

THE CONTRIBUTION OF THE BALANCED SCORECARD TO STRATEGIC ALIGNMENT: A SYSTEMATIC LITERATURE REVIEW ADAPTED FOR DESIGN SCIENCE RESEARCH

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ABSTRACT

The Systematic Literature Review (SLR) approach is specifically focused on the sciences of the artificial (what has been produced, invented, or influenced by man), with a problem-solving focus that is not solely supported by the traditional social and natural sciences paradigm. The aim is to update the theoretical ballast of the Balanced Scorecard's (BSC) contribution to organizational strategic alignment through an RSL, adapted for Design Science Research (DSR) based studies. The adapted RSL was used for research employing DSR, a methodology based on Design Science that presents more suitable applicability for organizational problem-solving. It was found in this study that the BSC contributes to strategic alignment, especially concerning the ability to communicate the strategic priorities, translation, and operationalization of strategic objectives and the balancing and alignment between areas and departments towards a common goal. Moreover, it was observed that its role in motivational influence, awareness, and behavior of employees, besides the possibility of joint use with fuzzy logic for translating inaccuracies and vagueness associated with human thinking in decision-making. The RSL performed by only one person rather than a team of researchers and the reviewed articles are ontologically and epistemologically different. This may limit their comparability, considering the vagueness and imprecision of human thinking in decision-making processes (fuzzy logic); the influence of the BSC on coordinating employees by encouraging their motivation and communicating strategic priorities, and establishing awareness of organizational responsibility. In this context, the discussion on the strategic alignment provided by the BSC performance measurement system, which is still widely used and whose approach needs to be updated because it has existed for almost thirty years, and the incorporation of the fuzzy concept to solve organizational problems were deepened.

Keywords: Strategy; Alignment; Balanced Scorecard; Design Science Research.

INTRODUCTION

According to Oliveira (2018), strategic planning is the administrative process that provides the methodological basis for establishing the direction to be followed by the company to optimize and improve its degree of interaction with external factors in an innovative and differentiated way. From Kaplan and Norton's (1997) point of view, at first, there were preponderantly financial measures focused on the past performance of organizations whose assets were, until then, mostly tangible. However, due to the development of new businesses, greater market complexity, and new organizational structures, the analysis of the so-called intangible assets has become necessary. Examples of such assets are quality, innovation, customer relations, information, and knowledge. Thus, it was sought to fill the gap between the accounting model and the competitive requirements of the information age to add value to the business and obtain an advantage in the competitive battle.

Thus, in the 1990s, the Balanced Scorecard (BSC) emerged in the USA, bringing together performance indicators into four perspectives associated with a logical structure of cause and effect and which cannot be seen independently: "Financial Perspective," "Customer Perspective," "Internal Process Perspective," and "Learning and Growth Perspective." Through them, the model can be understood as a strategy based on a particular collection of critical indicators that measure managerial performance in implementing the business strategy (HU *et al.*, 2017).

The strategic communication capability of the BSC in organizations that operate in highly competitive scenarios assists decision-making and strategic alignment adjustments and, consequently, promotes the synergy of actions at the various hierarchical levels aimed at achieving the common goal (Kaplan and Norton, 1997). According to Guerra *et al.* (2018), the BSC is expected to drive the energy, skills, and knowledge of all employees in the organization to achieve long-term goals. By building these strategies and capabilities, organizations provide value to the market and provide value to their shareholders at the same time. In this aspect, Quesado *et al.* (2018) indicate that the BSC fosters the development of long-term competitiveness skills that, in the competitive context, can mean future value creation. Furthermore, according to the authors, the BSC increases the organizations' ability to implement strategies and improve their performance and highlights value creation processes and the importance of intangible assets for the organization.

In Maltempi (2014), the increased search for companies' competitiveness has encouraged the adoption of best practices in management and the increasingly extensive use of support tools. From this perspective, the BSC still proves to be quite relevant since, according to a survey conducted and published by Bain and Company (2018), with more than 1,268 managers worldwide, the BSC is still the third among the twenty-five most popular management tools. Moreover, according to Bain and Company (2018), the BSC remains relevant among the main management tools. According to the publication, the BSC presents its usage and satisfaction rates with values of 29% and 3.93, respectively, which indicates that the tool is practically the average relevance compared to the others, with usage and satisfaction rates of 30% and 3.99, respectively (Bain and Company, 2018).

Given the relevance and importance of the BSC's contribution to organizational competitiveness and its capacity for top-down strategic alignment, as indicated by Quesado *et al.* (2018), this work is justified by contributing to the improvement and updating of the theoretical ballast that underlies the process of strategic alignment in organizations that apply the BSC. Moreover, according to the authors, the tool has already had almost thirty years since its first publication (Kaplan and Norton, 1992), making it timely to update the most recent approaches on the subject.

In terms of new perspectives for problem-solving, RDS is an alternative methodology for research instead of traditional science. Thus, the RSD is more suitable for developing artifacts that allow satisfactory solutions to practical problems and are aimed at the organizational context (Dresch *et al.*, 2015).

According to Dresch *et al.* (2015), the discussion on Design Science began with verifying the existing gap due to the sole and exclusive use of traditional sciences to conduct certain investigations. Thus, research aimed at studying the project, the conception, or problem resolution cannot be sustained solely with the paradigm of traditional social and natural sciences, whose central focuses are to explore, describe, explain, and, when possible, predict.

Also, according to Dresch *et al.* (2015), due to research in organizational areas that is generally restricted to the internal environment of organizations, it is advisable to use Design Science in this type of research to ensure relevance and academic credibility, in addition to the global reach of the results obtained. From this perspective,

rigor is essential for conducting Design Science research so that the results can be disseminated by the academy and in relevant publications, which allows for greater interaction between the practical and theoretical worlds.

Thus, Design Science is the epistemological basis of the study of the artificial, which, according to Simon (1996), would be everything that was produced, invented, or influenced by man. Conversely, DSR is understood as the method for supporting and operationalizing research conducted when the goal to be achieved is an artifact or a prescription. As it represents a problem-solving approach, the RSD seeks, from the understanding of the problem, to build and evaluate artifacts to modify situations by changing their condition to a desired or more favorable state (Dresch *et al.*, 2015).

In turn, Ayoup *et al.* (2016) indicate that most publications on BSC highlight its function as a performance measurement system (PMS) much more than as a strategic alignment tool. Hence, the relevance of this research to fill this knowledge gap stands out. Therefore, the following central research question is defined: "How can a BSC application contribute to organizational strategic alignment?"

Hence, there is an opportunity to deepen the discussion on the relationship between strategic alignment and BSC through an RSL with the approach proposed by Dresch *et al.* (2015). As such, this article aims to update the most recent publications on the contribution of the BSC to organizational strategic alignment through an RSL, adapted for research using the DSR methodology. Furthermore, this article also contributes as a reference for conducting methodological steps of an RSL, a fundamental requirement in DSR-based research.

This paper is divided as follows: the first part includes the introduction with the presentation of the opportunity of the study, the main objective, and the theoretical framework that establishes the boundary conditions of this research. The second part includes the research methodology and the detailed method for conducting the RSL. In the Results section, the main concepts and approaches reviewed are discussed, and, finally, the conclusion and opportunities for future work are presented.

METHOD

The RSL proposed for the research problem will be presented in this section. According to Morandi and Camargo (2015), RSL is a secondary study used to map, critically evaluate, consolidate, and aggregate the results of relevant primary studies about a specific research ques-

tion or topic. Also, according to the author, the expression "systematic" means that the method must strictly follow an explicit, planned, and justifiable method. The research must be well planned to avoid bias and to ensure replicability.

