

What has been said, and what remains to be said, about the balanced scorecard?*

Lucía Clara Banchieri¹, Fernando Campa Planas²,
Maria Victoria Sánchez Rebull³

Abstract

The aim of this study is to address the paradox that while the Balanced Scorecard (BSC) tool enjoys widespread penetration in the corporate world, at a theoretical level it has received many and varied criticisms. The hypothesis is that the BSC is based on a solid theoretical model that is applicable to companies. This hypothesis is analysed by means of a literature review. This review has been done over 955 documents containing the same expression related to BSC in the ISI database. Finally, after some filter criteria, 309 articles have been analyzed. The conclusion of the study is that the assumed hypothesis has been confirmed. The BSC is a model that has evolved and been honed over the years to the point where it currently has a solid and applicable theoretical foundation, which is made possible by implementing it in various sectors and countries. However, there are still some questionable aspects with regard to certain elements of the model (perspectives, indicators and cause and effect relationship).

Key words: balanced scorecard applicability; literature review, critical analysis.

JEL classification: M10, M40

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¹ Assistant Professor, Department of Business Administration Universitat Rovira i Virgili, (Reus – Spain), Avda. Universitat 1, Reus (43204), Spain. Scientific affiliation: management accounting, hotel industry. Phone: +34 977759865. E-mail: luciaclara.banchieri@urv.cat

² Full Professor, Department of Business Administration. Universitat Rovira i Virgili (Reus – Spain), Avda. Universitat 1, Reus (43204), Spain. Scientific affiliation: management accounting, tourism, air transportation. Phone: +34 977759872. E-mail: fernando.campa@urv.cat

³ Full Professor, Department of Business Administration. Universitat Rovira i Virgili (Reus – Spain), Avda. Universitat 1, Reus (43204), Spain. Scientific affiliation: cost accounting, hotel industry, air transportation. Phone: +34 977758906. E-mail: mariavictoria.sanchez@urv.cat

1. Introduction

The technological, sociocultural, economic and political change that took place during the mid 1970s created a dynamic, uncertain, and increasingly competitive business context. Companies had to adapt, and in this process different intangible resources acquired a major role. However, at that time organisations had not implemented a system for evaluating the performance of such assets, which were sometimes difficult to identify because traditional measuring systems only reflected a company's accounting and financial performance. In response to this situation, Kaplan and Norton (1992, 1993, 1996, 2000, 2004) developed the Balanced Scorecard (hereinafter BSC). This model has been widely accepted in both the professional and academic spheres.

From a professional standpoint, a wide range of companies have adopted it. In the year 2008, the BSC was ranked the sixth most widely used management tool, as it was used by 53% of 1,430 companies. This percentage was significantly higher than that of the other tools, while the level of satisfaction for the BSC is at the average for all management tools (Rigby and Biladeau, 2009). Another interesting fact for appreciating the tool's market penetration is that 40% of *Fortune* magazine's 1,000 top companies used the BSC model in 2007 (Thompson and Mathys, 2008).

From an academic standpoint, there have been countless publications on the BSC in recent years, with different approaches. From its creation in 1992 until July 2010, 309 articles containing "Balanced Scorecard" or the abbreviation "BSC" in the article title or abstract have been written and included in the Institute for Scientific Information (hereinafter ISI) database.

However, there are also many and varied criticisms of the model and the elements that make it up, as well as certain information gaps with regard to its concept and application.

Two criticisms of the overall theoretical model have been identified:

- Bessire and Bancker (2005) investigated the theoretical aspects not developed by the model and discussed two issues:

- a) There is no discussion of the political dimension of the tool, which is understood as the dimension that includes all individual and organisational objectives, and responds to questions such as for whom or what for do the organisations operate. The only reference to the political dimension in the BSC is the vision or mission defined for the organisation. However, in the cases cited by Kaplan and Norton, this is derived from the company's strategy. Critics therefore maintain that it corresponds to the strategic rather than the political dimension.

- b) They explained the contradiction that exists when attempting to establish the organisation's main objective. At one point, Kaplan and Norton (1996b) stated that the fundamental objective was to maximise profit for the shareholders, but they later cited customer satisfaction as the main objective.
- The BSC is a model that views an organisation from a mechanistic perspective (Bessire and Bancker, 2005; Voelpel et al., 2006). By characterising an organisation as a machine, they view it as bureaucratic, and do not consider the influence of, or interactions with, the outside world. They reduce the complexity of the company system to simple cause and effect relationships.

Similarly, some specific criticisms have been found of the various elements that make up the BSC, such as perspectives, indicators and cause and effect relationships. With regard to perspectives, there are two criticisms. The first refers to the fact that the structure of the model is composed of only four perspectives, and that these are only internal. The BSC is regarded as a static model that does not consider the external context (political, economic, social, environment). Several authors maintain that an external perspective should be added, that would consider the different interest groups who are not represented (suppliers, trade union, society and consumers who are a different group than customers) since the learning perspective considers the employees; the customer perspective considers the customers; and the financial perspective concerns the shareholders (Epstein and Manzoni, 1998; Brignall, 2002; Figge, et al. 2002, Van Der Woerd and Van Der Brink, 2004; Voelpel et al. 2006). However, Kaplan and Norton (1996b) explained that in cases where the organisation requires it, other perspectives could be added.

The second criticism of the perspectives concerns the interrelationships between them. Kaplan and Norton maintain that the learning and growth perspective is the cause of improvements in the internal processes. If they were more efficient, these processes would achieve customer loyalty, resulting in increased profits for the company. However, Nørreklit (2000) explained that the relationship between the perspectives is circular. For example, new processes are developed that improve the company's efficiency, resulting in better economic results. The circle is complete when the company, after obtaining higher profits, invests in improvements to the production processes.

