The impact of SMES characteristics on management accounting practices: Evidence from the state of Amazonas

El impacto de las características de las PYMEs en las prácticas de la contabilidad gerencial: evidencia del estado de Amazonas

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Abstract

This research seeks to identify Management Accounting Practices (MAP) used by Small and medium-sized enterprises (SMEs) and the factors that explain the adoption of those practices. This study is relevant due to the scarcity of studies in this context, especially, in developing countries. Our study shows that SMEs use mostly traditional MAPs. We provide evidence that the traits of the owner/manager, and the age and sector of activity of the SME influence the adoption of MAPs. This study contributes: empirically, by providing statistical evidence of the contingency factors associated with the adoption of MAP by SMEs in a developing country; theoretically, by enriching the literature on MAPs and contingency factors. Our results suggest clues for the development of public policies to support the small business environment and the importance of Management Accounting education. For future research, this study can be extended, namely to other developing countries.

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Resumen

Esta investigación busca identificar las Prácticas de Contabilidad Gerencial (PCG) utilizadas por las Pequeñas y Medianas Empresas (PYMES) y los factores que explican la adopción de esas prácticas. Este estudio es relevante debido a la escasez de estudios en este contexto, especialmente, en los países en desarrollo. Nuestro estudio muestra que las PYMES utilizan principalmente PCG tradicionales. Aportamos evidencia de que las características del propietario/gerente, la edad y el sector de actividad de la PYME influyen en la adopción de PCG. Este estudio contribuye: empíricamente, al proporcionar evidencia estadística de los factores de contingencia asociados con la adopción de PCG por parte de las PYME en un país en desarrollo; teóricamente, al enriquecer la literatura sobre PCG y factores de contingencia. Nuestros resultados sugieren pistas para el desarrollo de políticas públicas de apoyo al entorno de la PYME y la importancia de la educación en Contabilidad Gerencial. Para futuras investigaciones, este estudio puede extenderse a otros países en desarrollo.

Código JEL: M10; M41
Palabras clave: prácticas de contabilidad gerencial; teoría de la contingencia; pequeñas y medianas empresas; países en desarrollo

Introduction

Micro, Small, and Medium-sized Enterprises (SMEs) are the market infrastructure of any economy. They represent over 95% of the companies registered worldwide (Word Bank, 2018), over 50% of employment, and contribute with over 35% of the Gross Domestic Product (GDP) in many developing countries. They generate the largest percentage of new jobs, help diversify a country's economic base, and promote innovation. They are one of the main drivers of global economic growth, innovation, employment, and social inclusion (APEC, 2016; OCDE, 2009). Specifically, in Brazil, they represent about 95% of the total number of companies and 52% of formal jobs, being responsible for approximately 27% of the GDP (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [SEBRAE], 2014).

Accounting has a broad spectrum of use. Accounting ceased to be understood as a purely technical process and started to have some instruments which account for the facts of the economic life, as well as organizational and behavioral of the organizations. In this sense, the accounting practices are intrinsically related to what happens beyond organization boundaries, and not only with what occurs within the organization (Chapman et al., 2009).

Management Accounting (MA), particularly, involves a set of practices that help on the decision-making, controlling and building up future lines of action, from the management of relevant data (Carmona, 2017; Ahrens & Chapman, 2007; Qiu et al., 2022), effectively using this information for decision-making purposes (Souza et al., 2003). Therefore, the identification, measurement, accumulation, analysis, preparation, interpretation, and communication of the referred information support not only the

decision-making process but also connect the purposes of the organization and guide it in the most competitive way (Souza et al., 2003; Qiu et al., 2022). MA comes thus forward to help the organizations to optimize the use of resources to achieve the proposed goals.

The current context of increased competition, development of new technologies of production, and product's shorter life cycles has converted MA into a crucial controlling partner as far as decision-making goes as well as performance assessment (Frezatti, 2005), becoming useful both for the larger corporations and the SMEs. However, research focused on the use of MA on SMEs is scarce, but no less important. The literature suggests that most SMEs entrepreneurs/managers have little knowledge about accounting and its benefits, tending to use above all the decision-making process, experience, and intuition, disregarding the accounting information. Halabi, Dy, and Barrett (2010) report that entrepreneurs with better financial literacy skills are more likely to use accounting information.

