


Study on the usability of management accounting practices most intensely used by companies operating in Brazil


Estudo sobre a usabilidade das práticas de contabilidade gerencial mais intensamente usadas em empresas que atuam no Brasil

Estudio sobre la usabilidad de las prácticas de contabilidad gerencial más intensamente utilizadas en empresas que operan en Brasil


Rodrigo Paiva Souza

Doutor em Controladoria e Contabilidade (USP)
Professor do Programa de Mestrado Profissional em
Controladoria e Finanças da FIPECAFI,
São Paulo/SP, Brasil
rodrigo.souza@fipecafi.org
<https://orcid.org/0000-0002-5816-3991> 

Paschoal Tadeu Russo*

Doutor em Controladoria e Contabilidade (USP)
Professor do Programa de Mestrado Profissional em Controladoria e
Finanças da FIPECAFI, São Paulo/SP, Brasil
paschoal.russo@fipecafi.org
<https://orcid.org/0000-0002-7293-4385> 

Reinaldo Guerreiro

Doutor em Controladoria e Contabilidade (USP)
Professor da Faculdade de Economia, Administração e Contabilidade
(USP), São Paulo/SP, Brasil
reiguerr@usp.br
<https://orcid.org/0000-0002-6507-5965> 

Primary contact address for correspondence*

Rua Maestro Cardim, 1170, Bairro: Bela Vista, CEP: 01323-001 – São Paulo/SP, Brasil

Abstract

The main objective of the study was to investigate the main attributes that characterize the dimensions of usability that justify the adoption of Management Accounting Practices most intensively used by managers from different functional levels by Mahama and Cheng (2013), namely: coercive, enabling, repair, flexibilization, internal transparency, and global transparency. Survey was the data collection method, and questionnaires were sent to companies listed in the yearbook 'Best & Largest', published by Exame magazine. We collected 149 valid responses from professionals working in different positions at the organizations. We carried out data analysis by using the factorial and correspondence analysis techniques. As main findings, we highlight that the most adopted practices are those related to the management process (Budget, Strategic planning, and Budget variations), and professionals understand that these practices allow corrections and facilitate the solution of problems (repair dimension), as well as improve job visibility (internal transparency). In addition, the results show that accountants perceive the most used practices as a control tool (coercive dimension), while other middle management professionals perceive them as a tool that allows them to develop their activities more efficiently (enabling dimension).

Keywords: Management accounting practices; Usability; Most used practices

Resumo

Este estudo teve como objetivo principal investigar os principais atributos que caracterizam a usabilidade da Práticas de Contabilidade Gerencial mais intensamente usada por gestores de diferentes níveis funcionais em organizações que atuam no Brasil. As dimensões de usabilidade foram mensuradas a partir dos constructos definidos por Mahama e Cheng (2013), a saber: coercivo, habilitante, reparo, flexibilização, transparência interna e transparência global. O método de coleta de dados foi o *survey*, sendo enviados questionários para empresas listadas no anuário Melhores & Maiores, publicado pela revista Exame. Foram coletadas 149 respostas válidas de profissionais que atuam em diversas posições nas organizações. A análise dos dados utilizou as técnicas de análise fatorial e de correspondência. Como principais achados, é possível

destacar que as práticas mais adotadas são aquelas relacionadas ao processo de gestão (Orçamento empresarial, Planejamento estratégico e Variações orçamentárias), e os profissionais entendem que essas práticas permitem realizar correções e facilitam a solução de problemas (dimensão reparo), bem como melhoram a visibilidade do trabalho (transparência interna). Adicionalmente, os resultados mostram que os contadores percebem as práticas mais utilizadas na empresa como ferramentas de controle (dimensão coercitiva), enquanto outros profissionais de média gerência as percebem como ferramentas que os auxiliam a desenvolver suas atividades de forma mais eficiente (dimensão habilitante).

Palavras-chave: Práticas de contabilidade gerencial; Usabilidade; Práticas mais utilizadas

Resumen

Este estudio tuvo como objetivo principal investigar los principales atributos que caracterizan las dimensiones de usabilidad que justifican la adopción de las Prácticas de Contabilidad de Gestión utilizadas con mayor intensidad por los gerentes de diferentes niveles funcionales en las organizaciones empresariales que operan en Brasil. Las dimensiones de usabilidad se midieron a partir de las construcciones definidas por Mahama y Cheng (2013), a saber: coercitiva, habilitación, reparación, flexibilización, transparencia interna y transparencia global. El método de recopilación de datos fue la encuesta, y se enviaron cuestionarios a las empresas que figuran en el anuario "Mejores & Más Grandes", publicado por la revista Exame. Se obtuvieron 149 respuestas válidas de profesionales que trabajan en diferentes puestos en las organizaciones. El análisis de datos utilizó las técnicas de análisis de factorial y correspondencia. Como hallazgos principales, es posible resaltar que las prácticas más adoptadas son aquellas relacionadas con el proceso de gestión (presupuesto comercial, planificación estratégica y variaciones presupuestarias), y los profesionales entienden que estas prácticas permiten correcciones y facilitan la solución de problemas (dimensión de reparación), así como mejoran la visibilidad del trabajo (transparencia interna). Además, los resultados muestran que los contadores perciben las prácticas más utilizadas en la empresa como herramientas de control (dimensión coercitiva), mientras que otros profesionales de la gerencia media las perciben como herramientas que les ayudan a desarrollar sus actividades de manera más eficiente (dimensión habilitadora).

Palabras clave: Prácticas de contabilidad gerencial; Usabilidad; Prácticas más utilizadas

1 Introduction

This study adopts the understanding that Management Accounting practices (MAP) are the instruments or artifacts that Management Accounting uses to facilitate the achievement of its objectives, such as corporate budget, costing systems, Balanced Scorecard, among others (Espejo, 2008; Espejo *et al.*, 2009; Frezatti, 2005; Soutes, 2006; Soutes & Guerreiro, 2007; Souza *et al.*, 2003).