The criticisms put forward by various authors with regard to indicators focus on the usefulness of non-financial and future development indicators. Lipe and Salterio (2000) conducted a study that demonstrated that common measurements are considered when evaluating the performance of business units, while less attention is devoted to unique measurements. Common measurements are past and generic indicators, unlike unique indicators, which are non-financial measurements specific to each business unit, and reflect future development. This approach contradicts one of the main benefits of the BSC, which is the adoption of non-financial and future

development indicators for decision-making, in this case concerning the evaluation of business units.

Finally, one of the most widely criticised aspects of the model is one of the most recent and important additions to the BSC, and this refers to cause and effect relationships. Malmi (2001) maintains that they are complicated to apply in practice because they are difficult for users to understand.

For Nørreklit (2000), the relationships between the perspectives are not causal, but logical. Malina et al. (2007) verify statistically that there are no cause and effect relationships, but justify that there are indeed relationships of purpose and logic. The latter coincides with the type of relationship proposed by Nørreklit. Brignall (2002) also maintains that the relationships between the indicators are not only linear, and do not work only one way, and that it is generally complicated to establish the interdependencies and interactions in order to capture all of the effects they can produce.

Another criticism of the cause and effect relationships is that the model does not consider the time dimension (Nørreklit, 2000; Kunc, 2008). First of all, the periodicity of the indicators is not homogeneous. Thus, an indicator measured annually could be the cause of a monthly one. Second, the time that it takes an indicator to influence another is not specified. Cause and effect relationships are therefore understood to be simultaneous. In most cases, this is not viable (for example, a reduction in process time will not instantly be reflected in an increased market share). From another standpoint, leading indicators (forecast measures) are linked to lagging measures, which is not coherent because the results belong to a time prior to the reality reflected by the performance indicator (for example, it is highly unlikely that personnel training given during a particular period will be reflected in the sales for that same period). The study conducted by Kunc (2008) explained that a small percentage of persons identify the time lag between the indicators when making decisions with a Strategic Map.

There are situations in which the cause and effect relationships are not beneficial, or are even problematic (Bukh and Malmi, 2005). These situations are classified as four types of contingencies: strategic, organisational, related to external communication, and environmental, as shown in Table 1.

Table 1: Situations in which cause and effect relationships are not beneficial

Type of Contingency	Description
Strategic	The organisation has no strategy defined.
	There is no agreement or understanding between the underlying relationships.
	There are no priorities in the strategy.
	The strategy is considered a set of decisions or soft success criteria.
Organisational	The strategies are quickly solved by the immature state of the organisation or its dynamic capacities.
	Communicating the organisation's strategy so clearly can be risky for the people managing it, or if it becomes necessary to negotiate with other interest groups in the internal or external environment.
External communication	The BSC is used to provide information to the outside.
Environmental	In turbulent environments, it would be necessary to know how the BSC is being used: to manage the strategy or to provide information for decision-making.

Source: Created by the authors based on Bukh and Malmi (2005)

Lastly, in relation to information gaps, Marr and Schuima (2003) explained that more studies were needed to help define the theoretical foundation and research the new BSC methodology. Moreover, several authors stated that further studies are needed on the implementation of the BSC (Ahn, 2001; Aparisi Caudeli, 2008).

In view of the above, the relevance and opportunity of studying the BSC lies in the paradox of it being an extensively-used planning and management tool in the corporate world (Thompson and Mathys, 2008; Rigby and Biladeau, 2009) while at the same time being widely criticised by the academic world from a conceptual point of view (Epstein and Manzoni, 1998; Nørreklit, 2000; Ahn, 2001; Brignall, 2002; Figge, et al. 2002, Marr and Schuima, 2003; Van Der Woerd and Van Der Brink, 2004; Bessire and Bancker, 2005; Bukh and Malmi, 2005; Voelpel et al., 2006; Malina et al, 2007; Aparisi Caudeli, 2008; Kunc, 2008).

Addressing this contradiction is, therefore, the main objective of this article, which approaches it from the perspective of corroborating the hypothesis that the BSC is based on a solid theoretical model that is applicable to companies. Hence, the aim of this study is to support whether criticisms of the model have already been solved by academics, resulting in a solid theoretical framework for the model.

This article is structured in three sections. The first describes the methodology used. The second section analyses and discusses the findings. Finally, the third section presents the conclusions of this study.

2. Methodology

The methodology used to corroborate the hypothesis whether the BSC has a solid theoretical framework and whether there are any studies on its application was a review of the literature. This analysis of the literature was made from different dimensions: an analysis of the original model (its concept and evolution), its practical use and finally its potential for implementation.

The following criteria were used to select the articles:

- To obtain the results relating to the concept and evolution of the model, we considered all the publications and articles written by its creators, Kaplan and Norton, between 1992 and 2010.
- To examine its usefulness and practical implementation, we completed the information provided by its creators with other papers that corroborated the aspects propounded by Kaplan and Norton.
- We then used a bibliometric analysis to determine the number of articles written and which sectors and countries have studied the BSC model.

There are several databases that contain articles about BSC. In this study we have considered only the articles published in journals included in ISI database for bibliometric analysis, which is a limitation of the study carried out.

In late July 2010, the ISI database contained 955 documents when filtered by the expression “Balanced Scorecard” under the *Topic* category. Of the 955 results, 451 were for *papers*, 432 for *proceeding papers*, 22 for *reviews*, 16 for *book reviews*, 12 for *editorial materials*, 11 for *meeting abstracts*, 9 for *letters*, 1 for *news* and 1 for *reprints*. For the study, only papers were considered, and all papers that did not contain the expression “Balanced Scorecard” or the abbreviation “BSC” in the article abstract or title were discarded (even if Balanced Scorecard was listed as a keyword for the paper).⁴ As a result of this filter, 138 papers were eliminated and 4 were discarded as repeats, so that the sample to be analysed consisted of 309 articles. Of the articles, 77.35% (239) were empirical studies.