Cooper (2015) defines the RSL, or research synthesis, as a study focused on empirical research findings aimed to integrate previous studies by inferring generalizations from a series of separate investigations that deal with identical or related hypotheses to the research topic. Also, according to the author, the research's main goal is to present an overview of the state of knowledge regarding the variables of interest and to highlight the points that still need elucidation.

The first step proposed by Cooper (2015) for conducting an SLR is "Problem Formulation." In this step, the relevant variables for the research and which research evidence will be relevant or irrelevant to the problem or hypothesis studied are defined. The second step is the "Literature Search," which involves deciding the population of elements that will focus on the research since it seeks cumulative results that reflect all previous research on the problem and include studies that allow generalization. The third step, "Gathering of information from studies," requires the researcher to define what information he will need from each research unit, in addition to defining a training procedure for the people who will gather the information, ensuring that they will do so in a reliable and traceable manner. In the fourth step, "Evaluation of study quality," the researcher critically analyzes the quality of the data obtained. In the fifth step, "Analysis and integration of study results," the researcher needs to analyze the various data types and integrate them to identify patterns and rule out outliers. In the sixth step, "Interpretation and Evidence," the researcher interprets the cumulative evidence and determines which conclusions are justified by the data. Finally, the seventh step, "Presentation of results," involves publishing a document describing the research and resolving the research problem.

For Thomé *et al.* (2016), an RSL uses well-defined and rigorous criteria to identify, evaluate, and synthesize the literature, including a list of studies published in peer-reviewed or grey literature. Grey is understood as any material that is not easily identifiable by a traditional bibliographic index or database, such as newsletters, reports, working papers, and theses. Thomé *et al.* (2016) also use a step-by-step approach to conducting an RSL influenced by Cooper (2015). The first step is "Problem planning and formulation," which includes building the research team, defining the scope, conceptualizing the topic, defining the research question theory, and proposing the search

protocol. The second step, "Literature search," includes selecting databases, journals, and periodicals for the search, defining keywords, reviewing abstracts, applying inclusion and exclusion criteria, reviewing full texts, and backward and forward-searching. Then, in the third and fourth steps, "Data gathering" and "Quality assessment," respectively, the risks of bias in the review are assessed, and their quality assessment is performed. In the steps "Data analysis" and "Interpretation," in this order, data consolidation and interpretation are performed. Finally, in the steps "Presentation of results" and "Update of the review," the final presentation is prepared and kept up to date.

In Tranfield *et al.* (2003) approach, the SLR features three stages: "Planning the review," "Conducting the review," and "Reporting and disseminating the review." The first stage can be divided into identifying the need for review, preparing a review proposal, and developing a review protocol. The second phase, "Conducting the review," includes identifying the research, selecting studies, assessing study quality, extracting data, monitoring research progress, and synthesizing data. The third phase, "Reporting and disseminating the review," includes presenting the review results and recommendations and obtaining practical evidence of the findings.

Morandi and Camargo (2015), in turn, indicate that the first step would be the "Definition of the issue and the conceptual framework," i.e., the definition of the central theme to be discussed as to its specificity, extension, comprehensiveness, and scope, and the definition of a conceptual framework, which can be understood as a skeleton for conducting the research. Then there is the step of "Choosing the work team," in which, in ge-

neral, a team can be assigned for carrying out the research, mainly due to the length and deadline of the reviews. The third step is the "Search Strategy," in which time is invested in designing a search strategy that can manage high volumes of information. In the next step, "Search and coding eligibility," the operationalization of the search takes place, i. e., the search, selection, and coding of primary studies based on the strategy defined in the previous step. In the "Evaluation and quality" step, the credibility of the results produced is verified. In the "Synthesis of results" stage, the results of the Systematic Literature Review are integrated to generate knowledge that did not exist in the primary studies. Finally, in the "Study presentation" stage, the review results are widely disseminated, generally through publication in scientific journals. It is worth noting that the model proposed by Morandi and Camargo (2015) makes explicit the participation of stakeholders, i.e., the interest groups that influence the conduct of the review or those who will subsequently use the research results.

Thus, the steps of conducting RSL according to the cited authors can be summarized in **Chart 1**.

Steps for conducting a systematic literature review

Diagram 1 represents the generic and integrated model of RSL proposed by Morandi and Camargo (2015), which seeks to encompass and extend the concepts of the other authors indicated in Table 1. Common steps to the methods were kept, and steps such as stakeholder participation were included.

Thomé et al. (2016)	Cooper (2015)	Tranfield et al. (2003)	Morandi and Camargo (2015)
Planning and problem formulation	Problem Formulation	Planning the Review	Definition of the question and the conceptual framework
Literature search	Literature search		Working team selection
Data gathering	Gathering information from studies		Search strategy
Quality assessment	Evaluation of the quality of the studies	Conducting the review Review reporting and dissemination	Search and coding eligibility
Data evaluation and synthesis	Analysis and integration of study results		Evaluation and Quality Overview of the results
Interpretation			
Results presentation	Interpretation of the evidence Presentation of results		Study Presentation
Review update			

Chart 1. Comparison between Steps Systematic Literature Review by Author

Source: The author (2020).

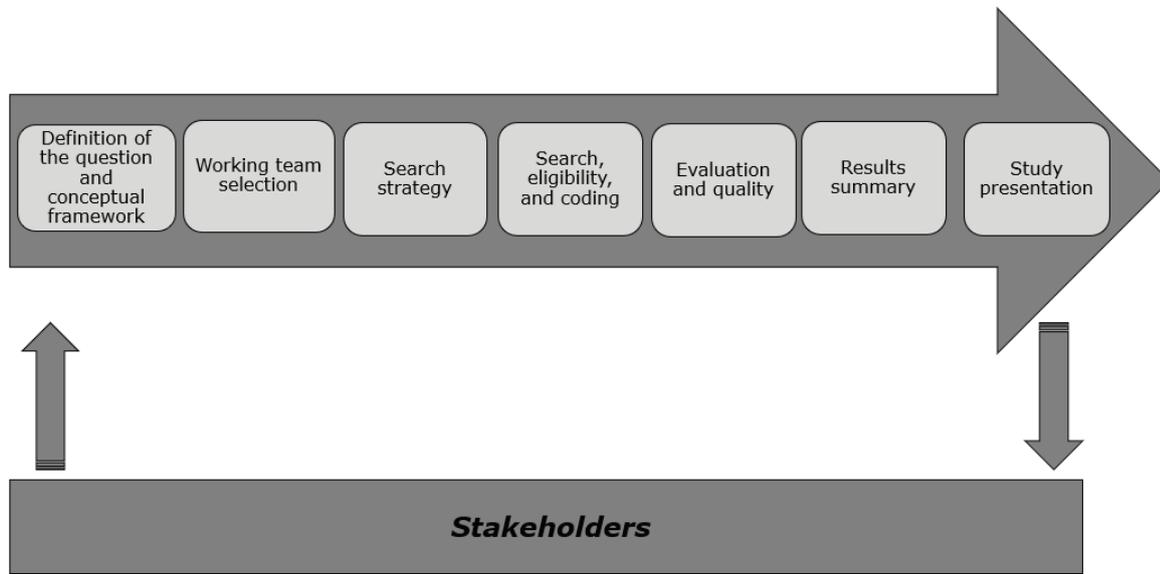


Diagram 1. Integrated Method for Systematic Literature Review

Source: Morandi and Camargo (2015, p. 146).