Armitage, Webb, and Glynn (2016) consider that researching MA in SMEs may be justified, firstly, as questioning whether many of the "general" MA techniques presented in books is being followed and applied; and secondly, due to the wrong idea that an SME is not more than a "small" version of a larger enterprise. Therefore, the different characteristics of SMEs may generate Management Accounting Practices (MAP) which differ from those of the larger corporations.

Thus, studying how MA is used in SMEs is the general purpose of this paper, aiming to answer two research questions: 1) Which MAPs are followed?; 2) Which factors can explain this adoption, that is, how can we explain the diversity of MA in practice? This study shows that companies seek to use MA to ascertain and control the costs of their services and/or products and that the most commonly used MAPs are those defined as traditional in the literature, although other MAPs are considered more suitable for current times. Among the factors studied to explain this diversity we found that there are some practices associated with the age group of the company and also the sector in which it operates.

This research was initially launched in the State of Amazonas, Brazil. This state has been chosen due to the proximity of one of the researchers, for being a State that, despite having a smaller number of companies in the Brazilian context, has expressiveness in Brazil's economic scenario, not only for the diversity of business activities but for the fact that its capital, Manaus, is known as the main economic, financial and corporative centre of the northern region of Brazil, occupying the 6th place in the list of municipalities with the highest GDP in the country (according to the Brazilian Institute of Geography and Statistics - IBGE). Data concerning the business fabric of this State points out the existence of 34,897 companies, 42.8% of which are linked to the Services Sector; 45.8% to Commerce; and 11% to Industry (IBGE, 2017).

This paper contributes to the literature from a practical and theoretical point of view. From a practical point of view, it increases knowledge of the MAPs adopted by SMEs and which factors explain

the MAPs found, reducing the scarcity of studies in the area of MA in developing countries, such as Brazil. From a theoretical point of view, it presents evidence that the environment in which the SME operates, or the strategy followed by the SME does not always influence the adoption of MAP. On the contrary, the organisation's age group and activity sector may influence the adopted MAPs. Finally, and because of the characteristics of the sample studied, the profile of the manager/owner seems to be a factor contributing to the adoption of MAPs.

Next, we present the theoretical basis of this research (characteristics and objectives of the MAPs, contingency factors), the methodological process used, and the results obtained, followed by the analysis and discussion, providing answers to the researched questions. Finally, we present the conclusions, contributions, and limitations of this study.

Theoretical framework

Management Accounting Practices (MAPs)

MAP is a generic term used in the literature to characterise artifacts, activities, tools, management philosophies, instruments, costing methods, management models, information systems, performance evaluation methods, or costing systems that are used by MA professionals (Guerreiro et al., 2011). The study of MAPs was initiated in the 1980s. For some researchers, the study was only aimed at finding evidence to reinforce the perception that there was a gap between theory and practice (Bromwich & Scapens, 2016).

One of the main works on MAPs is by Scapens and Sale of 1985 (Scapens, 2006). The authors used a survey that did not lead to substantial results and, after that, through interviews, they concluded that the MAPs applied (1) are not 'ideal', those expected for; 2) the development and the use of MA techniques are dynamic and difficult to capture in the cross-section studies; 3) the personality and background of the key individuals can affect the choice of the MAPs.

We may find in the literature two main classifications of MAP: traditional and contemporary (International Federation of Accountants [IFAC], 1998).

The traditional MAPs, covering the initial phases of the evolution of MA (IFAC, 1998; Tuanmat & Smith, 2011), have as main focus the internal look to the organization, with few strategic and environmental considerations, and low use of cost information in the managerial decision-making process (Abdel-Kader & Luther, 2006; Tuanmat & Smith, 2011). They are limited to the determination of cost for controlling the financial position, evolving into a situation of providing information for management planning and control (Tuanmat & Smith, 2011). Within these practices, we find the total cost system,

standard costing, traditional budgeting, Cost-Volume-Profit analysis, and performance-based on results (Pavlatos & Paggios, 2009). According to the literature, these practices are the ones organisations use the most (Sulaiman et al., 2004; Dick-Forde, Burnett & Devonish, 2007; Adbel-Kader & Luther, 2008; Campanale et al., 2021), but they lose much of their usefulness in the current contexts of highly competitive and rapidly changing markets (Sulaiman et al., 2004; Tuanmat & Smith, 2011).