3. Results and discussion

Detailed below are the main findings obtained from this review, classified under different headings: concept and evolution; usefulness; implementation; and studies relating to the BSC.

⁴ Given that there was no explicit reference to the BSC in the paper title or abstract.

a) Concept and evolution

Since 1992, Kaplan and Norton have been developing the BSC model. Over the years, they have defined, modified, and completed the model in order to offer executives a tool that would enable them to manage their companies in dynamic contexts.

Initially, they defined it as a set of indicators that provided a comprehensive view of a company because they were comprised not only of economic-financial indicators, but also considered other perspectives that reflected the performance of the organisation's intangible assets. Precisely four perspectives were selected: Financial, customers, internal business processes, and learning and growth. These perspectives provided balance to the information because they were comprised of long-term and short-term objectives, financial and non-financial indicators, lagging and leading indicators, and indicators reflecting a company's internal and external performance. This is why it is named as "balanced" (Kaplan and Norton, 1992).

They later improved the model, specifying the objectives (measures) comprising the BSC that would have to be established in accordance with the organisation's business strategy. First the organisation's vision had to be established, then the strategy for achieving it and, finally, the objectives (measurements) had to be designed for each of the perspectives (Kaplan and Norton, 1993).

The third modification to the model was a consequence of its use by companies. Several executives decided to implement the BSC at their companies, and discovered the tool's potential for communicating and aligning the organisation with the company's strategy. However, in order for the BSC to perform this function, it was not only necessary for the indicators to be related to the company's strategy, but also associated with each other through cause and effect relationships. The model therefore defines the strategy based on the hypotheses of the cause and effect relationships. With this new approach, Kaplan and Norton (1996b:2) redefined the BSC as a model that "translates an organisation's mission and strategy into a comprehensive set of performance measures, that provide the framework for a strategic measurement and management system." The BSC was transformed into a strategy management system that made it possible to carry out four relevant processes: clarify and translate the vision and strategy; communicate and link strategic objectives and measures; plan, set targets and align strategic initiatives; enhance strategic feedback and learning. Similarly, Kaplan and Norton (1996b) explained that in the cases where the organisation's strategy made it necessary, other perspectives could be incorporated.

A new contribution was the Strategic Map, which was the graphic representation of the strategy defined by the objectives (indicators) and cause and effect relationships. The Strategic Map provides a comprehensive, cohesive and systematic vision of the organisation's strategies. Also, because it is graphic, it facilitates the understanding and communication of the strategies by all members of the organisation (Kaplan and Norton, 2000, 2004).

Later, the BSC and Strategic Maps were considered key tools for the strategic alignment of the entire organisation, as the Strategic Maps provided the capacity to clearly describe the organisation's strategy, and the BSC had the capacity to link the strategy to the organisation's management system. Kaplan and Norton (2006) explained that to achieve organisational synergy, the alignment must not only affect the board of directors, shareholders, and business and support units, but also the customers, suppliers and partners. This new contribution proposes that the BSC is used for alignment the company with different external interested groups.

Finally, Kaplan and Norton (2008) proposed the Execution Premium, a management system that integrates the strategy into the company's operations. This new model is a circle containing six stages:

1. Develop the strategy. To develop it, they consider three inputs: the internal context, the external context, and the existing strategy.
2. Plan the strategy. The BSC and Strategic Maps are developed.
3. Align the organisation with the strategy.
4. Plan operations. The strategy is linked to the budget.
5. Monitor and learn. Meetings are held to review the strategy and the operations.
6. Test and adapt. Verification that the strategy is being carried out, while making any necessary modifications. In any case, these would take us back to the first point.

This new model is based on a continuous improvement approach, because it is reviewed continuously, which reflected in stages 5 and 6. In addition, this approach allows the organization to be adapted to the changes coming from the context and learn from their experience. They also proposed the only modification linked to the structure of the organisation, such as the creation of a strategic management office that would be responsible for ensuring efficient implementation of the system.

b) Usefulness

Kaplan and Norton described two main uses for the BSC. First, the model provides valuable information and offers executives an overview of the organisation's performance. Second, they explained the tool's contribution to comprehensive strategy management.

The information provided by the BSC is comprehensive and global, and supported by data from different indicators: long-term and short-term, financial and non-financial, lagging and leading, both internal and external.

In turn, in order to prove the usefulness of the model, Kaplan and Norton described four strategic management processes mentioned earlier that the BSC makes possible.

With regard to the above, there are different studies proving the usefulness of the BSC for the organisation, either because it provides useful information (Mooraj et al. 1999) or for managing corporate strategy (Aparisi Caudeli, 2008; De Geuser et al. 2009).

For Mooraj et al. (1999), the BSC is a necessary asset for organisations, as it provides important information to management in a concise manner, and creates a propitious environment for organisational learning. It is also a comprehensive control system because it provides the limits and explains the four perspectives and the key factors on which employees should focus. It is interactive due to the cause and effect relationships and diagnostic because it includes long-term indicators.

Aparisi Caudeli (2008) and De Geuser et al. (2009) provided empirical evidence related to strategy management based on different approaches. Aparisi Caudeli (2008) applied the BSC tool to the Port Authority of Valencia, and proved its effectiveness as a measuring, management and strategy implementation system, defining the effectiveness of this model with four variables: strategic compression, performance evaluation, strategic decision-making, and organisational performance. For their part, De Geuser et al. (2009) found that the BSC contributed positively to an organisation's performance by providing a good translation of the strategy into operational terms, making the strategy a continuous process, and managing to align processes, services, competences and business units.

