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Control Systems and Strategy: A Literature Review

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ABSTRACT

Objective – Organisational change necessarily requires an adaptation of a company's information structure, particularly its Management Accounting and Control Systems (MACSs). These systems should be designed according to the defined strategies to assist managers in the decision-making process. This paper reviews research that analyzes the MACSs concept and the elements that characterise it, so that it may be used to identify and characterise the existing systems in any company.

Methodology/Technique – Based on a contingency approach to management, the authors perform a broad literature review. Among other aspects, MACS information outputs will be analyzed in terms of the style of use, its nature and the type of decisions supported. In an attempt to broaden the scope of MACS functions, this paper reviews the present literature and provides a theoretical framework for studying the operationalization of MACS.

Findings – The results obtained indicate that the operationalization of the MACS concept can be achieved through the way information is managed and characterised, establishing three categories and six different dimensions.

Novelty – Theoretically, this framework characterises the existing MACS concept to analyse its impact on company strategy. The authors conclude that knowledge on the relationship between MCAS and strategy is limited, providing considerable scope for further research. In the future, the authors intend to develop a case study to analyse the impact of this framework on companies' internationalisation strategy.

Type of Paper: Review.

Keywords: Management Accounting and Control Systems; Accounting Information System; Organizational Change; Strategy; Operationalization of Concepts.

JEL Classification: M16; M40; F23.

1. Introduction

As a company evolves, whether in terms of its products or services or an expansion into new markets, the information needed tends to change and the company is required to adapt to that change. In that situation, a company must be prepared for change, in particular, its Management Accounting and Control Systems (MACSs).

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The design of a MACS system is fundamental to providing managers with the required information that enables them to evaluate company strategy and to achieve the organization's goals Therefore, MACS is an information provider, according to its users' needs, and is a fundamental tool in aiding the decision-making process.

On the other hand, recent literature states that both strategy and MACSs evolve over time through an intertwined dynamic, i.e. they influence each other and change together (Coller, Frigoto & Costa, 2018). It is in this way that, with the current study and from a broad literature review, the evolution of the MACS concept is analyzed and the elements that characterize its relationship with a company's strategy are identified. This study creates a conceptual framework that identifies and characterizes the existing systems of a company and its connection to the company's strategy.

Research studies on management control systems do not typically investigate the MACS system in its entirely but instead examine only one or a minimal number of aspects (Chenhall, 2003). This study aims to provide a more comprehensive view of the MACS system. One of the current interests in this area is on the relationship between strategy and management control systems (Shields, 2015). This study is in line with this school of thought.

This paper begins by explaining the MACS concept. Then, some differentiating characteristics are analyzed, which are related to: the style of use of the information provided by the MACS, the nature of the information provided by the MACS system and the type of decisions supported by the MACS system. These are the features which allow us to create a theoretical framework that can be used to characterize MACSs. Finally, some final considerations are discussed, followed by suggestions for future research.

2. Literature Review

2.1. Theoretical Approaches

Research on company organizational change has, over time, adopted several theoretical approaches. This study uses the Contingency Theory. This theory was developed along with the organizational theory (Woodwart, 1965) which claims that there is no unique or universal organizational structure for each organization (Reid & Smith, 2000). There are numerous organizational configurations or strategic options depending on the environment and organizational context of a company (Ginsberg & Venkatraman, 1985). The adoption of a structure, particularly an information structure, is closely related to the organization's internal and external characteristics (Otley, 1980; Chenhall, 2003) and depends on the need to obtain information that is useful for the decision-making process.

2.2. Management Accounting and Control Systems

There is no one definition of Management Control Systems (Fisher, 1998; Merchant & Otley, 2007), Management Accounting Systems, or even Organizational Control, as these terms are often used synonymously (Chenhall, 2003), although they are defined quite differently (Abernethy & Chua, 1996; Alvesson & Karreman, 2004; Anthony, 1965; Chenhall, 2003; Emmanuel et al., 1990; Fisher, 1998; Langfield-Smith, 1997; Malmi & Brown, 2008; Merchant & Van der Stede, 2007; Simons, 1995).

The most common definition refers to management control systems as a set of different forms of control, that are in permanent interaction with one other (Teittinen et al., 2013). "Managers implement controls, or sets of controls, to help attain these results and to protect against the threats to the achievement of good performance" (Merchant & Otley, 2007, p. 785).

According to Chenhall (2003), Management Accounting can be seen as a set of practices, such as budget or products cost. This study refers to management accounting systems as the systematic use of management accounting to achieve a goal.

In turn, management control systems have a broader scope which includes management accounting systems and other controls, such as personal and top management controls. They are considered passive tools which provide the necessary information to assist managers in the decision-making process.