Contemporary MAPs, linked to the latest stages of MA evolution, have as their main focus the efficient use of resources in business processes (cost reduction) and the consequent creation of value for the organisation. This group includes the ABC system, Balanced Scorecard, target-cost/goal, value chain analysis, and benchmarking (Pavlatos & Paggios, 2009; Tuanmat & Smith, 2011). They arose intending to overcome the deficiencies of traditional MAPs, combine financial and non-financial information with a more strategic focus, seeking to increase the competitive advantage of organisations (Chenhall & Langfield-Smith, 1998a, 1998b; Baines & Langfield-Smith, 2003; Souza et al., 2003; Abdel-Kader & Luther, 2006; Dick-Ford et al., 2007; Massicote & Henri, 2021). In other words, these MAPs have affected the entire MA process (planning, control, decision-making, and performance evaluation), and shifted the focus from 'simple' or 'naive' cost determination to 'sophisticated' value creation through improved resource application (Pavlatos & Paggios, 2009). Massicote & Henri (2021) develop a measurement instrument to capture the use of budget, financial and non-financial performance indicators by boards of directors to oversee the strategic plan.

Although there is this distinction between traditional MAPs and contemporary MAPs, these MAPs reflect an evolution, in that they tend to complement each other (Tuanmat & Smith, 2011).

Pavlatos & Paggios (2009) used a survey in the Greek hotel industry and concluded that traditional practices were widely used than contemporary ones, although hotel managers sought to move towards the application of more contemporary MAPs. Nagirikandalage et al. (2021) also found traditional practices in manufactured industries more than in the services sector and Campanale et al. (2021) found that hybrid organizations use traditional financial and cost information but is poorly developed. Tuanmat & Smith (2011) also conducted a questionnaire to gauge the degree of change of the MAPs in Malaysia and found that both traditional and contemporary MAPs were similarly important. Guerreiro et al. (2011) also collected data through a questionnaire applied to a group of Brazilian companies, to identify the degree of use of MAPs (which they call 'artifacts') and, in this case, the modern MA artifacts are used by the organizations in the sample studied. Ern et al. (2016) identified in a sample of Malaysian firms that the adoption of a more sophisticated management accounting system is due to the need for more strategic information, the ability to adapt to technological changes, and the intensity of market competition. Pavlatos & Kostakis (2015) investigated the role of various MAP in Greek enterprises before and during country's economic crisis; and for better crisis management, companies implemented contemporary

management accounting and at the same time the level of importance and usage of traditional cost accounting techniques was decreased. Souza et al. (2003) conducted interviews at Brazilian multinational companies and concluded that a MA is still predominantly traditional at sample companies, despite the clamour for information that is more adjusted to the current operational environment for decision-making and the need for practices that are more appropriate and consistent with competitive, globalized markets. However, they reinforce that, although the new practices do not have wide applicability, they are important for the continuous evolution of MA and even for the development and advancement of the practices that are already used.

Contingency factors

The Contingency Theory advocates that there is no ideal form of planning, organizing, or controlling, but rather different ways according to each situation and according to the specific circumstances of the organization. An appropriate accounting system depends on the specifics of the organization.

Assuming that organizations operate as open systems, concerned with their objectives and responding to external and internal pressures, the contingency-based approach assumes that MA is adopted to help managers achieve desired outcomes or objectives. If a MA system is considered appropriate then it should provide enhanced information so that individuals make better decisions and thus achieve organizational objectives more efficiently (Haldma & Lääts, 2002).

While this theory assumes that there is no ideal MAP, that everything depends on various contingent factors and every organisational structure is a response to a set of contingencies, there are five contingent factors that seem to affect the cost and management accounting system (and as consequence, the use of MAPs): Environmental uncertainty, organizational structure, type of production, dimension, and competitive strategy (Abdel-Kader & Luther, 2008). We can, however, find studies focusing on the influence of other (external and internal) contingent factors, among them: national culture, capital structure, organizational design and size, corporate strategy, technology, education, and management information systems, leadership style, regulation, uncertainty, competition, organizational culture, management style, external environmental and corporate governance structure (Shields,1998; Mia & Clarke, 1999; Haldma & Lääts, 2002; Baines & Langfield-Smith, 2003; Chenhall, 2003; Löftsen & Lindelöf, 2005; Garengo & Bititci, 2007; Abdel-Kader & Luther, 2008; Cadez & Guilding, 2008; Shil et al., 2021; Hadid &Al-Sayed, 2021). However, the research on contingency factors in SMEs is very limited and the existing literature is confined to the developed countries, with little evidence on the factors associated with the use of MAPs in developing countries (Ahmad & Zabri, 2015).