In Brazil, several studies sought to evaluate the use of Management Accounting practices in organizations (Lourenço & Sauerbronn, 2018; Russo *et al.*, 2016; Aguiar *et al.*, 2012; Dória *et al.*, 2005; Frezatti *et al.*, 2007; Guerreiro *et al.*, 2005, 2011; González, 2009; Oyadomari *et al.*, 2008; Reginato, 2010; Reginato & Guerreiro, 2012; Silva *et al.*, 2013; Soutes, 2006; Souza *et al.*, 2003). Such studies, in general, examined and showed which of these practices they use, based on the assumption that organizations adopt different practices.

Under a macro level of observation, MAPs have become increasingly more homogeneous, as studies in several countries and organizations show. Although there may be factors that explain this trend towards homogenization, these studies highlighted isomorphic factors such as coercion, normativism, and mimicry (Alsharari *et al.*, 2015; Brandau *et al.*, 2013; Granlund & Lukka, 1998; Scapens, 2006). However, different organizations do not use MAPs with the same intensity.

One approach used to assess the adoption of these practices considers them as organizational bureaucracies, which can both contribute to their users dealing effectively with management challenges, and hinder, if they focus on standardization and control of their activities (Adler & Borys, 1996). In this sense, we mean the concepts of coercive use versus enabling use (Ahrens & Chapman, 2004), in which the authors evaluated the use of management control systems in a restaurant chain in the United Kingdom. The authors adapted the coercive versus enabling construct, developed by Adler and Borys (1996), which has allowed observing different levels of quality in MAPs use.

Until the year 2017, more than 1,500 papers (Strauss & Tessier, 2019) had used Adler & Borys's construct (1996). In Brazil, there are still few studies that adopt this theoretical approach to assess specific characteristics of MAPs use in organizations, and these apply the construct developed by Mahama and Cheng (2013) (Souza & Beuren, 2018; Beuren & Santos, 2019; Beuren *et al.*, 2020; Oyadomari *et al.*, 2019).

Such papers suggest that the enabling perception of the practices is directly associated with the users' self-perception of empowerment, and with the capacity of organizational resilience (Beuren *et al.*, 2020). In addition, it also affects their perceptions on autonomy, control, job satisfaction, and task performance (Souza & Beuren, 2018). Other studies have shown that the intensity of use of certain practices, compared to others, can influence the perceptions on their more empowering attributes and on the benefits arising from a better task performance (Mahama & Cheng, 2013; Oyadomari *et al.*, 2019). On the other hand, research results have also shown that enabling and coercive practices can coexist in companies, and those perceived as coercive

do not necessarily mean negative influence to their users; instead, they can even generate positive contributions (Beuren & Santos, 2019).

Our research assumption is that different managers use Management Accounting practices in a peculiar way; however, in each organization, there is only one MAP that managers use more intensely. According to Mahama and Cheng (2013), we employ the term “intensity of use” to describe the extent of use of a Management Accounting Practice”. In each organization, managers at different functional levels may be involved with the use of accounting practices, and each one perceives them differently, depending on their performance levels.

Since the intensity of use can affect the way people perceive the enabling dimension of a Management Accounting Practice (Mahama & Cheng, 2013; Oyadomari *et al.*, 2018, p. 345), this research offers a unique view, different from the studies previously mentioned. This is because it assesses distinct practices simultaneously, but considers them comparable, for being the most used, and represents the perception of managers of different functional levels. In addition, it accepts that the practices noticed as the most used (used more intensely) reflect better their impact on the performance of directly associated tasks (Mahama & Cheng, 2013).

By assuming that MAPs can be characterized as organizational bureaucracies, which operate in an enabling or coercive way in associated tasks (Adler & Borys, 1996), this research starts from the perception of users, and adopts the construct developed by Mahama and Cheng (2013). The main objective was to investigate the perception of professionals of different functional levels, on the enabling or coercive attributes of the most intensely used MAPs in their organizations. The research focus is on non-financial companies operating in Brazil, in different economic sectors. As secondary objectives, we sought to: (i) carry out an inventory of the most intensely used MAPs by organizations operating in Brazil; (ii) assess the existence of an association between the levels of usability of the most intensely used MAPs, by two parameters: a) the different MAPs most intensely used by organizations; and b) the different functional profiles of managers who answered the survey.

We carried out the study from a survey of companies that participate in the publication “Best & Largest” of Exame magazine. We received 149 complete answers, 102 specifically from large companies, which showed the different types and uses of MAPs in the sample.

From an academic standpoint, the work contributes to understanding the factors that explain the usability of a wide range of practices most intensely used by managers in organizations. It takes into account the dimensions repair, internal transparency, flexibility, global transparency, and enabling and coercive uses, based on the construct proposed by Mahama and Cheng (2013). The research got the different perspectives of managers, according to their functional levels, which allowed to deepen the understanding on the attributes associated with the ‘enabling use’ type. From a practical point of view, it shows that the usability of practices is associated with elements such as users’ empowerment, satisfaction, and task performance, which can improve the organization’s whole performance.

We structured the article in five parts. The introduction presents the context elements, objectives, and justification of the research; the second part presents the literature review on MAPs and its implications regarding the coercive versus enabling use. The third part reports the chosen method; the fourth describes the evidence achieved and data analysis; and the fifth part presents the conclusions.

2 Literature Review

Many studies sought to classify MAPs according to their different elements: design (Chenhall & Morris, 1986; Chow *et al.*, 1999; Davila, 2000; Ferreira & Otley, 2006; Gordon & Miller, 1992; Simons, 1987); utility (Chenhall & Morris, 1986); use (Bisbe & Otley, 2004; Dobroszek *et al.*, 2019; Hopwood, 1972; Otley, 1978; Simons, 1990; Tuomela, 2005); and scope, timing, aggregation, and integration (Abernethy & Guthrie, 1994; Anderson & Young, 1999; Foster & Swenson, 1997; Silvola, 2007). However, these studies little explain what motivates the use of different MAPs, which of them are perceived as the most used daily by managers at different levels, and what are the factors that distinguish them, based on their usability.