After thoroughly reviewing the literature on the role of the BSC in strategy implementation, Atkinson (2006) concluded that the BSC is a means for guiding the organisation towards the achievement of its strategy. It is not a purpose in itself, but a vehicle for achieving it.

Some studies considered functions deriving from the above, such as control (Porporato and Parkinson, 2007), because measuring and comparing the results to standards in order to make decisions invariably implies controlling. Another case is discussed by Quinlivan (2000), who adds the establishment of economic awards to employees based on the achievement of their objectives to the two uses explained by Kaplan and Norton. This peculiarity of the model is viewed as deriving from the main use of managing the strategy, for which the organisation must be aligned, which is achieved by linking economic prizes to the achievement of the objectives. For their part, Kaplan et al. (2010) explained that the BSC helps achieve successful business mergers if the model is designed considering the achievement of the objectives pursued through the merger in the company's vision while the merger is taking place.

c) Implementation

According to the literature, in most cases where the BSC is implemented, the reason for doing so is related to a need arising from a strategic change (Kaplan and Norton, 2000b; Fernandez and Ask 2001; Malmi, 2001; Aparisi Caudeli et al, 2009). Wiersma (2009) mentions three reasons why the BSC is implemented: to help provide an overview of the organisation, to facilitate rational decision-making and, finally, for management self-evaluation. However, there are other reasons unrelated to the usefulness of the BSC, e.g., to obtain quality awards, because it is fashionable, or in order to change the traditional budgeting system (Malmi, 2001).

Kaplan and Norton (1996b) do not make any recommendations for successful implementation. However, they do provide a list of warnings regarding implementation. They seek to avoid two types of defects:

- **Structural Defects.** To avoid these, care must be taken while selecting non-financial indicators, in order to not choose measures with very general effects that report on how the strategy has worked in the past. On the contrary, non-financial indicators should be a guide for the future, to help allocate resources and link strategic initiatives to annual budgets and discretionary expenses.
- **Organisational defects.** The first defect is when BSC implementation is delegated to middle management. Commitment from senior management is required because this is the body that determines the organisation's strategy and is responsible for it. The second organizational defect is when the BSC is designed based on the indicators used by the best companies. This does not reflect the company's own strategy, because the best companies could have different competitive environment, customers and market segment. The last defect is when BSC implementation is delayed because not all of the necessary information is available at a particular time. In this situation, it is recommended that the BSC be implemented with the available information, and later improved upon gradually.

Braam and Nijssen (2004) provided four suggestions for implementing a BSC. Create a multidisciplinary project team, select a set of performance indicators that are multidimensional and balanced, introduce unique measures that reflect the peculiarities of the business, and maintain a proactive attitude towards criticism to improve the BSC.

One of the studies that makes the greatest contribution towards identifying key aspects of successful BSC implementation is the one by Assiri et al. (2006), who established 27 critical factors through an exploratory study conducted in 25 countries and involving 103 organisations. These factors were divided into the following levels:

- **Dominant factors:** Factors without which it would be very difficult to apply the BSC at an organisation, such as identification of the perspectives, creation of

a working team, and establishment of a committee with members from upper and middle management who support the project.

- Main factors: Nineteen factors less critical than the above but very necessary during each stage of BSC implementation. These are grouped into six categories: learning and innovation, planning, development, implementation, sustainability and obtention of benefits.
- Supporting factors: These are five factors supporting the dominant or major factors.

De Geuser et al. (2009) were surprised to discover that commitment from top management and the involvement of all organisation employees was not a necessary condition for successful BSC implementation, which contradicted one of the factors assumed and highlighted in the rest of the literature. The study conducted by these authors involved analysing 76 questionnaires completed by professionals from 24 large European international companies.

Once the companies decided to implement the BSC, in order to set up the model, and particularly for selecting the indicators or establishing relationships between the perspectives, they proposed the use of the Analytic Hierarchy Process (AHP) and/or the Analytic Network Process (ANP) (Hafeez et al, 2002; Lee et al, 2008; Leung et al, 2006; Yüksel and Dagdeviren, 2010).

However, the implementation process is not simple. Academics have also studied the major difficulties with BSC implementation. Escobar (2002) recognised two drawbacks for implementing the model. First, information external to the company is needed in order to calculate certain indicators, which in many cases is not easily available at a reasonable cost. A second problem is the limitations deriving from the company's internal information system (its structure and content).

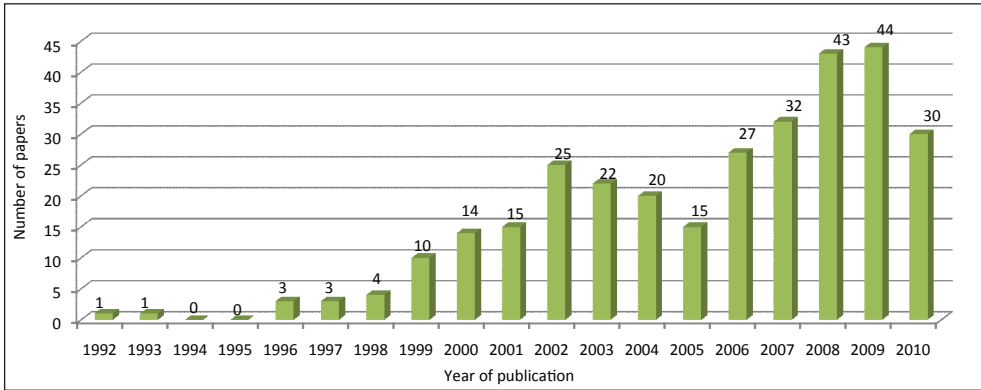
For their part, Thompson and Mathys (2008) identified four aspects that generate problems during BSC implementation: there is a gap in the understanding of the centrality and importance of processes; the alignment between the different BSC indicators is not understood; appropriate measures are needed; and understanding of how the organisation's strategy influences each of the BSC indicators is needed.