Development of hypothesis

In this paper, we explore the following contingency factors: the environment in which the organisation operates, the competitive strategy, age group, and sector of activity of the organisation.

Environment surrounding the organization

The globalised economic environment, changing product life cycles, advances in manufacturing and information technologies, environmental issues, demands much more from companies that are increasingly seeking means, systems, procedures, which contribute to optimise management, demanding relevant information related to costs, performance, processes, products, services, and clients. In this context, the MA assists in decision-making, planning, control process and fills the need for information for costs, cost management, profitability analysis (Drury, 2015), and also what and how the resources will be applied (Andersén & Samuelsson, 2016; Nowotny et al., 2022).

In this way, the environment surrounding the organization influences the use of a MA and this is increasingly dynamic, heterogeneous, and hostile (Chenhall, 2003; Löfsten & Lindelöf, 2005; Newkirk & Lederer, 2006).

For Haldma & Lääts (2002), Abdel-Kader & Luther (2008), and Cadez & Guilding (2008), the more uncertain and competitive the organisational environment, the more developed MA systems are. The need for an appropriate fit between the environment and organizational systems is an underlying assumption of much of the contingency-based empirical research in the area of MA (Chenhall & Langfield-Smith, 1998a, 1998b; Baines & Langfield-Smith, 2003; Sulaiman et al., 2004). The effectiveness of the MA system depends on the company's ability to adapt to changes in external circumstances (such as environmental uncertainty, hostility, national culture) and internal factors (such as size, technology, strategy) (Haldma & Lääts, 2002; Ahmad & Zabri, 2015).

And yet, despite the various changes in the business environment (with special emphasis on those related to advances in information technology) and the emergence of a new way for companies to carry out their activities, especially in the management field, little change has been noticed in terms of MA. However, companies need to understand the process of change in MA as something continuous and they also need to identify possible resistance and mitigate it so that there is success in the implementation (Padmi et al., 2021; Angonese & Lavarda, 2014).

Hip. 1: The environment surrounding the organization influences the set of MAP adopted by the organisation

Competitive strategy

For Mia & Clarke (1999), a business strategy aligned with managerial accounting controls enables better performance. As customers are more demanding, a company can place greater emphasis on developing a differentiation strategy, which will focus on aspects such as quality, flexibility, innovation, and reliability, thus generating better quality products at more competitive prices. But to do so, they must reorganize their work processes and adopt structures that have a stronger client orientation (Baines & Langfield-Smith, 2003).

The literature predicts that certain types of MA systems are better suited to specific strategies. For instance, companies that adopt the cost leadership strategy are more associated with traditional MAPs, focused on cost control, specific operational targets and budgets, and strict budgetary controls, than companies that adopt product differentiation strategy (Chenhall & Langfield-Smith, 1998b; Chenhall, 2003). For companies adopting differentiation strategies, traditional financial accounting performance measures are not sufficient as they do not provide efficient feedback on how the organization is maintaining product quality and on-time delivery. In this context, the use of more contemporary MAPs, focusing on performance measures is the most appropriate (Baines & Langfield-Smith, 2003; Hadid and Al-Sayed, 2021).

Hip. 2: Competitive strategy followed by the organisation influences the set of MAP adopted by the organization

Organization age group

In the literature, the age of the organisation is associated with the probability of survival. Older companies are more likely to survive than younger companies. Therefore, there is a positive and significant association between company age group and management control systems, with older companies tending to improve management control systems due to greater management learning (Davila, 2005). For Moore & Yuen (2001), management accounting systems are adjusted according to each stage of the company's life cycle.

Hip. 3: Organisation age influences the set of MAP adopted by the organization

Economic activity

There is a certain concordance of studies relating economic activity as a contingent factor of MAP.