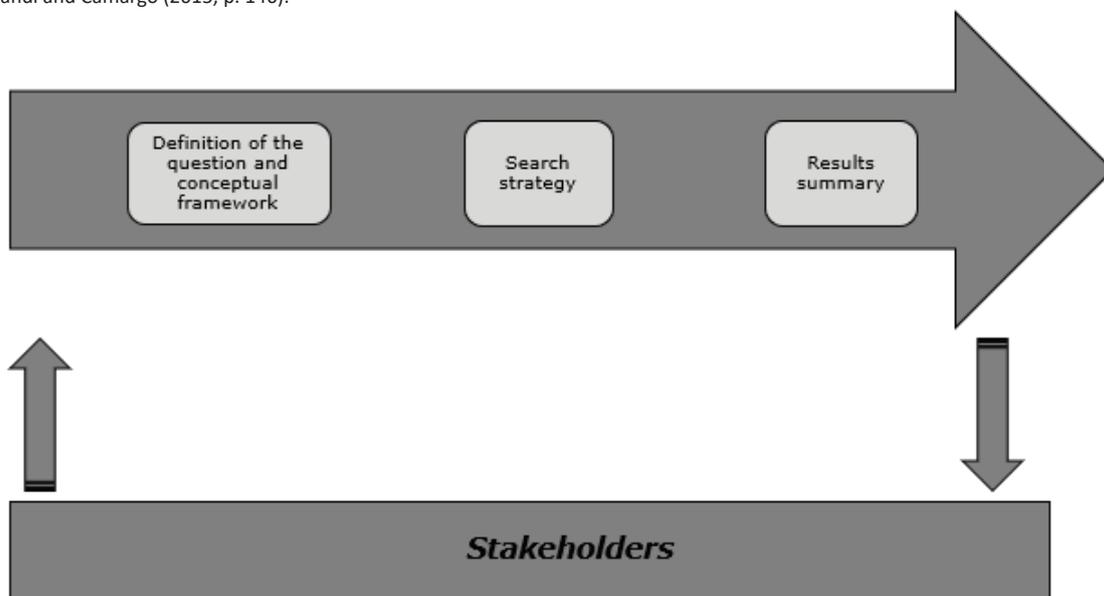


Diagram 2. Systematic Literature Review template adapted for DSR

Source: Adapted from Morandi and Camargo (2015, p. 167).

Thus, to give greater attention to the steps of defining the review question, research strategy, and result synthesis, Morandi and Camargo (2015) propose a classic RSL model specially adapted for research using RSD (**Diagram 2**).

Thus, in the first stage, “Definition of the question and conceptual framework,” the research question is: “How can a BSC application contribute to organizational strategic alignment?” After this phase, a research strategy is proposed, called the “Search strategy.” In this step, one

must follow a search protocol (**Chart 1**) in addition to applying filters and criteria for article inclusion and exclusion. First, based on the mentioned protocol, publications were sought in the article databases based on the search string defined in the protocol. In this research, the proposed string and the search keywords related to the research question (“Alignment,” “BSC,” “Strategy,” and “Balanced Scorecard”) and the logical operators (“OR” and “AND”) were adjusted for each base to return the largest number of publications possible.

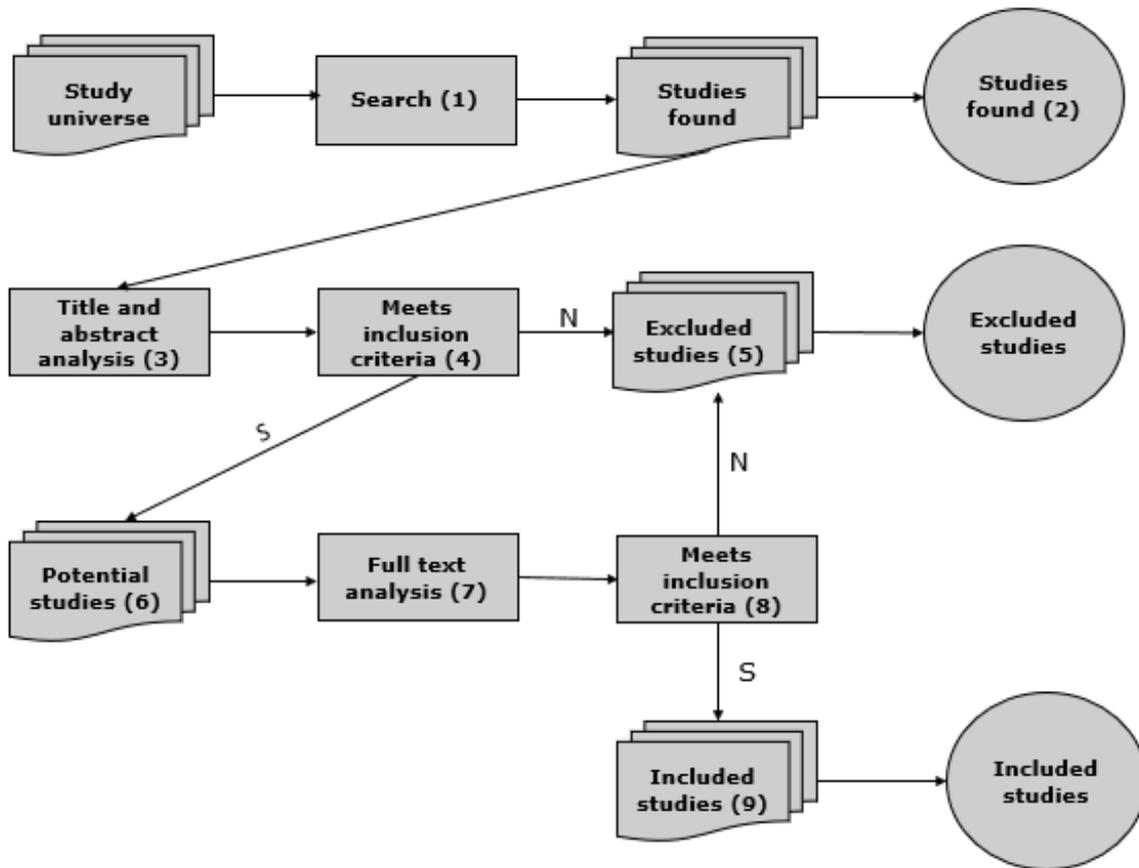


Diagram 3. Research Strategy for an RSL

Source: Adapted from Morandi and Camargo (2015, p. 154).

The search strategy implemented has been illustrated in **Diagram 3**.

The steps of the search strategy for the Systematic Literature Review are described below.

1) Search for articles based on the RSL search protocol: In this step, based on the Search Protocol (**Chart 2**) and the keywords “Strategy,” “BSC,” “Balanced,” “Scorecard,” and “Alignment,” the selected databases Scopus, Web of Science, and Science Direct were searched for publications using the following search strings defined using the criterion of the highest possible number of articles returned:

- *Scopus*: (Strategy AND Alignment AND BSC OR Scorecard);
- *Web of Science*: (Strategy AND Alignment AND Balanced AND Scorecard);

- *Science Direct*: (Strategy Alignment AND BSC AND Scorecard).

2) Data registration of the studies found: In this step, a total of 411 publications were obtained through the searches. The following is the total number of publications according to their respective databases:

- *Scopus* - Total of returned articles: 104;
- *Web of Science* - Total of returned articles: 73;
- *Science Direct* - Total of returned articles: 234.