Bureaucratic forms of management and control have been often criticized for being inappropriate for organizations that require flexibility (Burns & Stalker, 1966; Mintzberg, 1979). This is a fact, especially if they become an impediment to organizational performance, acting to increase efficiency at the expense of reducing employees’ commitment to work, thus reducing their willingness to search ways to improve work processes; however, this does not occur in all forms of bureaucracy (Jørgensen & Messner, 2009).

Adler and Borys (1996) did a search on the evaluation of technologies applied to machines, where they characterized the concept of ‘enabling use’ to describe how a technology can help its users to deal effectively with the specificities of their work environment, unlike those that limit the action of users. The authors employed the example of a paper copy machine to demonstrate how machines that allow interaction between user and equipment, whether by highlighting faults or explaining possibilities for adjustments, enhance the capacity of users, compared to those that are fully formatted, and lock when someone tries to change such parameters.

Based on the notions of enabling and coercive formalization, proposed by Adler and Borys (1996), we

understand how bureaucracies may have positive or negative impacts on employees' commitment and attitudes. For the authors, formal procedures are positive when they allow employees to deal more efficiently with unexpected daily conditions; and they are negative when designed to force obedience, and therefore replace, rather than complement, employees commitment (Jørgensen & Messner, 2009, p. 101).

Management accounting studies have used this construct, by adapting it to the dimension of organizational technology. In some organizations, MAPs are characterized by formal rules and standardized procedures and operations, while in others they are more responsive and have few rules, even allowing changes in the way they are conceived and used (Ahrens & Chapman, 2004; Chapman & Kihn, 2009; Jørgensen & Messner, 2009; Mahama & Cheng, 2013; Wouters & Wilderom, 2008).

Ahrens and Chapman (2004) adapted the concept of 'enabling use' versus 'coercive use' to accounting, based on the following elements: (a) repair – practice attributes that allow the user to make adjustments, when necessary, for best 'functioning'; (b) internal transparency - an attribute that provides clarity to the user on the 'functioning' practice; (c) global transparency - an attribute that explains the impact of a practice on the organization, and of the organization on that practice; and (d) flexibility - an attribute that allows the user to decide how and when to use the practice, until the point of deciding to 'turn it on, or even turn it off'.

Mahama and Cheng (2013), based on Ahrens and Chapman (2004), developed a research instrument that allows evaluating managers' perception, based on the intensity with which MAPs are enabling or coercive, including two dimensions that aim to directly measure these characteristics (enabling and coercive usability).

The formalization process in organizations using MAPs, depending on how it is done, is a form of coercion, since it can limit the mobility of individuals in their daily activities (Adler & Borys, 1996; Ahrens & Chapman, 2004; Mahama & Cheng, 2013). On the other hand, this process plays a significant role in providing predictability, guidance and clarity, helping to avoid chaos and unpredictability, which can occur when there are high levels of organizational decentralization (Hempel *et al.*, 2012). This shows the positive dimension in the use of such practices for coercive perception.

Studies carried out on the formalizing action, which ranks technologies as enabling or coercive, are based on the perception of their users. First, we can consider that perceptions are individual evidence, which would prevent their comparison, and even an aggregate analysis; however, when evaluating perceptions based on similar profiles of professional personality, that perception is completely changed. Schneider *et al.* (1998), by evaluating a sample of around 13,000 managers from 142 different organizations, representing a wide cross-sample of industries in the United States, and using multivariate analysis, showed a significant effect of the association of managers' personality characteristics, based on their organizational attributes. The results of a second multivariate analysis that grouped organizations in sectors, disclosed a significant effect for the organizations and the industry, regarding managers' personality characteristics. Hence, we can assume that, in a given functional range, there is an equivalence in professional personality, especially in the same sector.

Jørgensen and Messner (2009, p. 101) showed some attributes of an enabling system: (a) repair: allows non-specialist users to correct their errors, or those that emerged in the system, without interrupting the activities; (b) internal transparency: makes it possible to understand the system's logic; (c) global transparency: contributes to understanding downstream and upstream implications of its activities; and (d) flexibility: the degree of freedom granted to employees for using the systems.

Flexibility is desirable whenever it is not clear, in advance, how a specific objective should be achieved, or how a particular activity should be conducted; therefore, it is necessary for promoting control and efficiency, since it concentrates the behavior of employees in clear and defined activities, without the need of being guided by previous standards that would indicate what is efficiency (Jørgensen & Messner, 2009, p. 103).

Wouters and Wilderom (2008, p. 492) also share such definitions. They state that: (i) the **internal transparency** dimension is associated to the perception of users on the logic and internal function of a system, showing the reasons why some control mechanisms and good practices are in force; (ii) **global transparency** regards the employees' capacity of understanding, in a broader context, how controls are designed, in order to make them perceive where their tasks fit into the whole; (iii) **flexibility** shows the perception of users that they can make control decisions based on information received from information systems, allowing them to add functionalities to meet specific demands, as a result of work; and (iv) **repair** means that users can fix or improve their work process, acting on failures and other unscheduled events that may affect these processes.

For this research, in particular, Mahama and Cheng's study (2013) stands out. They investigated if and how the active perceptions of managers on their cost systems affect task performance. The results support the assertions that managers who consider their costing system as more enabling will show higher levels of task performance, and this relationship occurs due to the intensity with which the costing system is used, and to the level of psychological empowerment experienced by managers. The intensity of use is more associated to all four dimensions of psychological empowerment (meaning, competence, self-determination and impact). Finally, the intensity of use also has an indirect impact on task performance, through the 'competence' dimension of psychological empowerment.

The construct developed by Mahama and Cheng (2013, pp. 112-113), known in the literature as "Enabling Perception of Costing Systems", stemmed from the assumption that operational managers are the ones who perceive the largest benefits in adopting the costing systems most intensely used in organizations.