The study of Drury & Tayles (2005) indicates that business units in the financial and service sectors present significantly higher levels of cost system complexity when compared to companies operating in the manufacturing sector. For Shields (1998), within the same sector, there are differences in the use of MAPs because of the purposes and styles of use of techniques.

The causes of variation in the use of MAPs and industry are diverse, including product life cycle, cost structure, product diversity, distribution of costs over value chains, technology, type and intensity of competition, price flexibility, competitive strategies, and organizational designs (hierarchy, networks, decentralisation) (Shil et al., 2021; Shields, 1998).

Hip. 4: Economic activity of the organisation influences the set of MAP adopted by the organisation

Methodology

Design, application of the survey, response rate

This research is by its nature a quantitative and exploratory study, and data were collected through a survey, one of the most frequently used quantitative approaches in management accounting research (Hiebl & Richter, 2018).

The sample is non-random by convenience, composed of SMEs of the various economic activities belonging to the three major sectors (services, industry, and trade) and that is part of the register made available by SEBRAE of Amazonas (with 2,325 companies whose electronic contacts were validated).

The use of non-probabilistic sampling is justified because we studied a population that is only a fraction of the total population, it´s a quantitative study and because implementation is more efficient, as it would be more expensive and time consuming to survey all SMEs in all Brazilian states. The convenience in the sampling process is due to the fact that one of the researchers acts as a consultant with the SEBRAE of Amazonas and, therefore, has access to the databases of SMEs in that State (database referring to the 2014 census of SMEs of Amazonas).

However, as already mentioned, SMEs from different areas of activity were included in the study, thus minimizing subjectivity in the choice of study subjects and selection bias, thus achieving a

certain "breadth of understanding" (Etikan, Musa & Alkassim, 2016). By obtaining responses from SMEs from various economic activities, sampling bias was also minimized and, despite the low response rate, the SMEs that responded form a heterogeneous group that validates the study in question, giving value to the results obtained in the search.

The questionnaire was built through the research and data collection software Qualtrics. A preliminary version of the survey was submitted to pre-testing, with professionals in the areas of accounting and management, as well as entrepreneurs. This pre-testing mainly analysed aspects such as the structure of the survey, interpretation, and pertinence of the questions asked, knowledge of the tools to be questioned, appropriateness of the writing for the target audience, time, functionality of the link, and the reliability and internal consistency of the instrument by calculating the Cronbach' Alpha. After this stage, the final version of the survey was generated, consisting of four blocks and 28 questions: Respondents (6 questions), Company (6 questions), Business Environment (2 questions), Management and Accounting in the Company (14 questions).

The Respondents block aimed to characterize the entrepreneurs regarding gender, age, education, function, and seniority in the company and position. The Company block sought to portray the business, the field of activities, the main activity, age, the billing range, and size through the number of employees. The questions related to Business Environment aimed to characterize the business environment and performance (Newkirk & Ledere, 2006; Chenhall, 2003; Cadez and Guilding, 2008).

In the Management and Accounting block, we aim to obtain a picture of the company's management, the degree of formalization and importance of MA, and the use and frequency of MAP based on the methodology of Chenhall & Langfield-Smith (1998a, 1998b), Löfsten & Lindelöf (2005), Abdel-Kader & Luther (2006, 2008), and Cadez & Guilding (2008).

In addition to the descriptive analysis, this set of questions made it possible to measure and analyze the contingent factors such as the respondent's profile, the strategy of the company, and the use of MAPs.

Eight e-mails were sent between July 2017 and March 2018 (one of introduction and seven requesting participation in the study, with the link to the survey). In response, 80 companies answered the survey. However, nine surveys were excluded for not being filled out, not being possible to use in the statistical analysis. Thus, the sample for the empirical study comprises 71 companies. SPSS (Statistical Package for the Social Sciences) was used for the statistical treatment.

The construction of the latent variables followed the methodological assumptions of Burns & Burns (2009) and Field (2013) and factor analysis was used to simplify the data and reduce the number of variables related to each other to a small number of factors representing them.