3) Reading of the articles’ titles and abstracts: In this step, only the titles and abstracts of the articles are read to verify whether there was mention of the search keywords as defined in the research protocol (**Chart 2**);

4) Filtering articles by reading the title and abstract: After reading the title and abstract indicated in the previous step, whether the publications have referred to at least one keyword in their titles or abstracts is verified. If at least one keyword is mentioned in the title or abstract, the study is filtered and moves on to the next step. Thus, a total of 29 articles that passed through this first step were obtained:

- *Scopus* - Total of returned articles: 15;
- *Web of Science* - Total of returned articles: 6;
- *Science Direct* - Total of returned articles: 8.

5) Exclusion of articles that do not meet the criteria: In this step, articles that do not mention at least one keyword in the title or abstract are excluded and do not proceed to the second filter. Thus, a total of 382 articles were excluded in this step:

- *Scopus* - Total articles excluded in the first filter: 89;
- *Web of Science* - Total articles excluded in the first filter: 67;
- *Science Direct* - Total articles excluded in the first filter: 226.

6) Selection of potential studies: In this step, the 29 publications selected in the first filter (Step 4) were checked for duplicates. After this step, five publications were repeated and excluded. According to their database, the remaining 24 publications were tabulated in chronological order, from the oldest to the most recent, as shown in **Table 3**;

7) Full-text reading: In this step, again based on the research protocol (**Chart 2**), a detailed reading (screening) of the articles cataloged in the previous step is performed to check if the content of the articles refers to the relationship between BSC and strategic alignment;

8) Second filter through the exclusion and inclusion criteria: In this step, for the publication to be included in the review, it must be written in English, be available on the web through the selected databases, and, in addition, it must refer to the relationship between strategic alignment and the BSC or to the BSC's ability to contribute to strategic

alignment. In total, 12 articles passed the second filter:

- *Scopus* - Total filtered articles: 8;
- *Web of Science* - Total filtered articles: 1;
- *Science Direct* - Total filtered articles: 3.

9) Study selection for inclusion in the search and data storage: In this step, the articles that passed the second filter are cataloged, as detailed in **Chart 4**. Thus, the analytical reading of these articles was performed to carry out the other steps of the Systematic Literature Review (SLR). On the other hand, after this second filter, a total of 12 articles were excluded:

- *Scopus* - Total articles excluded in the second filter: 5;
- *Web of Science* - Total articles excluded in the second filter: 3;
- *Science Direct* - Total articles excluded in the second filter: 4.

Chart 2 describes the search protocol used in the research.

Diagram 4 shows the schematic summary of the selection flow of publications included in the RSL according to the steps of the search strategy (Diagram 3).

Chart 3 below shows the catalog of publications included after the first filter.

Chart 4 below shows the catalogue of publications included after the second RSL filter.

RESULTS

Once the RSL article search and selection step has been conducted, one can consolidate the information about each step of the Search Strategy (**Diagram 3**) conducted in the three different databases: Scopus, Web of Science, and Science Direct in **Table 1**.

As cited in **Table 1**, the Science Direct database returned many articles and journals; however, most articles did not pass the first reading filter of title and abstract (Acuña-Carvajal *et al.*, 2019; Ferreira, 2017; Lee *et al.*, 2008). Conversely, the Web of Science database also re-

Search Strategy Protocol (RSL)	
Conceptual framework	The BSC is a tool for organizational alignment in the company studied. One of the ways to verify the tool's contribution to strategic alignment is through the stakeholders' perception. However, there is difficulty capturing their perception, which is based on approximate reasoning. Thus, it is proposed to verify the most suitable approaches to quantitatively translate the human perception of the organizational strategic alignment provided by the BSC.
Context	The research will be conducted through a Systematic Literature Review model proposed by Morandi and Camargo (2015).
Horizon	Between 2008 and 2019
Theoretical Currents	Strategic management, strategic communication, strategic alignment, performance measurement systems (BSC)
Languages	English
Revision Strategy	Aggregative
Search criteria	Inclusion: Articles that mention the search keywords in their titles or abstracts are included in the title and abstract reading stage. In the second filter, articles in English that were available on the web in the selected databases and made reference to the relationship between strategic alignment and the BSC or to the BSC's ability to contribute to strategic alignment were included.
	Exclusion: Articles that do not mention the search keywords in their title or abstract were excluded from the title and abstract reading stage. In the second filter, articles were excluded if they were not written in English, if they were unavailable on the web in the selected databases, and if they did not refer to the relationship between strategic alignment and the BSC or to the BSC's ability to contribute to strategic alignment.
Search Terms	Scopus: (Strategy AND alignment AND BSC OR Scorecard)
	Web of Science: (Strategy AND alignment AND Balanced AND Scorecard)
	Science Direct: (Strategy alignment AND BSC AND Scorecard)
Search database	Web of Science, Science Direct, and Scopus.

Chart 2. RSL Search Protocol

Source: Prepared by the author based on Morandi and Camargo (2015, p 155).

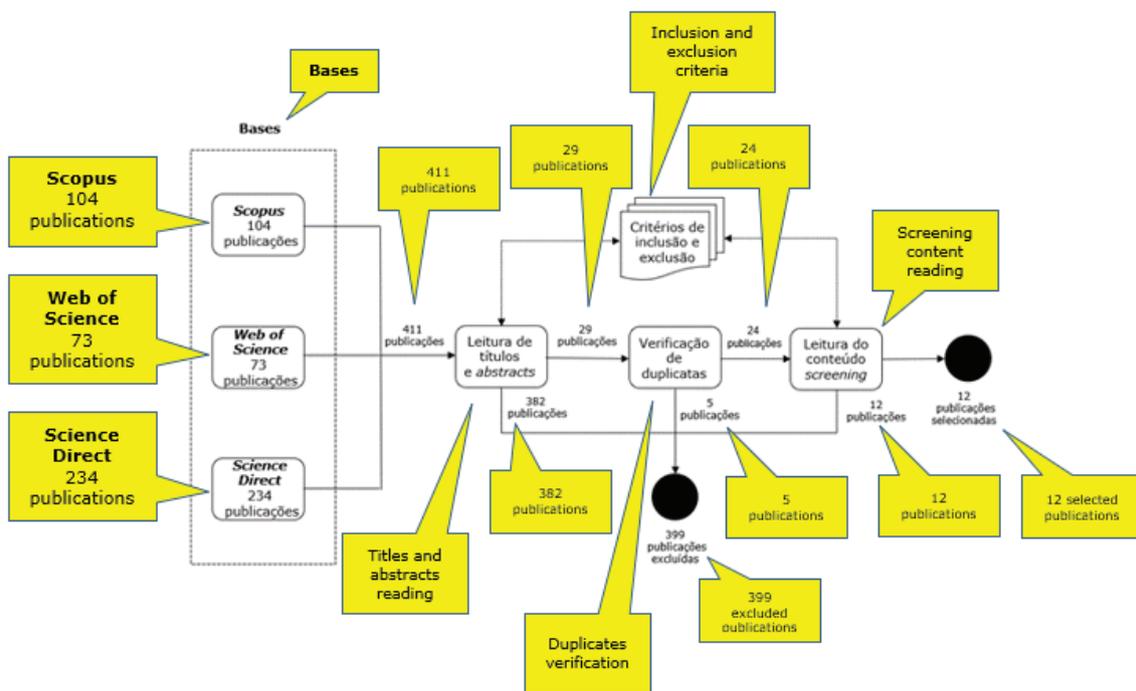


Diagram 4. Publication Selection Flow for RSL

Source: The author (2021).

