientation: absence of a connection between the company's innovation and the existing market, client needs, and/or market circumstances; Technological strategies: lack or inadequate technology road mapping.	Yu & Hang (2010)
1) Organizational dualism; 2) Unnecessary bureaucracy; 3) Smothering of the current situation; 4) Deficiency of distinctive capabilities; 5) Outdated mental models; 6) High risks and unpredictability; 7) Risk averse environment; 8) Lack of inspiration; 9) Lack of market awareness and vision; 10) Innovation process mishandling; 11) Lack of required infrastructure; 12) Insufficient follow-up.	Assink (2006); Henderson (2006)
Client's restrictions: 1) Perceived danger of using the product or service; 2) Doubt; 3) Unusualness; 4) Subjective norms; 5) Sustainability and preference for the local community and economy.	So et al. (2018)
Performance measures: being dependent on market size, growth rate, and profitability ex-ante as a foundation for choosing incentives is inadequate; Client's factors: lack of understanding concerning new customer needs or the incapacity to influence customer conduct.	Bergek et al. (2013); Govindarajan & Kopalle (2006)
Technical level: scalability, dependability, volatility, safety, wasted resources, damaging environmental effects, and absence of uniform norms; Corporate level: problems related to governance and legislation, implementing and incorporating blockchain into existing business, and lack of universal standards; Societal level: increased hazards of surveillance and scam, security, crime, corporatization, as well as a number of other social and ethical issues.	Frizzo-Barker et al. (2020)
Perceived performance-decreasing threat: it is triggered by forecasted loss, or	Osiyevskyy & Dewald

Barriers to implementation	Authors
anticipated results below the desired objectives, in terms of revenues and profits; Critical threat: events that are expected to bring great difficulties and result in the closure of the whole business.	(2015)
1) Higher costs; 2) Little applications available to use with wearable devices; 3) Problems of confidentiality and safety (digital data); 4) Public acceptability; 5) Suitability and accessibility of wearable technology; 6) Health and personal life issues.	Sultan (2015)
Businesses or industries operating in low-tech or resource-limited environments.	Agarwal et al. (2017)
Firms may not understand the disruptive innovation technology's analytical capacity, oppose the innovation, or may not have access to effective frameworks to lessen its effects.	Alles (2015); Paap & Katz (2004)
1) Senior executives are hesitant to allocate resources to meet disruptive innovation; 2) Existing market research tactics; 3) Absence of design skills among local providers.	Ray & Kanta Ray (2011)
Social innovation/changes: 1) Incapacity to reflect on the existing problems in new ways; 2) Not dealing with the difficulty of systems' change; 3) Incapacity to overcome opposition from established players and inability to transition from an active niche to the mainstream; 4) Not receiving the proper kind of assistance.	Lettice & Parekh (2010)
Disruptive business models: 1) Small incumbents usually are unsure when to actively oppose or adopt the new business models; 2) Reluctance to change because of the idea of the business model innovation as a risk; 3) Limitations to combining or utilizing current business models.	Dewald & Bowen (2010)
Strategic management: 1) Dependency on mainstream consumers for resources; 2) Rigidity of current practices and skills; 3) Demand uncertainty; 4) Institutional pressures in handling diverse organizational demands of disruptive innovations; 5) Financial incentives and reliance on recognized value networks.	Cozzolino et al. (2018)

4. Discussion

Disruptive innovation is crucial to achieving business success since it evolves new markets and provides new services/products. However, one major concern regarding disruptive innovation is how companies can implement it, given the fact that data is frequently generated after innovation has already taken its place within the organization. Furthermore, it is also evident in the literature that there are some common misunderstandings about disruptive innovation. Thus, the present study aimed to gather the knowledge related to the concept's definition, the best practices and techniques that allow to successfully implement and manage disruptive innovation, and the barriers that prevent companies from implementing disruptive innovation successfully.

The conducted systematic literature review comprised 50 articles from multiple industries and contexts, providing in-depth knowledge that answers this study's research questions. In terms of the definition of the concept of disruptive innovation (Table 11), a significant amount of studies presented a consensual perspective, characterizing it as the description of how companies can fail

by ignoring the progress of a disruptive product that does not have previously preferred features yet provides different advantages, thus changing the current value proposition and appealing to other consumers, potentially creating new markets despite being initially perceived as inferior to existing products/services. However, disruptive innovation has several definitions, varying according to the pertaining industry and the elements that it includes. It can refer to low-end disruptions or new market disruptions, depending on its main impacts (Henderson, 2006; Sultan, 2013, 2015); it can be considered as a cheaper, more convenient, and simpler product/service that meets less-demanding customers' needs (Christensen et al., 2000; Rao, 2013); it can provide new functionalities, which ultimately can disrupt current market linkages (Govindarajan & Kopalle, 2006; Yu & Hang, 2010); and it can refer to innovative technologies, products or services that are financially less attractive to incumbents (Ansari et al., 2016; Osiyevskyy & Dewald, 2015).