It comprises six statements: the first focuses on the enabling proposition of the systems, the second seeks to identify its coercive proposition, the third tries to highlight the repair dimension, the fourth addresses internal transparency, the fifth the flexibility, and the sixth the global transparency.

Several studies have applied this construct in different situations. Beuren *et al.* (2020) used it to assess the enabling and coercive perceptions of the use of Management Control Systems. Souza and Beuren (2018), for providing administrative, financial, and accounting services in the southern region of Brazil, through a Shared Services Center. Oyadomari *et al.* (2019) adopted it to the use of management reports in a retail organization, and in an insurance company (Oyadomari *et al.*, 2018). Oyadomari *et al.* (2017), in cost measurement and pricing for small businesses; and Souza *et al.* (2017) for costing systems of companies in the Manaus Free Trade Zone. We detail these studies below.

Beuren *et al.* (2020), through a survey of 161 Brazilian companies that had gone through acquisition processes, showed that the enabling perception of Management Control Systems (MCSs) affects the psychological empowerment of their users, and also contributes to organizational resilience. This relevant aspect of the daily management process helps organizations to deal more effectively with the turbulence they are exposed to. A previous paper by Beuren and Santos (2019), also in companies that had gone through the acquisition process, had already reached these conclusions, by showing that MCSs are antecedents of the resilience capacity in organizations, which suggests that the design and use of the MCS can contribute to develop the necessary capacities to deal with unexpected situations or events. Such studies led to inferences on the effects of the MCS on the dimensions of psychological empowerment, which was not possible until then, based on the papers by Mahama and Cheng (2013), Moulang (2015), Appuhami (2017), and Souza *et al.* (2017).

Souza and Beuren (2018), in a survey with 88 operational employees in a Shared Services Center, which provides administrative, financial, and accounting services in the southern region of Brazil, found evidence that the use of systems with formal controls perceived as enabling contributed to employees' satisfaction, empowerment, and task performance. Oyadomari *et al.* (2019), who conducted a survey with 77 managers in a retail organization, confirmed such findings. The results suggest that there is a statistically significant and positive relationship between the enabling dimension of management reports and the intensity of their use, which, in its turn, is positively associated with the speed and quality of the decision.

Previously, Oyadomari *et al.* (2018) had carried out a survey with 231 employees of an insurance company, combined with secondary data. By using the structural equation modeling (SEM) technique, they identified that the enabling dimension did not influence positively the use of management reports. In contrast, the study showed that technical validity was positively associated with the use of management reports, and this use affected the performance of commercial managers in that organization.

Oyadomari *et al.* (2017), through an interventionist approach for measuring costs and setting prices in small companies, showed that, when managers realize the benefits, they use cost controls more intensely, thus confirming the results of Mahama and Cheng (2013). With different results, Souza *et al.* (2017) conducted a survey with 62 companies listed in the Profile of Companies with Approved Projects or in Implementation, at the Manaus Free Trade Zone, in 2014. They analyzed the effect of the enabling perception of costing systems by managers on their tasks' performance, mediated by the intensity of use of the costing systems and the level of psychological empowerment. Research results showed that the enabling perception of costing systems by managers did not affect their intensity of use, but did affect psychological empowerment, which reflected directly in task performance; this indicates that the greater the empowerment, the greater the performance of managers.

An extensive literature review showed no studies that sought to evaluate the characteristics of usability of the MAPs most intensely used, thus emphasizing the contribution of this study to the literature and to organizations.

3 Method

3.1 Sample Selection and Data Collection

We carried out the survey with managers of companies listed in the 2015 yearbook *Melhores & Maiores* [Best & Largest], composed of 1,153 organizations. From this population, we identified those whose executives in the areas of Accounting and Finance had electronic addresses for contact, regarding Controllership activities. Thus, at the end of 2015, we sent 618 electronic questionnaires to potential respondents, whom we then contacted by telephone, to request their collaboration for the research, achieving 149 complete answers.

The first part of the questionnaire aimed to identify the respondent's position, company size, and the sector of economic activity (industry, commerce, or services). Regarding the size, we used BNDES's [National Bank for Economic and Social Development] classification rank (2011), with the following ranges of gross revenue: a) Small (annual revenue up to R\$ 16 million); b) Medium (annual revenue over R\$ 16 million, up to R\$ 90 million); c) Medium-Large (annual revenue above R\$ 90 million, up to R\$ 300 million); d) Large (annual revenue over R \$ 300 million, up to R\$ 1 billion); and e) Very Large (annual revenue above R\$ 1 billion).

The second part of the questionnaire sought to identify the respondent's perception on which MAP was most intensely used by managers in the organization (just one). To assist in this task, we composed a list of 17 practices, in the body of the questionnaire, based on the menu of techniques identified by Ferreira and Otley (2006), as well as a glossary, which briefly explained each one.

The list included the following practices: Strategic planning, Business Budget, Budget Variance Analysis, Traditional Costing Techniques, Product Profitability Analysis, Instrument Panel (*Tableau de bord*), Residual Income, Return on Investment, Operational Research Techniques, Balanced Scorecard, Activity-based Budgeting, Activity-based Costing, Target Costing, Customer Profitability Analysis, Economic Added Value (EVA), Product Life Cycle Analysis, and Benchmarking. At the end of the list, there was an empty field where the respondent could include the MAP most used in his organization, if it were not on the list.

We tested the questionnaire and glossary in a group of five specialists in Management Accounting, and included the necessary adjustments (word substitution) in the final version. We achieved a rate of 24% complete response. Most companies in the sample belong to the industrial sector (52%), followed by services (33%) and commerce (15%). As for the size, large or very large (83%) companies prevail, followed by medium (14%) and small (3%). The origin of capital was 73% national, and 27% were multinational companies. Controllers (26%), directors (41%), and managers (16%) answered most of the questionnaires, as shown in Table 1. The length of stay in the position was less than a year for 3%; from 1 to 5 years for 48%; from 5 to 10 years for 20%; from 10 to 15 years for 12%; and 17% stayed more than 15 years in the same role.