Author	Article Title	Base
Jusoh et al. (2008)	Competitive strategy and performance measurement in the Malaysian context: An exploratory study	Scopus
Joseph (2009)	Mapping, measurement and alignment of strategy using the balanced scorecard: the Tata Steel case	Scopus
Rezende and Nogueira (2010)	Strategic alignment, performance, and value	Scopus
Asli et al. (2013)	A combination model using strategic alignment model and balanced scorecard and strategies' prioritisation based on TOPSIS technique	Scopus
Herdiansyah et al. (2014)	IT strategy alignment in university using IT balanced scorecard framework	Scopus
Ayoub et al. (2016)	Assessment of the Balanced Scorecard Strategic Alignment Process: A Study of a Utility Company	Scopus
Chopra et al. (2017)	Strategic Management Using Balanced Scorecard—A Case Study on Tata Power	Scopus
Quesado et al. (2018)	Advantages and contributions in the balanced scorecard implementation	Scopus
Okada and Souza (2010)	Balanced scorecard – strategic alignment for the biodiesel production chain in the Brazilian Midwest	Scopus
Gomes and Romão (2016)	Strategic alignment with a Balanced Scorecard approach	Scopus
Giannoulis et al. (2011)	Modeling business strategy	Scopus
Iselin et al. (2008)	The effects of the balanced scorecard on performance	Scopus
Lawrie et al. (2016)	Multi-level strategic alignment within a complex organisation	Scopus
Ayoub (2009)	Observational assessment of the Balanced Scorecard Strategic alignment process: A Study of a utility company	Web of Science
Geuser et al. (2009)	Does the Balanced Scorecard add value? Empirical evidence on its effect on performance	Web of Science
Okongwu et al. (2015)	Causal linkages between supply chain management practices	Web of Science
Prieto and Carvalho (2010)	Strategic alignment and performance: Brazilian companies in the medical diagnostics sector	Web of Science
Lee et al. (2008)	A fuzzy AHP and BSC approach for evaluating performance of IT department in the manufacturing industry in Taiwan	Science Direct
Ferreira (2017)	How managers use the balanced scorecard to support strategy implementation and formulation processes	Science Direct
Acuña-Carvajal et al. (2019)	An integrated method to plan, structure and validate a business strategy using fuzzy DEMATEL and the balanced scorecard	Science Direct
Hoque (2014)	20 years of studies on the balanced scorecard: Trends, accomplishments, gaps and opportunities for future research	Science Direct
Bisbe and Barrubés (2012)	The Balanced Scorecard as a Management Tool for Assessing and Monitoring Strategy Implementation in Health Care Organizations	Science Direct
Modak et al. (2017)	Performance evaluation of outsourcing decision using a BSC and Fuzzy AHP approach: A case of the Indian coal mining organization	Science Direct
Grigoroudis et al. (2012)	Strategic performance measurement in a healthcare organisation: A multiple criteria approach based on balanced scorecard	Science Direct

Chart 3. Publications Catalogue after RSL's First Filter

Source: The author (2020)

Chopra <i>et al.</i> (2017)	Strategic Management Using Balanced Scorecard—A Case Study on Tata Power	Scopus	Case Study	Interviews and corporate data	The power industry Tata Power-DDL case study presents an in-depth analysis of BSC as a tool for strategic alignment, deployment, and performance alignment. The study points out that the main advantage of using BSC as a strategy alignment and deployment tool is mapping the relationship between organizational strategic objectives and environmental challenges to consolidate the effect of achieving strategic objectives.
Quesado, Guzmán, and Rodrigues (2018)	Advantages and contributions in the balanced scorecard implementation	Scopus	BSC Literature Review	Systematic literature review	Through a purely theoretical literature review and practical cases, the study lists the main advantages and benefits of using the BSC and its contribution to strategic alignment, strategic communication, the strategy implementation process, and organizational learning.
Ayoup (2009)	Observational Assessment of the Balanced Scorecard Strategic Alignment Process: A Study of a Utility Company	Web of Science	Case Study	Exploratory and qualitative analysis	The case study seeks to narrate how the company under study ensures the successful implementation of the BSC while establishing a strategic alignment. The study concludes that proper BSC implementation is a requirement for achieving strategic alignment.
Lee, A., Chen, and Chang (2008)	A fuzzy AHP and BSC approach for evaluating performance of IT department in the manufacturing industry in Taiwan	Science Direct	Case Study	Fuzzy AHP	The article describes the construction of an approach based on a hierarchical analysis process based on fuzzy logic and BSC to evaluate the IT area of a manufacturing company located in Taiwan. The results obtained lead to a systematic approach to understanding the priority strategies better to improve the sector's performance.
Ferreira (2017)	How managers use the balanced scorecard to support strategy implementation and formulation processes	Science Direct	Case Study	Simon's 4 control levers	The study seeks to analyze how managers use the BSC and how it influences the process of strategy implementation and modification. The evidence suggests that top management involvement is one of the success factors for the interactive use of the BSC.
Acuña-Carvajal <i>et al.</i> (2019)	An integrated method to plan, structure and validate a business strategy using fuzzy DEMATEL and the balanced scorecard	Science Direct	Case Study	Fuzzy DEMATEL	The article proposes a generic method that assists the entire planning, structuring, and validating strategy and incorporates subjectivity in decision-making and the creation of strategic maps. Therefore, a fuzzy Dematel approach and linear programming were used.

Chart 4. Publications Catalogue after RSL's Second Filter

Source: The author (2020).

turned a considerable number of articles, most of which did not pass the first filter (Ayoup, 2009). On the other hand, in the Scopus database search, a greater number of eligible articles were obtained after the first and second filters (Asli *et al.*, 2013; Ayoup *et al.*, 2016; Chopra *et al.*, 2017; Herdiansyah *et al.*, 2014; Joseph, 2009; Jusoh *et al.*, 2008; Quesado *et al.*, 2018; Rezende and Nogueira, 2010).

Regarding the research lines on the studied theme, it was found that several authors have studied the role of the BSC for strategic alignment. In **Tables 5, 6 and 7**, the last step of conducting the RSL is presented, "Synthesis of results," according to **Diagram 2**, where the main approaches of different concepts related to the theme researched in the RSL are summarized.

According to Rezende and Nogueira (2010), it was evidenced that the corporate performance would be conditioned to the strategic alignment, especially the integrated management strategy and a business model to obtain greater total value to be distributed to stakeholders.

The use of the BSC to control and communicate the mission and strategic objectives throughout the organization was highlighted by Quesado *et al.* (2018). According to the authors, the BSC facilitates strategy definition in operational terms. It facilitates communication effectiveness by making possible a systematic dialogue between the organization and its employees, their respective activities, and departments, in addition to continuous feedback on the achievement of strategic goals. Furthermore,

according to Quesado *et al.* (2018), the BSC can increase employee morale since it establishes a link between employees' contributions to the corporate mission and strategy. From this perspective, the study aligns with the perception of Rezende and Nogueira (2010). Furthermore, there may be an increase in the spirit of cooperation, communication, and visibility between top management and operational and administrative employees. The most significant contribution of the BSC would be its ability to enable organizations to build a high-performance-oriented culture as alignment is promoted between key indicators and the company's strategic objectives at all organizational levels (Quesado *et al.*, 2018).