From another perspective, Capelo and Ferreira (2009), after conducting experimental research using a business game, concluded that if the BSC is implemented along with the Strategic Map, the combination helps executives to create mental business models that resemble reality, enabling them to make good decisions. However, if only the BSC is implemented (without including the Strategic Maps), the executives end up creating mental models further removed from reality than if they were provided with economic-financial information.

d) Studies relating to the BSC

Figure 1 shows the existing articles by year of publication, from the creation of the model in 1992 until mid 2010. As we can see, in 1992 and 1993 the only paper was the one in which Kaplan and Norton introduced the BSC. Later, in 1996, they published their third article, in which they finished explaining the causal relationships that linked the objectives to the perspectives (Lawrie and Cobbold, 2004). It is worth noting that the number of papers published after 2002 decreased until 2005. Starting in 2006, the dissemination of articles on the subject has grown uninterruptedly until the present day. We did not find any logical explanation for this important variation

Figure 1: Number of articles published per year



Source: Created by the authors based on information from the ISI Web of Knowledge

Studies were found using organisations located in 36 different countries. Table 2 shows the countries where the entities studied were established, the number of articles per country, the authors, and the country’s overall representation in the research (the articles appear in chronological order). As the table indicates, the country with the largest number of studies was Taiwan, followed by the United Kingdom. It is worth noting that the studies conducted in Taiwan were published starting in 2004, whereas those based on data from the United Kingdom were published until 2004. There were 10 studies concerning organisations in the United States, where the BSC was created. There were 8 studies relating to Spain, which were published starting in 2008. It is logical that no studies reflecting the implementation of the BSC were published in France, given the limited impact of the tool there, as most French companies were using the Tableau de Bord (Aparisi Caudeli, 2008).

Table 2: Articles published by country where the organisations used in the empirical study were based

Country	Number of papers	Authors	% of total
Taiwan	14	Chen and Huang, 2004; Hsieh et al. 2004; Huang et al. 2006 ; Lee and Lai, 2007; Lin et al. 2006; Yang and Tung, 2006; Chang et al. 2008; Huang, 2008; Lee et al. 2008; Liang and Wang, 2008; Chang, 2009 ; Huang et al. 2009; Lin and Yahalom, 2009; Tseng, 2010.	13.3
United Kingdom	12	Broady-Preston and Hayward, 1998a; Broady-Preston and Hayward, 1998b; Littler and Aisthorpe 2000; Neely et al. 2000; Davis and Brockie, 2001; Tebbutt et al. 2002; Jones, 2003; McAdam and Walker, 2003; Tebbutt et al. 2003; Bassioni et al. 2004; Hastings, 2004; Greasley, 2004.	11.4
United States	10	Rimar and Garstka, 1999; Wachtel et al. 1999; Neufeld et al. 2001* ; Griffith and Alexander, 2002; Lindblom and Von Koch, 2002; Piotrowski and Rosenbloom, 2002; Banker et al. 2004; Kampschrorer and Heerwagen, 2005; Palmer and Short, 2008; Stepchenkova et al. 2010.	9.5
Spain	8	Tejedor et al. 2008; Aparisi Caudeli et al. 2009; Naranjo-Gil, 2009; Naranjo-Gil et al. 2009; Salinas et al. 2009; Tejedor, 2009; Naranjo-Gil, 2010; Vila et al. 2010.	7.6
Canada	6	Neufeld et al. 2001* ; Magistretti et al. 2002; Yap et al. 2005; Klein and Nicholson, 2006; Weir et al. 2009; Steinke et al. 2010.	5.7
Netherlands	6	Van Veen-Dirks and Wijin, 2002; Admiraal and Van Helden, 2003; Braam and Nijssen, 2004; Akkermans and Van Oorschot, 2005; Braam, et al; 2007; Wiersma, 2009.	5.7
Germany	5	Horvath and Gaiser, 2000; Poll, 2001; Niesner et al. 2008; Groene et al. 2009; Koeper et al. 2009.	4.7
Australia	5	Stewart and Mohamed, 2003; De Watering et al. 2006; Bezama et al. 2007; Stewart, 2007; Yetano, 2009.	4.7
Brazil	3	Fernandes and Rodrigues, 2007; Antunes and Aves, 2008; Frezatti et al. 2010.	2.8
Korea	3	Lee and Lee, 2007 ; Hong et al. 2008; Oh et al. 2009.	2.8
Sweden	3	Elefalk, 2001; Landin and Nilsson, 2001; Carmona and Grönlund, 2003.	2.8
Afghanistan	2	Peters et al. 2007; Hansen et al. 2008.	1.9