Table 1

Description of research data

Respondents' roles	Number	%
Analysts	10	7%
Accountants	5	3%
Controllers	38	26%
Directors	61	41%
Managers	24	16%
Superintendents	4	3%
Supervisors	7	5%

As shown in Table 2, the practice perceived by respondents as the most used was Business Budget (30%), followed by Strategic Planning (28%) and Budget Variance Analysis (25%). These three practices together represent the perceptions of 83% of the sample. However, both the Business Budget and the Budget Variance Analysis, despite presented as separate practices, are linked to the same practice, the Business Budget, in a broader sense. Hence, considering this broader view of the Business Budget, it appears as the most used MAP for 55% of the respondents, with Strategic Planning in second place, with 28% of answers.

As we continued to analyze the other MAPs, we identified Product Profitability Analysis (4%) and *Tableau de bord* (4%), followed by Customer Profitability Analysis (2%) and Activity-based Costing (2%), then BSC - Balanced Scorecard (1.0%) and Economic Value Added (EVA) (1%); next, Activity-Based Costing (<1%), Original Financial Statements (<1%) and Traditional Costing Techniques (<1%). As in the analysis of the Business Budget, we added the values achieved from BSC and *Tableau de bord*, considering that in many situations it is difficult to distinguish between such practices; therefore, this was the fourth most used MAP (5%).

Table 2

Management Accounting Practices most intensely used

Practice	Number	%
Business Budget	45	30%
Strategic Planning	42	28%
Budget Variance Analysis	37	25%
Product Profitability Analysis	6	4%
Instrument Panel (<i>Tableau de bord</i>)	6	4%
Customer Profitability Analysis	3	2%
Activity-based Budgeting	3	2%
Balanced Scorecard	2	1%
Economic Added Value	2	1%
Activity-based Costing	1	1%
Original Financial Statements	1	1%
Traditional Costing Techniques	1	1%
Total	149	100%

The fact that a practice was the most used in an organization does not exclude the possibility of others being used simultaneously, and still, used with very similar intensities. Regarding the study's objective, data

obtained in the survey do not allow us to know which other practices would be used simultaneously by organizations, not even the intensity of their use, compared to the practice indicated as the most used.

As Table 2 shows, respondents noticed that the priority use of MAPs in their organizations is to support the planning and control process, that is, Business Budget and Budget Variance Analysis (55%), and Strategic Planning (28%).

3.2 Measuring Usability through Mahama and Cheng's (2013) Construct

The third part of the questionnaire aimed to identify the respondents' perception on the usability of the Management Accounting practice most used in their organizations. To do that, they were asked to evaluate six statements (C1, C2, C3, C4, C5 and C6 - Appendix 1), based on the construct developed by Mahama and Cheng (2013). They should score their agreement from 0 (zero) (no agreement) to 10 (ten) (total agreement), for each one of them. We made a treatment to reverse the question built on an inverted scale, according to these authors' original instrument.

As for its reliability, the construct showed a Cronbach's Alpha of 0.861 and a KMO of 0.849, which points out its internal consistency. From Exploratory Factor Analysis (EFA), only a single factor emerged, with an eigenvalue higher than one and representing 59.31% of the total variance explained.

Each of the statements proposed by Mahama and Cheng (2013) was initially evaluated according to its communalities, which eliminated U6 for being <0.5 (0.429). The others presented the following factor loadings: U3 = 0.848; U4 = 0.827; U5 = 0.794; U1 = 0.763 and U2 = 0.717 (in order of magnitude).

3.3 Evaluation of Associations Between Usability, Practices most intensely used, and Respondent's profile

Based on EFA, we identified the individual usability factors in the answers from each of the respondents (from -3.0893 to 1.47642), which were divided into quartiles (from Q1 to Q4, from the smallest to the largest factors), and then treated as a nominal variable. Likewise, variables 'Most Intensely Used Management Accounting Practice' and 'Managers' Role' are also nominal variables, and we analyzed them together with usability. For this purpose, we assessed their frequencies through Correspondence Analysis (CA) in its simple form, which uses the Chi-square test (χ^2). According to Fávero, Belfiore and Figueira (2006, p. 8), the Chi-square test standardizes the expected frequency values and forms the basis for the associations given by the chi-square metric distances in a dimensional space.

CA is based on the distribution of frequencies resulting from two qualitative variables, to show their associations in a multidimensional space, thus allowing a graphic representation of the nature of existing relationships. We performed the Chi-square test between the categories: (i) Usability and Most Intensely Used Management Accounting Practices ($\chi^2 = 25.43$ and $\text{sig} = 0.824$) and (ii) Usability and Managers' Roles ($\chi^2 = 44.251$ and $\text{sig} = 0.001$). Then, we did a CA between the variables Usability and Roles, since it was the only relationship with statistical significance at the 1% level. We identified no statistically significant associations between usability and the other control variables.

4 Description and Analysis of Results

4.1 Inventory of Management Accounting practices most intensely used by organizations operating in Brazil

The inventory carried out on the most intensely MAPs used by organizations operating in Brazil, according to Table 2, shows that respondents notice, in their organizations, the priority use of practices that support the planning and control process, that is, the use of Business Budget and Budget Variance Analysis (55%), and Strategic Planning (28%). This is because the positions of most respondents (Controllers, Directors, and Managers), equivalent to 83%, aim to achieve goals, in general (Wouters & Wilderom, 2008).

Due to the higher number of answers associated with Business Budget - 55% - (Budget, 30%, and Budget Variance Analysis, 25%), we can infer that the most intensely used practices focus on the short term (up to one year), since the most frequent time horizon for budgets is up to one year. However, in a representative group of respondents (28%), the priority was the practice of Strategic Planning, leading us to infer that, in these organizations, managers focus on long-term objectives.