There was also confluence regarding the relationship between BSC and strategic alignment to increase organizational performance (Ayoup *et al.*, 2016; Jusoh *et al.*, 2008). In their research, Jusoh *et al.* (2008) indicated that the effectiveness of integrated, comprehensive, and coherent performance measurement systems depends largely on how well strategy and performance measures are aligned, integrated, and harmonized to improve organizational performance. Moreover, the authors' research results indicate that when financial, consumption, internal processes, learning, and innovation measures are properly aligned to meet the organization's strategic requirements, superior non-financial performance occurs. This performance should exist regardless of the type of strategy the organization adopts or emphasizes since the four BSC perspectives' overall alignment can explain this superior performance level.

Search Sting used	Base	Total publications found	Total publications after analyzing titles and abstracts	Potential studies after duplicity elimination	Number of publications after the second inclusion and exclusion criteria
("Strategy" AND "Alignment" AND "BSC" OR "Scorecard")	Scopus	104	15	13	8
("Strategy" AND "Alignment" AND "Balanced" AND "Scorecard")	Web of Science	73	6	4	1
("Strategy Alignment" AND "BSC" AND "Scorecard")	Science Direct	234	8	7	3
Total		411	29	24	12

Table 1. Base Search Summary

Source: The author (2020).

Concept	Definition	Author
Strategic alignment and BSC	Alignment between strategy and performance measures through the BSC contributes to organizational performance. A combination of effective strategic alignment and compensation based on the BSC approach can positively contribute to leadership's extrinsic motivation.	Ayoup (2009); Jusoh <i>et al.</i> (2008)
	The BSC is especially useful for aligning people coherently with corporate strategy and assisting the achievement of strategic objectives since it is a powerful tool that ensures the correct implementation of the strategy.	Quesado <i>et al.</i> (2018)
Hierarchy Analysis, Fuzzy Logic, and BSC	The conventional BSC does not automatically integrate performance perspectives into a consolidated view. Such an approach can be improved by incorporating fuzzy logic to address concepts of vagueness and ambiguity quite common in the reality of multi-criteria decision-making processes in corporate strategy planning environments.	Lee <i>et al.</i> (2008); Acuña-Carvajal <i>et al.</i> (2019)
Strategic Alignment and Performance	Strategic alignment facilitates the ability of organizations to improve their performance and efficiency and obtain a competitive advantage. Corporate performance is conditioned to the internal arrangement of performance vectors (alignment), emphasizing the importance of integrated strategic management for greater value aggregation to stakeholders.	Ayoup <i>et al.</i> (2016); Rezende and Nogueira (2010)
Strategy alignment and deployment	Strategy deployment must be done so that the organizational strategy is translated into every daily activity of the employees and at every level of the organization. Scorecards are an integral part of strategy communication and alignment.	Joseph (2009); Chopra <i>et al.</i> (2017)
Competitive advantage and IT strategy	The organization needs to have good strategic alignment to create a competitive advantage. Organizations are most effective when there is coordination between the information processing requirements of the strategy and the information processing capability.	Asli <i>et al.</i> (2013)

Chart 5. Summary of Concepts Revised in the RSL

Source: The author (2020).

The study of Ayoup (2009) demonstrated that the relationship between an effective strategic alignment and a compensation plan based on the BSC could generate positive results in the extrinsic motivation of executives. Moreover, according to the authors, there is a lack of published studies dealing with the BSC implementation process in the context of real organizations. From this perspective, Ayoup (2009) indicates that an effective strategy deployment depends on factors such as the level of understanding of managers and their respective departments about the strategic objectives, sponsorship of initiatives by managers, and communication, in addition to time constraints, supervision, and coordination. They add that an effective deployment process will enable the organization to access a platform to achieve strategic alignment, always linked to better financial and non-financial performance.

In a subsequent study, Ayoup *et al.* (2016) indicate that most of the literature on BSC has focused more on its function as a performance measurement and management tool than as a strategic alignment tool. Therefore, evidence of the BSC for such a purpose is limited. Thus, strategic alignment theory states that organizations that seek to align their different components, such as people, systems, and structure, perform better in achieving their strategic objectives than those that do not. Also, according to the authors, a failure to strategically align the various components can lead to undesirable implications such as strategic objectives that are misaligned across sectors, measures that may not be fully understood or applied, goals that may be compromised or not achieved, and important initiatives or investments that may not be prioritized, optimized, or adequately sponsored, which can lead to costly corrections. Still, according to the authors, strategic alignment enables organizations

to improve their performance and efficiency. Consequently, a competitive advantage is gained and maintained. In addition, successful implementation of organizational strategies requires a crucial understanding of the link between resources, activities, and the desired outcome.

Both Ayoup (2009) and Ayoup *et al.* (2016) discuss the possibility that alignment can be categorized into vertical and horizontal and can also be achieved through strategy deployment. In turn, Melnyk *et al.* (2005) defined vertical alignment as the alignment of strategies, objectives, action plans, and decisions at all levels of the organization. On the other hand, the horizontal alignment would be defined as a matrixed and coordinated alignment of efforts among structures at the same level. Compared to vertical alignment, horizontal alignment receives little attention from researchers. According to Ayoup (2009), many managers believe that alignment is necessary to achieve the organizational vision and mission. The strategy deployment in companies with a high degree of hierarchization makes the process more complex. According to Ayoup *et al.* (2016), the study demonstrates the positive effects of implementing BSC as an approach to managing the issue of strategic alignment in large organizations. However, managing such alignment involves dealing with all the hard and soft elements of an organization. The hard elements seem to be easier to deal with, such as systems, policies, and procedures. The soft or elastic elements, such as awareness, knowledge, and communication, are a greater challenge to maintaining organizational alignment.

Also, in their study, Ayoup *et al.* (2016) indicated that there are different approaches to the strategic alignment concept. For example, Nath and Sudharshan (1994) use the word coherence to refer to the alignment between business and functional strategies. On the other hand, Smith and Reece (1999) define strategic alignment as the degree of compatibility between an organization's operational components and its business strategy. According to Ayoup *et al.* (2016), the strategic alignment makes it easier for organizations to improve performance and efficiency. Consequently, gaining and maintaining competitive advantages is more easily achieved. Moreover, the successful implementation of organizational strategies requires a crucial understanding of the link between resources, activities, and the desired outcome.

The BSC's contribution to strategic alignment could be verified through the various approaches raised in the RSL, such as performance increase, competitive advantage, integration, and synergy of strategic perspectives. In particular, the BSC's contribution is highlighted in its ability to communicate strategic priorities, translate and operationalize strategic objectives, and balance and align

areas and departments toward a common goal. Regarding the type of researched articles, there is a great tendency for case study publications, most likely due to the need for empirical verification of the BSC implementation and its relationship with strategic alignment (Acuña-Carvajal *et al.*, 2019; Asli *et al.*, 2013; Ayoup, 2009; Ayoup *et al.*, 2016; Chopra *et al.*, 2017; Ferreira, 2017; Joseph, 2009; Lee *et al.*, 2008).

In their study, Quesado *et al.* (2018) also indicated that once the BSC is properly implemented, it has a number of advantages over traditional financial reporting as it facilitates the change process. Some of the advantages include greater flexibility, inclusion of greater non-financial information, ability to communicate key drivers of performance, organizational innovation, and learning. The BSC also recognizes the influence of the performance measurement system on managers' and employees' behavior. Thus, the method forces the organization to explicitly recognize the activities that contribute to the success and proper development of performance measures.