Some authors (Malmi & Brown, 2008; Merchant & Otley, 2007) consider that there are broader control concepts which includes variables such as strategic development, strategic control and learning processes, clearly exceeding the traditional scope of management accounting. Therefore, Management Control Systems are important for organizations as a tool capable of aligning the company's processes so that its objectives and goals are achieved. "In broad terms, a management control system is designed to help an organization adapt to the environment in which it is set and to deliver the key results desired by stakeholder groups, most frequently concentrating upon shareholders in commercial enterprises" (Merchant & Otley, 2007, p.785).

In order to privilege the Management Control Systems without neglecting the role of accounting or Management Accounting Systems will, like other authors (Macintosh & Quattrone, 2010), use the concept of Management Accounting and Control Systems - MACSs. The idea of a management control system that integrates accounting and management controls was first designed by Lowe in 1971. This integration intended to ensure that the company's actions were aligned with its plans and goals and that the management decisions were fed from a single information system, regardless of the decision-maker's functional area (Lowe, 1971).

It is therefore assumed that MACSs are structures which uses information derived from management accounting to support decision-making processes and to achieve the company's strategic goals (Chenhall, 2003) and they simultaneously include controls, personal and top management, and their performance depends on the company's structure.

2.3. Information Use

One of the most commonly referenced classifications of MACSs is the distinction between traditional systems – Narrow Scope, and contemporary systems – and Broad Scope systems (Chenhal & Morris, 1986; Abernethy & Guthrie, 1994; Chong & Chong, 1997, Bouwens & Abernethy, 2000; Gerdin, 2005).

The difference between those two systems lies in the fact that the contemporary systems (Broad Scope) allow the widening or broadening of the type of information that the Narrow Scope provides, through the incorporation of non-financial (intangible) information, prospective information (not only historical) and the inclusion of external information (demographic factors, consumer preferences, competition, etc.), thereby intensifying their reporting rate (Novas et al., 2012; Ittner & Larcker, 1995).

In recent years, the classification of this type of MACS has grown in popularity, which has been motivated by the use of management accounting tools, such as the activity-based costing system or the Balanced Scorecard, and by the research on "Management Accounting Change". In this context, MACSs stand out as an important source of information that is used to assist the decision-making process (Wickramasinghe & Alawattage, 2007). The way in which MACS is actually implemented in an organization is central to its success (Chenhall & Euske, 2007).

For operational reasons and similar to other works (Novas, Alves & Sousa, 2017), MACS is considered a multidimensional concept and its various dimensions are grouped in three categories: (1) style of use of the information provided by the MACS; (2) nature of the information provided by the MACS; and (3) type of decisions supported by the MACS.

In this research, it is assumed that the conception of MACS is achieved using non-typified instruments (Novas et. al 2012). Each organization presents a MACS system with unique characteristics. On the other hand, the structuring of various dimensions in the three aforementioned categories considers the presence of a dynamic tension (Agbejule, 2006; Bisbe & Otley, 2004; Henri, 2006) that results from the existence of similarities between the inherent dimensions. Each of these categories will then be analyzed.

2.3.1. The Style of Use of the Information

The possibility of structuring the MACSs in dimensions is relevant for management accounting research. According to Moores and Yuen (2001), the different MACS dimensions can provide users with relevant information. Simons (1991) establishes two distinct styles in the use of MACS: an interactive style and a diagnostic style. Since then, many authors have adopted these categories in their research (Abernethy & Brownell, 1999; Hartmann & Vaassen, 2003; Lukka & Granlund, 2003; Ahrens & Chapman, 2004; Bisbe & Otley, 2004; Thorén & Brown, 2004; Agbejule, 2006; Henri, 2006; Naranjo-Gil & Álvarez-Dardet, 2006; Naranjo-Gil & Hartmann, 2006, 2007).

Simons (1991) describes an interactive system as one in which the top manager reports on the use of the system personally, regularly and often as a priority, both for himself and his subordinates. This system is used when there are regular interconnection meetings with subordinates to review the results of the company's action plans. On the other hand, a system is classified as being diagnostic if the top manager only reports a small personal involvement with the MACS, delegating the subsystem operations to staff or lower level managers, and relying on others to report and notify them when their attention is required.

Simons (1995), in his book "Levers of Control", extends the concept of MACSs of the interactive and diagnostic type. The diagnostic systems is the formal system that managers use to control the results and correct deviations from the established performance goals. Attention is generally directed at the performance variables. They are characterized by the ability to assess output and by comparison. Similarly to the traditional management control system, they provide corrective measures for deviations. There is little intervention of those responsible.