The fact that a practice was perceived as the most used in an organization does not exclude the possibility that it uses others simultaneously, and still, with very similar intensities; probably, organizations use other practices as a complement to the one most intensely used, for measuring, evaluating, or controlling. However, the highest intensity of MAP use occurs in those practices directly associated with the management process (plan, execute and control); however, data from the survey do not allow us to know what other practices are used simultaneously by organizations, not even the intensity of their use, compared to the most used.

4.2 Factors that explain the usability of the practices most intensely used in organizations

First, we asked respondents to indicate the Management Accounting practice most intensely used in their organizations, and this was one of the assumptions for using the construct proposed by Mahama and Cheng (2013). Results of previous research by Oyadomari *et al.* (2019, 2017) confirm the positive association between intensity of use and enabling perception of management practices. On the other hand, Oyadomari *et al.* (2018) show that the motivation for enabling use comes from the perception of technical utility. Studies that took into account the dimensions of psychological empowerment and organizational resilience are associated with the enabling perception, but without considering the dimension 'intensity of use' as a research variable.

We performed EFA by using SPSS (version 26). Table 3 presents the results with the factor loadings for each of the components of the explanatory factor of the Usability of the Management Accounting Practices most intensely used, based on the respondents' perspective. We ranked them from the highest to the lowest intensity, according to the construct proposed by Mahama and Cheng (2013), properly adjusted to the research objectives, which showed the associations with the respective dimensions (repair, internal transparency, flexibility, enabling perception and coercive perception), and the statements used.

Table 3

Components of the Explanatory Factor of Management Accounting practices most intensely used

Variables	EFA loading*	Construct dimensions	Statements
U3	0.848	Repair	It was designed to facilitate the way I deal with problems unforeseen in my work
U4	0.827	Internal Transparency	It was designed to improve the visibility I have of the work I am responsible for
U5	0.794	Flexibility	It was designed to strengthen the flexibility of my work
U1	0.763	Enabling perception	It was designed to allow me to work more efficiently
U2	0.717	Coercive Perception	It was designed to monitor how I comply with company procedures

Note: *EFA – Exploratory Factor Analysis

The dimension Repair (U3 = 0.848) was perceived by respondents as having the highest factor loading. It is mainly related to the fact that non-specialist employees have permission to correct flaws, whether in the systems, or even their own, without the need for interruptions (Jørgensen & Messner, 2009); that is, it allows users to repair or improve their work process, thus being able to act on their own failures, or on other unscheduled events (Wouters & Wilderom, 2008).

Bearing in mind that 83% of the respondents have positions related to processes that involve common attributions, such as decision-making (Controllers, Directors and Managers), associated with the achievement of specific goals (Wouters & Wilderom, 2008), it is not surprising that this dimension got the highest factor loading.

Another argument is that the intensity of occurrence of the Repair dimension depends on each organization, which we could not infer from our results. On the other hand, we can say that, to the respondents, the most intensely used practice is associated with this ability to contribute to the correction, be it of route, process, or activity, among others.

The Internal Transparency dimension (U4 = 0.827) was the second in factor loading, according to respondents' perception. It refers to how much users can understand the systemic logic of the most used Management Accounting practice, in addition to being in effect and a reference of recommended practice (Jørgensen & Messner, 2009; Wouters & Wilderom, 2008). As in the previous dimension, given the majority profile of respondents, we can infer that they are able to understand the criteria, parameters, and processes involved in the elaboration and use of each of these practices.

The Flexibility dimension (U5 = 0.794) was the third in factor loading. It is the perception about the degree of freedom given to the user when adopting the practice. This can occur due to the design of the practice, the way functionalities are specified, or even the level of requirement to use the practice by organization's higher levels (Jørgensen & Messner, 2009). It can also be the self-perception of power of its users, so that they can change or include certain functionalities or processes for carrying out such practices (Wouters & Wilderom, 2008), to the point where they decide to turn it on, or even turn it off (Ahrens & Chapman, 2004).

The dimensions of the Enabling (U1 = 0.763) and Coercive (U2 = 0.717) perceptions were the fourth and fifth in factor loading. This fact becomes clear by analyzing the statements referring to them. The statement "It was designed to allow me to work more efficiently", which is associated with enabling perception, as well as the statement associated with coercive perception "It was designed to monitor how I comply with company procedures", have less explanatory power over their attributes, in their enabling or even coercive dimensions, compared to the previous three dimensions.

The understanding of coercive bureaucratic formalizations has been inadequate, as it hinders organizational performance, achieving results at the expense of loss of commitment (Jørgensen & Messner, 2009). Practices should not be understood exclusively as enabling or coercive; instead, they have both

dimensions simultaneously, and one can be more intense than the other, which does not mean that the coercive effect is negative (Mahama & Cheng, 2013; Beuren & Santos, 2019). This is shown by the proximity of the factor loadings between the two perceptions.

Finally, we could not include the 'global transparency' dimension in the analysis, because it did not express the variability of the factors involved, within the minimum required parameters (<0.5).

4.3 Association between the usability of the Management Accounting practice most intensely used and the type of practice

We did not find statistical significance that allows us to say that different practices are not randomly associated with categories of practices' usability. We conducted tests with different configurations (2, 3, and 4 groups) without achieving statistical significance for these associations. This fact, among other possibilities, may be a consequence of the few number of respondents that use some practices.

However, Table 4 presents the average values of responses by practice, for each of the dimensions (C1, C2, C3, C4, C5 and C6) of the construct developed by Mahama and Cheng (2013) (Appendix 1), along with the general average of the values by dimension, and the factor average by type of MAP most intensely used.