According to Joseph (2009), a strategy should consider the different levels of the organization for the development of proper scorecards since they are an integral part of communication and strategic alignment. Complementarily, Asli *et al.* (2013) state that the BSC is suitable for implementing and operationalizing the strategic alignment model that enables the alignment of the more operational and internal organizational layers with strategies extrinsic to the organization. The study also suggests using BSC for establishing a strategic alignment model. In turn, Ferreira (2017) concludes in his study that performance measurement systems used interactively favor market awareness, an entrepreneurial mindset of managers, innovation, and organizational learning. Moreover, the study adds that the BSC performance measurement system has increased managers' decision-making power and awareness of responsibility (accountability).

Concerning the study by Chopra *et al.* (2017), BSC introduction and implementation as a strategic management tool proved to be highly beneficial in creating a business strategy, connecting objectives to long-term goals, facilitating organizational change, and improving the understanding of organizational vision and mission. Moreover, they add that organizations all over the world face the same difficulty, i.e., strategy creation and development would be only one step, because communicating it with the extent and depth of the organization and checking if the strategy is being implemented correctly is something completely different.

With regard to new approaches, the recent use of fuzzy logic to capture and quantify the vagueness and

imprecision of human thinking stands out in particular, as well as its association with multi-criteria hierarchical analysis for prioritizing organizational strategies when considering subjectivity in the decision-making process (Acuña-Carvajal *et al.*, 2019; Lee *et al.*, 2008). Specifically, in Lee *et al.*'s (2008) view, the BSC is a performance measurement framework that promotes an integrated look at a company's business strategy through financial and non-financial measures. However, a conventional BSC does not consolidate such performance measures; therefore, incorporating the hierarchical analysis method (AHP) into the BSC seems to be a good solution. Since vagueness and imprecision are common characteristics in many decision-making problems, an integrated method of BSC and Fuzzy AHP (FAHP) can deal with such aspects.

The study by Acuña-Carvajal *et al.* (2019) reveals that some more recent prioritization approaches use the classic BSC to generate strategic maps for decision support. In this respect, such approaches do not consider the existing subjectivity of one objective over another, nor the decision makers' perception regarding the influence of some objectives over others. Such an approach would imply ignoring the uncertainty inherent in the prioritization process. In addition, the study proposes a three-step quantitative method for establishing causal relationships between strategic objectives and the strategic maps of a BSC. First, the DEMATEL multicriteria decision method was used to find the weights and evaluate the objectives based on a cause-and-effect process comparison. A matrix is generated that represents all possible causal relationships between objectives. In a second step, the DEMATEL method is improved by using fuzzy logic to overcome the limitations of subjectivity gradation in the data obtained from decision-makers. In the third step, a binary optimization model was built and applied to define which relationships would be prioritized to construct the strategic map. Finally, according to Acuña-Carvajal *et*

al. (2019), the BSC's use in real-world contexts has been used in companies in Fortune Magazine's Top 1000 companies, including those in the financial, industrial, and energy sectors.

Regarding the study by Quesado *et al.* (2018), it was possible to verify that the BSC uses a set of financial and non-financial indicators fully integrated and coordinated through causal relationships established with the organization's objectives and targets. Therefore, its flexible nature, adaptability to particular activities and circumstances of each organization, and its synthetic and summarized characteristics, which allow a quick overview of the organization, are qualities that stand out in the BSC. Furthermore, according to the study, the BSC has always been considered a complete indicator system compared to those proposed. Thus, the BSC went beyond conventional scorecards by considering all key factors in an organization and the active involvement of managers. Thus, besides being a useful tool for information and control, the BSC enables the coordination of people and encourages their motivation. The study also indicates that, some years later, the BSC started to show that it was also useful to align people coherently to the organizational strategy and to help achieve strategic objectives, constituting a powerful tool to ensure that the strategy is implemented correctly.

Thus, the BSC is integral to mission identification, strategy formulation, and strategy implementation. Therefore, it plays an important role in communicating the organization's strategy to its members while generating feedback on the process. Furthermore, once used properly, the BSC enables a link between long-term strategy and short-term actions and creates strategic awareness among employees. In this context, the BSC approach helps managers to focus on the organization's strategy and decide how and what to measure, avoiding potential

Influence of BSC for horizontal and vertical alignment	Influence of BSC on motivation and behavior	Contribution of BSC to strategic alignment	Strategic communication through BSC	Influence of BSC for accountability	Applying fuzzy logic to BSC
Ayoup (2009); Ayoup et al. (2016); Quesado et al. (2018)	Quesado et al. (2018)	Joseph (2009); Asl et al. (2013); Ayoup (2009); Ayoup et al. (2016); Chopra et al. (2017); Lee et al. (2008); Ferreira (2017); Acuña-Carvajal et al. (2019)	Joseph (2009)	Ferreira (2017)	Lee et al. (2008); Acuña-Carvajal et al. (2019)

Chart 6. Key Concepts Reviewed per Author

Source: The author (2020)

conflicts between different goals and indicators (Quesado *et al.*, 2018; Joseph, 2009).

Chart 6 summarizes some of the concepts reviewed per author.

According to Dresch *et al.* (2015), no single synthesis technique is to be adopted in an RSL. The synthesis process begins with a tabulation of the selected primary studies to obtain a map of the results found. At the end of the synthesis process, one seeks to answer the original review question.

Thus, in light of the RSL conducted, one can answer the research question, "How can a BSC application contribute to organizational strategic alignment?" The DSR was initially established in the first step of the RSL model adapted for DSR (**Diagram 2**). According to the review, the BSC contributes to:

- Strategic alignment by communicating and identifying the mission and strategy formulation and implementation;
- The vertical and horizontal strategic alignment;
- The influence on the behavior of employees and managers, coordination of people by encouraging their motivation;
- Communicating strategic priorities;
- Establishing awareness of responsibility (accountability);
- Capturing the vagueness and imprecision of human thought in processes of decision making when associated with fuzzy logic.

Chart 7 presents the synthesis of the articles included in the SLR according to Step 9 of the search strategy (**Diagram 3**). Thus, in the table above, the publications are synthesized according to the problem class, problem, artifact, construction heuristic, contingency heuristic, results, and observations and their respective references.

CONCLUSION

This article aimed to update the theoretical ballast of the contribution of the BSC performance measurement system to organizational strategic alignment. Thus, it was possible to verify several approaches rose in the RSL that answer the central research question, such as the BSC's contribution to strategic alignment, organizational per-

formance improvement, competitive advantage, and the integration and synergy of strategic perspectives. Furthermore, the BSC has been shown to have vertical and horizontal alignment capabilities in organizations, the vertical being the alignment of strategies, objectives, action plans, and decisions across the various levels of the organization and the horizontal being the matrixed and coordinated alignment of efforts across structures at the same level (Ayoup, 2009; Ayoup *et al.*, 2016).

In addition, BSC's influence on the behavior of managers and employees regarding their motivation as a means of reward was also verified (Quesado *et al.*, 2018). In particular, the contribution of the BSC concerning the ability to communicate strategic priorities, translate and operationalize strategic objectives, and balance and align across areas and departments of an organization toward a common goal is highlighted (Acuña-Carvajal *et al.*, 2019; Asli *et al.*, 2013; Ayoup, 2009; Ayoup *et al.*, 2016; Chopra *et al.*, 2017; Ferreira, 2017; Lee *et al.*, 2008; Joseph, 2009).

Regarding the BSC's communication capacity, it is inferred that it plays an important role in its strategic communication to its members while generating feedback on the strategic process (Joseph, 2009; Quesado *et al.*, 2018). A relevant finding was the BSC's ability to establish a greater sense of responsibility among managers (Ferreira, 2017), which is pertinent in organizations that need to establish segregation of duties and greater traceability of results.