On the other hand, the interactive-type system fosters innovation, learning and the quest for solutions, which creates new strategies, as the participants interact and respond to the opportunities and threats that arise (Novas et al., 2012).

These two types of systems are not rigid. Simons (1994) states that it is possible that the same system can be classified as interactive in one company and diagnostic in another. On the other hand, it is necessary to understand that an interactive system in a company can be used in a non-interactive way, depending on the contextual factors (Simons, 1995).

2.3.2. The Nature of Information

The information derived from the MACSs is not all the same. This information may be provided in different formats and with different aggregation and integration levels (Chenhall & Morris, 1986; Chia, 1995; Bouwens & Abernethy, 2000; Moores & Yuen, 2001). Moores and Yuen (2001) analyze the integration and aggregation of information provided by the MACS and the company's lifecycle. They conclude that these integration and aggregation levels tend to take a simpler form in the early stages of the company's life. As the company evolves, the information needs tend to be adapted, and the information becomes more aggregated and integrated. The integration of information and aggregation features are therefore contingent to the company's lifecycle.

Bouwens and Abernethy (2000) believe that the aggregation of information corresponds to the time for processing of information which is relevant to the various organizational reality domains. In turn, information integration provides coordination between different organizational units, and is therefore fundamental in decentralized structures, both at the decision-making process level and in terms of control (Chia, 1995).

Chenhall (2003) states that systems based on information integration are systems that, on the one hand, allow us to understand the cause-and-effect relationship between operational structures and strategies (and the strategic goals) and, on the other hand, include a measurement component associated to the provision of several measures that relate to financial aspects. Those systems seek to integrate the operational side with the strategic side, which MACSs do not typically provide.

2.3.3. The Type of Decision

The use of the MACSs as an element of organizational structure containing vital information to support the decision-making process is a popular topic of research (Naranjo-Gil & Hartmann, 2006; Abernethy et al., 2007; and Anderson & Widener, 2007). The type of decisions supported by MACSs rests on two axes: support to resource management decisions and the evaluation and control of performance (Novas et al., 2012).

Naranjo-Gil and Hartmann (2006) define the role of resource management as the monetary and non-monetary distribution of resources by the organization's decentralized units, in order to instil accountability to management and to encourage the satisfaction of company objectives. Hence, all of the information is used to ensure appropriate distribution of resources (Baines & Langfield-Smith, 2003). With respect to the assessment of performance, Silvi (2002) argues that this includes issues of monitoring and control of organizational goals and of the performance of the organizational units. The focus is therefore on how performance can be improved through the use of MACSs for monitoring and control purposes (Naranjo-Gil & Hartmann, 2006).

Although the MACS system is viewed as a prerequisite for an efficient decision-making process, not only in resource management but also in performance assessment, it is not perfect. That is, no system can provide all the information and capture the performance of an organizational unit or an organization in its entirety, as some performance dimensions are not able to be measured (Ouchi, 1979).

Many studies (Otley 2001; Naranjo-Gil & Hartmam, 2006, 2007; Reck, 2001; Chenhall, 2008) show that uncertainty in performance requires a wider set of information. In this context, non-financial measures assume an important role in the decision-making process. Although it is difficult to assess their importance, they are the most appropriate in cases of uncertainty, since they demonstrate certain problems, management processes and organizational routines, which financial measures do not show (Vaivio, 1999), thus providing a greater contribution to the decision-making process.

The characteristics of MACS systems may vary over time and the importance of a given dimension or a configuration of dimensions may vary in a particular context (Bouwens & Abemethy (2000). Hence, in order to systematize the ideas presented above, Table I presents the theoretical framework of the study with its various dimensions, as well as its main characteristics. The different MACS dimensions can be considered conceptually distinct from one other, although they may overlap at some points. Further, the importance of a given dimension may vary in a particular context (Bouwens & Abernethy, 2000) and/or during the organization's lifecycle (Moores & Yuen, 2001). Each dimension provides a comprehensive view of the MACS system (Novas et al, 2017; Simons, 1991).

It is believed that MACSs vary according to three dimensions: (1) the style of use of the information provided, which can be diagnostic or interactive; (2) the type of information provided, which can assume different levels of aggregation and integration; and (3) the type of decisions supported, considering the existence of performance evaluation decisions and resources allocation decisions.