Table 4

Average values of responses

Practice	No.	C1	C2	C3	C4	C5	C6	Average	Average Factor/ MAP
Business Budget	45	8.29	7.16	6.98	7.71	6.42	8.56	7.52	0.22
Strategic Planning	42	7.43	5.98	5.71	6.88	5.02	7.33	6.39	-0.35
Budget variance analysis	37	7.76	6.62	6.08	7.59	5.95	7.86	6.98	-0.06
Product profitability analysis	6	8.50	8.67	6.50	6.50	6.33	7.33	7.31	0.08
Tableau de bord	6	8.33	7.50	7.17	8.17	5.17	8.50	7.47	0.21
Customer profitability analysis	3	9.33	8.67	9.67	10.00	9.33	9.00	9.33	1.15
Activity-based budgeting	3	8.67	9.33	6.67	7.33	6.00	8.33	7.72	0.30
Balanced Scorecard	2	5.50	3.50	3.00	6.00	4.00	8.50	5.08	-1.02
Economic Added Value	2	10.00	7.50	7.00	10.00	7.50	10.00	8.67	0.85
Activity-based costing	1	9.00	5.00	5.00	8.00	7.00	9.00	7.17	0.09
Original financial statements	1	8.00	10.00	7.00	9.00	8.00	10.00	8.67	0.76
Traditional costing techniques	1	9.00	9.00	6.00	7.00	7.00	8.00	7.67	0.27

Note: C1, C2, C3, C4, C5, C6 – Average of observations of Mahama & Cheng's (2013) Construct Dimensions, weighted by the number of observations by MAP. Average = Average from C1 to C6. Average of individual factors resulting from Exploratory Factor Analysis, weighted by the number of observations by MAP.

From Table 4, and assessing the total range observed in usability through MAP factors (from -1.02 to 1.15), we can identify MAPs that have more usability (Customer Profitability Analysis with factor = 1.15), and less usability (Balanced Scorecard with factor = -1.02). In fact, this shows how this group of companies uses them, on average; for most of the practices, the results are not representative, due to their small number.

However, by observing the set of MAPs Business Budget (47 companies), Strategic Planning (42 companies), and Budget Variance Analysis (37 companies), there is a significant number of mentions of practices that complement each other, and provide elements that support the long and short-term decision-making process. About these practices, and based on questionnaires' data, we cannot say if they are enabling or coercive from the factors achieved (Business Budget [Average factor = 0.22], Strategic Planning [Average factor = -0.35], and Budget Variance Analysis [Average factor = -0.06]), given their proximity to zero (which would mean indifference), and the small difference between them. This confirms Beuren and Santos's (2019) findings, for whom the coexistence of enabling and coercive practices is not necessarily a negative influence, according to their users. It is worth reflecting if the real motivation is not due to its technical utility, as suggested by Oyadomari *et al.* (2018).

4.4 Association between usability of the Management Accounting practice most intensely used and the respondent's position

Based on the individual factors of each observation, created from EFA procedures, we established usability ranges, as previously described in the Method section. Table 5 shows the distribution of usability according to respondents' roles.

Since the statistical parameters identified in the correspondence analysis were appropriate to show statistical significance, we performed CA for the non-random relationship between Usability and Respondent Roles ($\chi^2 = 44.251$ and $\text{sig} = 0.001$), shown in Figure 1. We carried out Correspondence Analysis by using SPSS (version 26).

Table 5
Distribution of usability for each respondent role

Usability	Respondent role							Total
	ANA	CON	CTR	DIR	GER	SPI	SUP	
Q1	0	1	1	1	0	0	0	3
Q2	0	3	0	11	2	0	0	16
Q3	3	0	18	21	8	0	0	50
Q4	7	1	19	28	14	4	7	80
Total	10	5	38	61	24	4	7	149

Note: ANA = Analyst, CON = Accountant, CTR = Controller, DIR = Director, GER = Manager; SPI = Superintendent, SUP = Supervisor. Q1, Q2, Q3, Q4 - usability quartiles, from the lowest to the highest

In Figure 1 (perceptual map), there are points that represent the various roles of the respondents; others, from 1 to 4, represent the quartiles 1 to 4, ranging from those associated with the perception of lower usability features (which stand for the most coercive), to those associated to higher usability (which stand for the most enabling). We also observe three circles characterized by the letters A, B and C. Circle A contains quadrants 1 and 2, and the function CON (Counter). Circle B contains quadrants 1 and 2 on the right, and 3 on the left; near the center, we can identify the DIR (Director) role. Circle C contains quadrant 4 in its upper part, and next to it, the GER (Manager) and CTR (Controller) roles superimposed at the same point, and the ANA (Analyst) role, just to the left of quadrant 4; further down, also overlaid at the same point, the SPI (Superintendent) and SUP (Supervisor) roles.

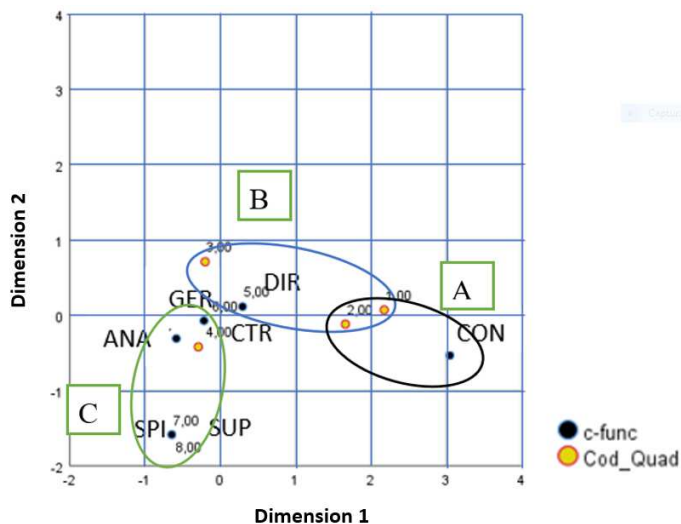


Figure 1: Perceptual map of usability and respondent role

Note: ANA = Analyst, CON = Accountant, CTR = Controller, DIR = Director, GER = Manager; SPI = Superintendent, SUP = Supervisor. Q1, Q2, Q3, Q4 - usability quartiles, from the lowest to the highest

From the analysis of circle A, we observe the proximity of the Accountant role to the quadrants that show a more coercive perception. The sample included five accountants, of which one fit in quadrant 1, three in quadrant 2, and one in quadrant 4 (see Table 4). However, the joint intensity of their answers placed them in a very distant position from the other professionals of the sample. The coercive perception on the most intensely used MAPs can be related to normative or legal pressures, to which they are more intensely subject than other company professionals, and to the strain to meet monthly deadlines for closing processes and sending reports to regulators (Adler & Borys, 1996; Ahrens & Chapman, 2004). This shows that performance improvement is not necessarily the focus of these professionals, maybe more concerned with producing formal information (Jørgensen & Messner, 2009; Wouters & Wilderom, 2008).