Regardless of the industry, market, level, and technologies, disruptive innovation implies an innovative and new product/service that will impact the organization and the market/industry, probably changing the current market disposition and competitiveness requirements. Overall, this concept is highly associated with technology, either in terms of final product/service or in terms of technology that is used to develop such product/service, thus being correlated with the current pace of evolution, intrinsically connected with digital transformation. In sum, companies must consider disruptive innovation as a key concept, especially due to the profound changes that it can truly implement in the current worldwide scenario.

Considering the best practices and techniques of disruptive innovation (Table 12), it has been demonstrated that one popular practice is to implement new business models in organizations, with the main goal of addressing permanent shifts in the market and increasing the industry's competitiveness (Akamavi et al., 2015; Dewald & Bowen, 2010; Voelpel et al., 2004; Yu & Hang, 2010). Nevertheless, some other factors are important to successfully implement disruptive innovation into organizations, thus including other practices, directly related to the offer of a new value proposition to appeal to customers (Guttentag & Smith, 2017; Schmidt & Druehl, 2008), to the implementation of processes of disruptive innovation (Ansari et al., 2016; Christensen et al., 2006; Paap & Katz, 2004), to digital transformation (Karimi & Walter, 2015),

and to the consideration of several organizational characteristics and consequent change (Wan et al., 2015).

Overall, the best practices to implement disruptive innovation into organizations must assume that disruptive innovation is an inevitability in the current days, with companies needing to address this evolutionary parameter to succeed and maintain their competitiveness within the market. Thus, this success and competitiveness are only possible if companies change their obsolete operational and management strategies, introducing innovation in their organizational culture and modifying all their internal structures to fully implement this innovation. If organizations resist this innovation, they will end up being surpassed by their competitors, either struggling to survive in the business or completely disappearing.

Finally, the main barriers to the implementation of disruptive innovation have been found (Table 13), referring to multiple levels and aspects of the organization, as well as to some external factors. One barrier that was mentioned by several studies is associated with established/traditional firms, considering that disruptive innovation has a significant impact on them, changing the market (Ansari et al., 2016; Christensen et al., 2000; Markides, 2006; Riffai et al., 2012). Still, other barriers that significantly challenge the implementation of disruptive innovation in organizations are usually performance measures and customers factors (Bergek et al., 2013), companies disregarding the value of disruptive innovation technology in terms of analytical power (Alles, 2015; Paap & Katz, 2004), financial and operational barriers (Johnson et al., 2008), several aspects of the organizational context (Yu & Hang, 2010), governments (Kivimaa & Kern, 2016), consumers' constraints (So et al., 2018), and disruptive business models (Cozzolino et al., 2018). Overall, these factors contribute to the rejection of disruptive innovation by several companies, or they challenge the implementation of such innovation within organizations, referring to obstacles that must be overcome for companies to successfully implement disruptive innovation, ultimately leading to their growth and competitiveness within the market.

5. Conclusion

The goals of this systematic literature review were to define the concept of disruptive innovation, assess the best practices and techniques to implement disruptive innovation within organizations

and investigate the barriers to the implementation of disruptive innovation in organizations. It was possible to conclude that the concept of disruptive innovation refers to innovative products/services/technologies/business models that ultimately seek to change the market, increasing the organization's competitiveness and guaranteeing their sustainability throughout the times. In terms of best practices to successfully implement disruptive innovation within organizations, it was found that they all comprise changes in the current organizational context and structure, as well as in society in general. The focus lies on introducing new and innovative business models/products/services/technologies so that the industry and the market can evolve, contributing to the organization's success and survival. Finally, about the main barriers to the implementation of disruptive innovation, it was found that they all comprise the rejection of innovation, being associated with multiple contexts and scenarios, ranging from society and its perspectives to the organizational structure and business model. Ultimately, the detected barriers are related to obsolete thinking and strategical management, which are intrinsically closed to innovation and newness, preferring more traditional and established businesses and strategies.

This systematic literature review proved that there are still few studies that focus on disruptive innovation, despite being an increasingly discussed concept, with growing popularity and implementation among several markets and industries. Furthermore, the existing studies demonstrate the lack of consensus when discussing disruptive innovation, with a significant number of studies developing an in-depth analysis based on different contexts and assumptions, which ultimately leads to misconceptions about the concept itself. Therefore, future research is needed to fully expand the discussion around the concept of disruptive innovation, trying to provide more consensual insights about this key factor for current organizations' success.

This study was only based on one database, comprising papers written in English, published between 2000 and 2020, with more than 100 citations, and published in Q1 and Q2 quality journals; there can be other relevant papers that were therefore not included in this systematic literature review. Moreover, the final screening was done based on the paper's title, abstract, and keywords, which implies that papers that might focus on this concept did not fit exactly this paper's goal, not being included. However, this study can be a starting point for research, contributing to an in-depth analysis of the concept of disruptive innovation, especially in terms

of the best practices and barriers to its implementation within organizations, ultimately leading to its success or failure in the current digital and innovative era.

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