Country	Number of papers	Authors	% of total
China	2	Huang et al. 2007; Qi et al. 2009.	1.9
Finland	2	Utunen, 2003; Velcu, 2007.	1.9
Iran	2	Asosheh et al. 2010; Jafari et al. 2010.	1.9
New Zealand	2	Griffiths, 2003; Greatbanks and Tapp, 2007.	1.9
Singapore	2	Chong et al. 2008 ; Sandhu et al. 2008.	1.9
Switzerland	2	Heberer, 1998; Janssen et al. 2006.	1.9
Argentina	1	Scavone, 2006.	0.9
Croatia	1	Vukomanovic et al. 2008.	0.9
Scotland	1	Wisniewski and Dickson, 2001.	0.9
Slovakia	1	Skorecova and Farkasova, 2007.	0.9
Slovenia	1	Podobnik and Dolinšek, 2008.	0.9
Estonia	1	Zernand-Vilson and Elenurm, 2010.	0.9
France	1	Rochet, 2004.	0.9
India	1	Bhagwat y Sharma, 2007.	0.9
Indonesia	1	Rhodes et al. 2008.	0.9
Italy	1	Farneti, 2009.	0.9
Japan	1	Ishino and Kijima, 2005.	0.9
Malaysia	1	Yu et al. 2009.	0.9
Pakistan	1	Rabbani et al. 2010.	0.9
Portugal	1	Sousa et al. 2005.	0.9
South Africa	1	Pienaar and Penzhorn, 2000.	0.9
Thailand	1	Chareonsuk and Chansa-Ngavej, 2008.	0.9
Venezuela	1	Solano et al. 2003.	0.9

* This is the same study, as companies from both countries were used.

Source: Created by the authors based on information from the ISI Web of Knowledge

Table 3 shows data related to the sector researched, either theoretical (for example, proposing the adaptation of the BSC to a particular sector) or empirical. The information contained in Table 3 describes the sector, the range of papers published, the authors, and the sector's representation in the total research. As shown in the chart, the most research was conducted in the healthcare sector. Of a total of 161 articles that specified the sector in their abstract or title, 53 applied to the healthcare sector. Probably, the reason why the healthcare is the sector where more articles has been published is that many of the authors are medicine doctors. 40 of the 53 articles published about the BSC in the healthcare sector have been in medical journals. This was followed by the public sector, which accounted for 18% of the papers, with the education sector in third place with 17 articles. There were 12 papers that studied organisations belonging to more than one sector, such as public hospitals and teaching hospitals.

Table 3: Articles published, classified by the sector of the organisations used in the empirical study

Sector	Number of papers	Authors	% of total
Healthcare	53	Chow et al. 1998; Heberer, 1998; Rimar and Garstka, 1999 [*] ; Zelman et al. 1999 [*] ; Curtright et al. 2000; Griffith, 2000; Meliones, 2000; Abels et al. 2002 [*] ; Borges and Schmidt, 2002; Griffith and Alexander, 2002; Inamdar and Kaplan, 2002; Magistretti et al. 2002; Protti, 2002; Zbinden, 2002; Brinkmann et al. 2003; Robinson et al. 2003 ^{***} ; Huang et al. 2004; Berler et al. 2005; Schwartz, 2005; Yap et al. 2005; Chan, 2006; De Watering, et al; 2006; Fottler et al. 2006; Klein and Nicholson, 2006; Leung and Johnston, 2006 [*] ; Yang and Tung, 2006; Park and Huber, 2007; Peters et al. 2007; Villalbi et al. 2007; Wicks and Clair, 2007; Chang et al. 2008; Choi et al. 2008; Chong et al. 2008; Hall et al. 2008; Hansen et al. 2008; Hong et al. 2008; Lorden et al. 2008; Niesner et al. 2008; Tejedor et al. 2008; Ritchey and Pati, 2008 ; Capelo and Ferreira, 2009; Chu et al. 2009 ; Groene et al. 2009 ; Naranjo-Gil, 2009 ^{***} ; Naranjo-Gil et al. 2009; Salinas et al. 2009 ; Tejedor, 2009 ; Weir et al. 2009 ^{***} ; Wu et al. 2009c; Canela-Soler et al. 2010 ; Naranjo-Gil, 2010 ^{***} ; Rabbani et al. 2010 [*] ; Steinke el al. 2010 ^{***} .	32.7
Public	29	Chesley and Wenger, 1999; Quinlivan, 2000; Elefalk, 2001; Wisniewski and Dickson, 2001; Hagood, and Friedman, 2002; Irwin, 2002; Piotrowski and Rosenbloom, 2002; Schay et al. 2002; Carmona and Grönlund, 2003; Griffiths, 2003; Jones, 2003; McAdams and Walker, 2003; Robinson et al. 2003 ^{***} ; Greasley, 2004; Hastings, 2004; Phillips, 2004; Rochet, 2004; Kampschoer and Heerwagen, 2005; Greatbanks and Tapp, 2007; Umashev and Willett, 2008; Farneti, 2009 ; Naranjo-Gil, 2009 ^{***} ; Weir et al. 2009 ^{***} ; Yetano, 2009; Asosheh et al. 2010; Naranjo-Gil, 2010 ^{***} ; Steinke el al. 2010 ^{***} ; Sundin et al. 2010 ^{****} ; Wu et al. 2010.	17.9
Education	17	Rimar y Garstka, 1999 [*] ; Wachtel et al. 1999; Zelman et al. 1999 [*] ; Pienaar and Penzhorn, 2000; Ceynowa, 2001; Poll, 2001; Abels et al. 2002 [*] ; Hsieh et al. 2004; Leung and Johnston, 2006 [*] ; Lloyd, 2006; Asan and Tanyas, 2007; Kettunen, 2007; Palmer and Short, 2008; Muñoz, 2009; Yu et al. 2009; Rabbani et al. 2010 [*] ; Tseng, 2010.	10.4