Regarding circle B, we observe that the Director role is at an average distance between the most coercive quadrants (1 and 2) and the medium intensity enabling (3). This shows that, in their perceptions, the most intensely used MAPs ensure that activities, objectives, and goals are controlled and met (coercive quadrants 1 and 2) (Adler & Borys, 1996; Ahrens & Chapman, 2004), but without disregarding the performance view (quadrant 3 – enabling of medium intensity) (Jørgensen & Messner, 2009; Wouters & Wilderom, 2008).

Circle C, on the other hand, shows that the other roles, which can be considered as middle management and operational activities, perceive the practice of Management Accounting more intensely used as relevant, either by the intensity of its use, or by its contribution to improve their own performance (Jørgensen & Messner, 2009; Wouters & Wilderom, 2008).

5 Final Considerations

By considering MAPs as organizational bureaucracies that can be enabling or coercive in their associated tasks, we used in this research the construct developed by Mahama and Cheng (2013) to achieve its main objective – to investigate the main features that characterize the usability of the Management Accounting practice more intensely used by managers of different levels in non-financial companies operating in Brazil. As secondary objectives, we sought to: (i) create an inventory of the most used MAPs by these organizations; and (ii) assess the existence of association between the usability levels of the most intensely used MAPs, by two parameters: a) the different MAPs most intensely used by organizations; and b) the different functional roles of managers who responded the survey.

The Repair dimension (U3 = 0.848) had the highest factor loading, which shows that its users, non-specialist employees, realize that they are able to correct failures, often resulting from unforeseen events, which allows them to achieve specific goals. The second was Internal Transparency (U4 = 0.827), which shows the perception on its systemic and procedural logic. Flexibility was the third (U5 = 0.794), perceived by the user's freedom to adopt it (Jørgensen & Messner, 2009; Wouters & Wilderom, 2008). The fourth (U1 = 0.763) and the fifth (U2 = 0.717), enabling and coercive perceptions, respectively, show that they should not be seen exclusively as one or the other; instead, both practices have the two dimensions simultaneously, and one may be more intense than the other, which does not mean that the coercive effect is negative (Mahama & Cheng, 2013; Beuren & Santos, 2019). There was no statistical significance to allow for statements about the Global Transparency dimension.

Regarding the first specific objective of the study, results indicate that the most used MAPS by organizations operating in Brazil are those related to the business management process, that is, Business Budget (30%), Strategic Planning (28%), and Budget Variance Analysis (25%), representing 83% of the sample perceptions. We can also infer that the focus of these practices is on short-term decisions, as 55% of the companies mentioned that the most used practices were Business Budget (30%), and Budget Variance Analysis (25%), since in practices related to the budget process the most frequent time horizon is up to one year. However, a significant group of respondents (28%) assigned the highest priority to Strategic Planning, thus showing that in these organizations the focus is on long-term goals.

If we consider the complex environment where these organizations operate, assessing the level of adequacy of Strategic Planning and Business Budget practices to the new contexts can be a contribution. Also useful is to find ways to simplify Strategic Planning approaches and rites, and to study new ways of using the Budget, with structures more flexible and adaptable to business models. Academy can invest in interventionist research, where it is possible to assess the real needs of companies, and bring them effective benefits from the use of practices in their several areas of application.

Regarding the first part of the second specific objective of the research, we were unable to establish associations between MAP usability and its types, as there was no statistical significance to allow for them. As for the second part, we could associate different levels of usability with respondents' role profiles, and we showed the Accountants' perception of the coercive use of these practices – possibly due to the pressure of regulations, deadlines and laws to which they are subject. Directors found them coercive and enabling – possibly because their focus is on achieving goals, but with a concern for performance; and other respondents (Analysts, Controllers, Managers, Supervisors, and Superintendents) noticed them as enabling, as they are middle management professionals that seek to improve their performance.

As a limitation, this study focused on the Management Accounting practice most intensely used by organizations, without using a scale to assess the intensities and compare more than one practice within the same organization. As new research paths, we suggest assessing the characteristics related to the intensity of use, in order to solve doubts regarding the influence of intensity of use on the enabling perception.

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Appendix 1 – Research instrument adapted from Mahama & Cheng (2013)

Based on your perception of the Management Accounting practice most used in your organization, give a grade from 0 (zero) to 10 (ten) for each statement, 0 being no agreement, and 10, total agreement:

Question	Observed Dimension
It was designed to allow me to work more efficiently	Enabling versus coercive perception
It was designed to monitor how I comply with company procedures.	Coercive perception versus enabling – Negative question
It was designed to facilitate the way I deal with problems unforeseen in my work	Repair
It was designed to improve the visibility I have of the work I am responsible for	Internal Transparency
It was designed to strengthen the flexibility of my work	Flexibility
In my perception, the most used MAP in my organization allows me to understand the wider processes of the company.	Global Transparency

NOTES

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AUTHORITY CONTRIBUTION

Conception and elaboration of the manuscript: P. T. Russo

Data collection: P. T. Russo

Data analysis: P. T. Russo; R. Guerreiro; R. P. Souza

Discussion of results: P. T. Russo; R. Guerreiro; R. P. Souza

Review and approval: P. T. Russo; R. Guerreiro; R. P. Souza

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The data set that supports the results of this study is not publicly available.

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Not applicable.

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