Regarding the types of articles surveyed, there is a high incidence of case study publications, most likely due to the need to verify the empirical nature of BSC implementation and its relationship with strategic alignment. Concerning new approaches, one should highlight the recent use of fuzzy logic to capture and quantify the vagueness and imprecision of human thinking and multi-criteria hierarchical analysis for prioritizing organizational strategies (Acuña-Carvajal *et al.*, 2019; Lee *et al.*, 2008).

In turn, the RSL conducted in this research was instrumental in providing a full, more comprehensive view of the research topic. Moreover, the RSL allowed for the publicization of more recent and relevant approaches to the relationship between BSC and strategic alignment, a subject published over twenty-five years ago and lacked timely updating (Quesado *et al.*, 2018). Furthermore, as an unfolding of RSL, fuzzy logic has proven to be very useful in translating human perceptions by quantifying human thought and its intrinsic aspects, such as imprecision and vagueness, as opposed to the dichotomous relationships of traditional science.

Classe de problema	Problema	Artefato	Heurística de Construção	Heurística Contingencial	Resultado	Observação	Referência
Alinhamento Estratégico através do BSC	Avaliação da consistência da contribuição das múltiplas medidas de desempenho do BSC.	Análise sistêmica multivariada (DRAZIN; VAN DE VEN, 1985).	Análise de consistência de padrões entre conjuntos multivariados.	Estabelecimento de grau de correspondência a um perfil externo ideal.	Alinhamento estratégico através das perspectivas do BSC está associado à alta performance das organizações.	Estudo realizado em 120 indústrias da Malásia.	Jusoh et. al (2008)
	Verificação da contribuição da TI para objetivos estratégicos.	Modelo Fuzzy AHP.	Imprecisão e incerteza é parte do processo decisório e deve ser incorporada ao BSC.	A partir da revisão de literatura e avaliação de especialistas, foram definidos 14 indicadores mais importantes para departamentos de TI.	A pesquisa propõe um modelo sistemático de avaliação para nortear avaliação de estratégias na área de TI.	Estudo baseado em uma empresa de Taiwan.	Lee et. al (2008)
	Contribuições da implementação do BSC para o alinhamento estratégico.	Análise exploratória e qualitativa (CRESWELL, 2007).	Programa BSC healthcheck.	Cisão da empresa estudada em duas outras empresas.	Um desdobramento eficiente do BSC possibilita o alinhamento estratégico associado a melhor performance organizacional.	Estudo baseado em uma empresa da Malásia.	Ayoup (2009)
	Articulação da estratégia.	Mapas estratégicos (KAPLAN; NORTON, 1997).	Ligação entre elementos-chave da estratégia com as quatro perspectivas do BSC.	Reavaliação estratégica constante.	A utilização do BSC proporcionou maior foco e flexibilidade mercadológica, além de impulsionar ganhos financeiros.	Estudo baseado na empresa Tata Steel.	Joseph (2009)
	Avaliação da relação entre o alinhamento estratégico e a criação de valor.	Modelo PMHIP - Performance Management Systematics Based on Multiple and Integrated Perspectives (PONTES, 2004).	Performance corporativa está condicionada ao arranjo interno de vetores de desempenho.	Resultados devem ser relativizados devido a utilização de amostras não probabilísticas e caráter exploratório da pesquisa.	A importância do gerenciamento integrado e do modelo de negócio para obtenção de maior valor total para ser distribuído para os stakeholders.	Estudo baseado em indústrias mais complexas e de maior impacto com a inclusão de blocos adicionais de proposição de mecanismos de gestão.	Rezende e Nogueira (2010)
	Categorização e priorização estratégica.	Técnica TOPSIS - Technique for Order Preference by Similarity to Ideal Solution (KROHLING; CAMPANHARO, 2011).	A opção preferida deve ser a que mais se aproxima da solução ideal.	Desconsideração da inter-relação entre as perspectivas do BSC.	A proposição de um framework de priorização de estratégia para aumentar o foco na criação de valor na organização.	Pesquisa baseada em estudo de caso.	Asli et. al (2013)
	Alinhamento estratégico de TI.	IT BSC (KEYES, 2004).	Framework de desdobramento do BSC.	Expansão de sistemas de educação a distância de acordo com a visão da organização.	O framework de desdobramento do BSC possibilitou avaliação dos gaps estratégicos da organização estudada.	Pesquisa baseada em estudo de caso.	Herdiansyah et. al (2014)
	O papel do BSC no alinhamento estratégico organizacional.	Análise qualitativa de dados (MILES; HUBERMAN, 1994).	Modelo de Alinhamento Organizacional.	Avaliações e entrevistas ocorreram por quatro meses com gestores de diversos níveis.	O BSC possui efeitos positivos no processo de alinhamento estratégico em grandes organizações.	Pesquisa baseada em estudo em organizações na Malásia.	Ayoup et. al (2016)
	Verificação da implementação e comunicação estratégica.	BSC (KAPLAN; NORTON, 1997).	Desdobramento estratégico segundo desafios de negócios, operacionais e de recursos humanos.	Implementação do BSC à luz do desenvolvimento sustentável.	O alinhamento de atividades individuais, departamentais e corporativas através do BSC possibilitou um aumento significativo na performance organizacional.	Estudo baseado na empresa Tata Steel.	Chopra et. al (2017)
	Vantagens da implementação do BSC.	Revisão Sistemática de Literatura (LUEG, 2015; SAMPAIO; MARCINI, 2007).	Artigos teóricos, conceituais e empíricos.	Revisão de artigos entre os anos 2002 a 2016.	BSC é parte integral de identificação e implementação da estratégia.	Pesquisa limitada à revisão bibliográfica.	Quesado et. al (2018)
	As implicações do uso do BSC no processo de implementação estratégica.	Framework de quatro evidências de controle (SIMONS, 1995; 2000).	O uso das quatro alavancas de controle de Simon define a efetividade da implementação das estratégias.	Estudo realizado comparando a coerência entre os resultados de outros estudos do framework de Simons com os resultados obtidos no estudo de caso.	O estudo indica que o BSC, quando utilizado de maneira iterativa, possibilita aumento do poder decisório dos gestores e seu comprometimento com os objetivos estratégicos, bem como promove o aprendizado estratégico.	Pesquisa baseada em estudo de caso.	Ferreira (2017)
	Inclusão da incerteza no processo de formulação da estratégia.	Fuzzy DEMATEL (VALMOHAMMADI; SOFYABADI, 2015; WU, 2012; WU; LEE, 2007; Wu et al., 2001).	Matrizes de influência, oferta, valor máximo e variáveis de valor total agregado.	Os resultados da pesquisa podem ser adaptados para diferentes tipos de organizações.	O estudo propõe um método para integrar os passos de formulação de estratégia em uma solução única que possibilite a inclusão de incertezas à tomada de decisão.	Futuras pesquisas poderão utilizar outras abordagens como a técnica Delphi.	Acuria-Carvajal et. al. (2019)

Chart 7. Summary of Publications Included in the RSL

Source: Prepared by the author (2020).

As for the limiting factors of this research, one can point out that the RSL was performed by only one person rather than a team of researchers. This could contribute to some relevant articles not being considered in the review. In addition, the reviewed articles are of different ontological and epistemological natures, which may limit their comparability.

For future research, it is suggested to search for articles based on methodological approaches more appropriate to the organizational context, such as the RSL, and not preponderantly case studies (Dresch *et al.*, 2015). Furthermore, it is recommended that a team of experienced reviewers is established to conduct a more comprehensive RSL.

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