Sector	Number of papers	Authors	% of total
Transport	13	Klingenberg, 2000; Neely et al. 2000; Poli and Scheraga, 2003; Chand et al. 2005; Gouws et al. 2006; Fernandes and Rodrigues, 2007; Chen et al. 2008a; Grando and Balverdere, 2008; Aparisi Caudeli et al. 2009; Koeper et al. 2009; Lin and Yahalom, 2009; Jafari et al. 2010; Vogt et al. 2010.	8.0
Financial	13	Broady-Preston and Hayward, 1998a; Broady-Preston and Hayward, 1998b; Littler and Aisthorpe, 2000; Lindblom and Von Koch, 2002; Ittner et al. 2003a; Ittner et al. 2003b; Yu, 2007; Chareonsuk and Chansa-Ngavej, 2008; Liang and Wang, 2008; Chiang and Lin, 2009; Knechel et al. 2010; Wu et al. 2009a; Wu et al. 2009b.	8.0
Service	8	Banker et al. 2004; Cheng et al. 2007; Kuo and Chen, 2008; Griffith and Neely, 2009; Oh et al. 2009; Forstenlechner et al. 2009; Qi et al. 2009; Zimmermann and Seuring, 2009.	4.9
TIC	6	Mair, 2002; Utunen, 2003; Lee and Lai, 2007; Chen, et al; 2008b; Huang et al. 2009; Stepchenkova et al. 2010.	3.7
Tourist	6	Van Der Woerd and Van Den Rink, 2004 ^{**} ; Huang et al. 2007; Phillips, 2007; Huang, 2008; McPhail et al. 2008; Vila et al. 2010.	3.7
Building industry	5	Landin, and Nilsson, 2001 ; Bassioni et al. 2004; Gunduz and Simsek, 2007; Stewart, 2007; Vukomanovic et al. 2008.	3.0
Natural	5	Richard, 2004; Skorecova and Farkasova, 2007; Turner, 2007; Durgjai et al. 2008; Koellner et al. 2008.	3.0
Energy	4	Schollnberger, 1996; Jomov, 1999; Janssen et al. 2006; Sundin et al. 2010 ^{****} .	2.4
Industrial	4	Reichel and Baldermann, 2005; Lee et al. 2008; Akimova and Kamenskaya, 2010; Sandkuhl, 2010.	2.4
Water	3	Tebbutt et al. 2002; Admiraal and Van Helden, 2003; Tebbutt et al. 2003.	1.8
Foodstuff	2	Van Der Woerd and Van Den Rink, 2004 ^{**} ; Abdel-Kader and Luther, 2006.	1.2
NGO	2	Wu and Hung, 2008; Meadows and Pike, 2010.	1.2
Textile	2	Cebeci, 2009; Montava et al. 2010.	1.2
Sport	1	Lohman et al. 2004.	0.6
Laboratory	1	Eilat et al. 2008.	0.6

* Articles that studied organisations belonging to the healthcare and education sectors, such as teaching hospitals.

** This study examined a food company and a tourism company.

*** The research was conducted in public hospitals.

**** The research was conducted at a public electrical power company.

Source: Created by the authors based on information from the ISI Web of Knowledge

One of the limitations of the study is that bibliometric analysis was performed only with the articles contained in the ISI database. Hence, there are many articles about the BSC in different sectors and countries that could be included in others database, which have not been analyzed.

e) Discussion

The first criticism of the BSC is that this model does not reflect the political dimension of the organisation, for which the model would have to answer the questions: who is it for? And what is its purpose? The BSC regards the organisation's vision as its final objectives, although for its critics this belongs to the strategic dimension. Kaplan and Norton (1996b) defined it as a model that translates the vision of the organisation. To answer the question who is it for, the BSC takes into account all the stakeholders who are important in the different perspectives that make it up, as the perspectives are chosen depending on the business in question. The answer to the criticism that the BSC does not have a single objective also follows this line. The objective, according to the original model, as explained earlier, is unique and consists of achieving the vision of the organisation. For this reason, the authors clarify this concept by asserting that all the stakeholders involved in the company need to be aligned in order to achieve the global vision of the organisation.

The second criticism of the global model is that it regards the company as a machine. The most recent model from Kaplan and Norton, The Execution Premium, considers the organisation as a system, and takes the approach of a philosophy of continuous improvement whereby it is constantly changing.

Other authors have also proposed new models to address this challenge. Voelpel et al. (2006) proposed an alternative model to the BSC, the "Systemic Scorecard." This model focuses the four perspectives in the BSC outside of the organisation, considering the environment and causing the organisation to relate and adapt to it. Another option was proposed by Othman (2008), linking the BSC to possible future scenarios also containing external variables. Neither of these proposals has been empirically verified.

With regard to the elements of the model, the criticism is that the BSC only considers four perspectives and that these are internal. However, the Execution Premium reflects the external concept right from the moment the strategy is first designed.

With regard to the absence of studies examining the BSC and providing a theoretical foundation, the findings of this study detail how the concept and the model have evolved up to the present day. Speckbacker et al. (2003) defined three types of BSC based on the evolution of the model:

- Type 1: It was considered a tool for measuring strategic performance because it combines financial and non-financial indicators.

- Type 2: This expands upon Type 1 by adding the function of describing the strategy through cause and effect relationships.
- Type 3: Comprehensive strategy management system.

Following the literature review we could add a Type 4 and a Type 5. The fourth type would be possible not only align all the organisation's resources which was already proposed by the BSC, but also the external interest group for achieving greater synergies (Kaplan and Norton, 2006). Finally, the fifth type would be to achieve the Execution Premium. This model considers that the organization must adapt to the changing environment as well as learning from the organization (Kaplan and Norton, 2008).

This classification would provide a new contribution to the theoretical framework of the BSC. At the same time, 309 articles were identified that study the model from different perspectives. In this respect, the culling and systemisation of the information in the ISI database by country and by sector has been our greatest contribution to this work. This research has mostly focused on the healthcare, public and education sectors. Regarding the geographical location of the organisations where the studies have been conducted, 36 different countries have been identified, and Taiwan and the United Kingdom are the countries with the largest number of articles.

It could be inferred that this model is applicable due to the amount of studies that have been conducted in different sectors and countries.