Table 1. Theoretical Framework

MACS DIMENSIONS		CHARACTERISTICS / STUDIES
Style of utilization		- The senior manager does not report his involvement with others, he delegates the subsystem operations to lower level managers and he only consults others to inform them when his intervention in the system is required (Simons, 1991); - They are formal systems that managers use to control results and correct deviations regarding previously established performance goals; they are limited,

	Diagnostic	regarding the search of innovative solutions and in the identification of opportunities, since the attention is essentially paid to performance variables (Simons, 1995). - They are characterized by the ability to evaluate the outputs of the process, by the existence of measures that serve to allow comparison and corrective measures that, in all cases, equate it with the traditional definition of management control (Simons, 1991). - There is few interventions of the person responsible (performance control characteristics allow this "absence"). The managers only focus on the negotiation and determination of goals and evaluation of periodic reports that determine the possible actions (Simons, 1991); - It is autonomous, its participants are free to undertake their actions to determine the established goals, although, at the same time, they are limiting because the analysis of the critical performance variables blocks the search for solutions and opportunities (Simons, 1995). - The use of this system does not allow for debate and ignores potential exchange proposals of those who execute certain tasks (Simons, 1990; Vaivio, 2004).
	Interactive	- The senior manager reports the use of the system personally, regularly and frequently, not only for himself, but also for his subordinates; it is used to define regular meeting schedules of interconnection with direct subordinates and others, in order to review data and results of action plan (Simons, 1991). - The information is important for the highest levels of management (2) the process requires frequent and regular attention at all levels of management (3) the data are interpreted and discussed in face-to-face meetings with superiors and subordinates (4) the interactive system implies a continuous debate and reflection on the data, strategies and action plans (Simons, 1995). - They encourage innovation, learning and the search for new solutions, which trigger the emergence of new strategies, as their participants interact and respond to emerging opportunities and threats (Novas et al., 2012). - It allows simultaneously the creation of a best practices codification system, in order to stabilize and diffuse the organization's abilities (Novas et al., 2012). - It has a less restricted, more superficial and, at the same time more informal control, focused on communication and cooperation, which allow information to flow and promote debate and dialogue within the organization itself, thus constituting the fundamental mechanisms for knowledge creation and integration (Agbejule, 2006).
Nature of the information	Aggregated	- Aggregation of information that is processed over time and which is relatively relevant to the various domains of organizational reality (Bouwens & Abernethy, 2000). - It allows the processing of a large volume of information, within a certain period of time (Bouwens & Abernethy, 2000).
		- Their goal is to provide the means of coordination in and between the units of the organization, becoming fundamentally relevant in decentralized structures for both the decision-making process and in terms of control (Chia, 1995). - They allow to understand the cause-effect relationships between the operational structure and the strategy and the goals and among other aspects such as

	Integrated	customers, suppliers…, and, on the other hand, they include a measurement component related to the provision of various measures that are related to financial aspects (customers, organizational processes, innovation) (Chenhall, 2005). - They integrate the operational side with the strategic one, which, as a rule, management accounting systems do not provide (Chenhall, 2005). - They allow a broad and complete view of the set and means of coordination between the different organizational units (Chia, 1995).
Type of decision	Performance evaluation	- It is related to aspects of monitoring and controlling of the organizational goals, of the managers' performance, and of the organizational units which they run (Silvi, 2002). - It focuses essentially on the way performance can be improved (Novas et al., 2012), using the Management Accounting Systems for monitoring and control (Naranjo- Gil & Hartmann, 2006).
	Resources management	- It is related to management and distribution of monetary and non-monetary resources by the different decentralized units of the organization in order to instil in managers the responsibility in the management and execution of their activities (Naranjo- Gil and Hartmann, 2006). - All the information is converted into the appropriate distribution of resources and, in situations of uncertainty and instability, the availability of better information will obviously result in a better application of resources (Baines & Langfield- Smith, 2003). - It corresponds to the use of management accounting systems for planning and coordination (Novas et al., 2012).

Source: (Roque, Alves & Raposo, 2018)

3. Conclusions

This paper reviews the different dimensions of MACS systems, through an analysis of the relevant literature, and develops a theoretical framework to provide a deeper insight into MACS systems. The results indicate that to operationalize the MACS concept, three categories and six different dimensions are used. Theoretically, this conceptual framework allows us to characterize the existing MACS concept and to analyse its impact on company strategy. This allows us to understand how the importance of the system which is crucial for the development of the company. The system may be diagnostic and/or interactive. In turn the nature of information may vary between aggregate and/or integrated forms. In addition, all of the information that the system provides may be useful for the relative decision-making process, the simple management of resources, as well as for the evaluation of company performance.

This paper contributes to the literature on MACS (Coller, Frigoto & Costa, 2018). However, as a literature review, the paper is limited in its practical implications.

Therefore, future research may wish to adopt a case study method (Roque, Alves & Raposo, 2018).

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