The information gap relating to the implementation of the BSC has been filled by various studies that have already been undertaken, analysing articles that address the usefulness of the BSC, the reasons why is advisable to implement it, and the difficulties that arise in the implementation process.

To check the hypothesis of our study, we collated each of the criticisms identified and compared them with the existing literature, as shown in Table 4.

Table 4: Comparison of the criticisms of the BSC model with the findings

Criticism of the BSC model	Author	Conclusions of the study
Political dimension: Who is it for? For what purpose?	Bessire and Bancker (2005)	To reflect all the stakeholders in the different perspectives.
Main objective of the organisation	Bessire and Bancker (2005)	The organisation's vision, for which all the stakeholders involved are aligned.
Considers the organisation as a machine	Bessire and Bancker (2005); Voelpel et al., 2006	The Execution Premium is an approach based on continuous improvement. Alternative models
There are only four perspectives, which are internal	Epstein and Manzoni (1998); Nørreklit (2000); Brignall (2002); Figge, et al. (2002); Van Der Woerd and Van Der Brink (2004); Voelpel et al. (2006)	The perspectives should be commensurate with the company's vision and strategy. The Execution Premium considers the external environment of the organisation in its analysis.
Interrelationship between perspectives	Nørreklit (2000)	Future line of research
Existence of cause and effect relationships	Malmi (2001); Nørreklit (2000); Malina et al. (2007) Brignall (2002)	Future line of research
Consideration of the time factor in the model	Nørreklit (2000); Kunc (2008)	Future line of research
Efficacy of the indicators that are unique measurements and those that are future developments.	Lipe and Salterio (2000)	Future line of research
More studies are needed that contribute to defining theoretical foundations and investigating the new methodology	Marr and Schuima (2003)	Evolution of the concept into five types of BSC. 309 articles on the model in the ISI database.
Lack of information on its implementation	Ahn (2001); Aparisi Caudeli, (2008)	They detail the reasons why it is used and the factors that facilitate its implementation. They also identify the difficulties that might arise at the time of its implementation. Articles are identified that study the model in different countries and sectors.

Source: Created by the authors

Therefore, as seen in Table 4, we have identified several criticisms about the BSC model, some of which the literature has already solved. Others remain in force and therefore become in future lines of research.

4. Conclusion

The main objective of this article is corroborating the hypothesis that the BSC is based on a solid theoretical model that is applicable to companies. This hypothesis has been corroborated, because six of the ten criticisms have been resolved by the academics. Therefore, assert that the BSC does currently have a solid theoretical foundation and that it is applicable for the most part. However, there are still aspects of certain elements of the model that the literature continues to question. The reason why these gaps exist is going to be analyzed by authors in future research. Right now, the hypothesis considered is that consultants are selling original BSC when the management of the companies are requesting an easy tool to follow up the performance of the company. To do that, for a great percentage of companies an accurate definition of key performance indicators would be enough. Additionally there are various criticisms which, following this study, have not been addressed and/or resolved in the literature: clarifying the relationships between indicators or perspectives, identifying whether they are linear, logical, cause and effect, interrelationships, interdependence, etc.; considering how to analyse the time factor in the model; estimating the efficiency of the model of indicators of unique measures that are future developments; reflecting non-critically on whether or not the support of upper management is necessary for the implementation of the model.

Our understanding is that these potential investigations will form the future lines of research that will contribute to completing the theoretical framework of the BSC.

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Što je rečeno i što još treba reći o BSC metodi?

Lucía Clara Banchieri¹, Fernando Campa Planas², Maria Victoria Sánchez Rebull³

Sažetak

Cilj ovog istraživanja je ukazati na paradoks Balance Scorecard (BSC) metode koja iako široko rasprostranjena u korporativnom svijetu, na teorijskoj razini izložena je mnogobrojnim kritikama. Postavlja se hipoteza da se BSC temelji na čvrstom teoretskom modelu koji je primjenjiv na poduzeća, a testira se pomoću odgovarajuće literature. Pregled je napravljen na temelju više od 955 dokumenata koji sadrže iste pojmove povezane s BSC metodom u ISI bazi podataka. Naposljetku, nakon nekoliko izabranih kriterija, analizirano je 309 članaka. Zaključak istraživanja je da je pretpostavljena hipoteza potvrđena. BSC je metoda koja se razvila i usavršila tijekom godina do točke u kojoj trenutno ima čvrste i primjenjive temelje, što je čini mogućom za primjenu na različite sektore i države. Međutim, još uvijek postoje upitni aspekti s obzirom na određene elemente modela (perspektive, pokazatelje i vezu između uzroka i posljedica).

Ključne riječi: primjenjivost BSC metode, pregled literature, kritička analiza

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¹ Docent, Department of Business Administration Universitat Rovira i Virgili, (Reus – Spain), Avda. Universitat 1, Reus (43204), Španjolska. Znanstveni interes: menadžment računovodstva, hotelska industrija. Tel.: +34 977759865. E-mail: luciaclara.banchieri@urv.cat

² Redoviti profesor, Department of Business Administration. Universitat Rovira i Virgili (Reus – Španjolska), Avda. Universitat 1, Reus (43204), Španjolska. Znanstveni interes: menadžment računovodstva, turizam, avioprijevoz. Tel.: +34 977759872. E-mail: fernando.campa@urv.cat

³ Redoviti profesor, Department of Business Administration. Universitat Rovira i Virgili (Reus – Španjolska), Avda. Universitat 1, Reus (43204), Španjolska. Znanstveni interes: računovodstvo troškova, hotelska industrija, avioprijevoz. Tel.: +34 977758906. E-mail: mariavictoria.sanchez@urv.cat