Sample descriptive analysis

Characterization of the respondents, the companies, and the formalization of management and the MA

The survey respondents are 71.8% male, aged between 36 and 45 years old (39.4%), with higher education (56.3%) and some specialization/post-graduation (31%). The area of training is mainly Management (42.5%), followed by Accounting (20%). Of the respondents who have post-graduation degrees/specialization, the main areas of training are Management (31.8%), Auditing (18.3%), and Finance (13.7%). About 52.1% of the respondents are the owner/general manager of the company and 38% have been working in the company for 5-9 years (only 14.11% have been with the company for more than 16 years).

The sample is mostly composed of young companies since their business activity is less than 10 years (55%). Only 18.3% have been in existence for more than 20 years (or aged between 11 and15 years). The majority of the companies are in the Services (49.3%) and Trade (23.9%) sectors. Our sample is representative of the State of Amazonas since it is made up mostly of companies belonging to the Services and Trade branches.

As to the SMEs classification in the sample (by the criteria adopted in Complementary Law 123/2006), 43.7% of the companies are classified as Micro Companies (21.1% of the responding companies are classified as Small Company and 15.5% as Individual Micro Entrepreneur).

In terms of formalising management, 71.8% of the companies state that their mission is clearly defined. For 45.1%, both the strategic objectives that guide their operational activities and the critical success factors are formally identified. About 54.9% of the responding companies adopted the 'product differentiation' strategy, while 31% adopt a 'cost leadership' strategy. Only 8.5% of the responding companies adopt a 'focus' (market niche) strategy.

Concerning the formalization of MA in the company, the items that obtained the highest frequency in the answers "never" and "rarely" are, respectively 67.8% and 54.9%, "there is a manual of functions and procedures" and "there is the use of an integrated management system", which denotes the low formalization of the MA in the sample companies, despite the item "your company analyses the accounting information and the result obtained" having a mean of 3.51 (and 52.1% of frequency in the answers "often" and "always"). Respondents were also asked to identify the objectives of using MA in the company. MA is important for various purposes, being "quite important" for "ascertaining the costs of the products/services" (mean 3.59, with 56.4% of the responses) and "for decision-making" (mean 3.52,

with 53.5% of responses). These answers are like those obtained in the literature reviewed (Bouwens & Abernethy, 2000; Baines & Langfield-Smith, 2003; Dick-Forde et al., 2007; Ilias et al., 2010; Andersén & Samuelsson, 2016), where the MA main objective of the MA is to ascertain the costs of products/services, followed by the support of decision-making and cost control. The "Absorption Costing" is the method most frequently used by 36.6% of the responding companies, due to its legal requirement. However, 35.2% of the companies adopt this costing method and complement it with the "Variable Costing", for contribution margin analysis, for instance. More contemporary costing methods ("Target Costing" or "ABC Costing") are adopted by only 11.2% of the companies. For 16.9% of the responding companies, no costing method is adopted since they are services sector companies.

Characterization of the environment in which they operate

The environment in which respondents are inserted was analysed through eight items, which characterize this variable in three dimensions: dynamism, heterogeneity, hostility (Table 1). These companies operate in more hostile and heterogeneous environments, where price competitiveness, fierce competition in the activity sector, and legal, political, and economic constraints are the main factors that interfere in their environment. When asked about their performance compared to their competitors, respondents consider them to be better in terms of product quality and customer satisfaction [with 71.8% and 74.7% of responses respectively at levels 4 ("better than competitors") and 5 ("much better than competitors")].

Table 1
Environment surrounding the organization

	DESCRIPTION	FREQUENCY (percent)[a]					STATISTICS			RANK[c]
		1	2	3	4	5	Mean	Mode	Standard Deviation.[b]	
DYNAMIC	It is not possible to foresee the actions of the competitors.	2.8	22.5	46.5	23.9	4.2	3.04	3	0.869	7
	Products and services technology changes very quickly	2.8	28.2	29.6	29.6	9.9	3.15	3[b]	1.037	6
	Products and services become obsolete very quickly.	14.3	32.9	31.4	15.7	5.7	2.66	2	1.089	8
HETEROGE	There is a very fierce competition in my sector of activity.	2.8	5.6	16.9	40.8	33.8	3.97	4	1.000	2
	There is a wide variety of customer buying behaviour.	0	17.4	34.8	29	18.8	3.49	3	0.994	4

HOSTIL	Companies suffer legal, political and economic restrictions.	2.9	14.3	20	30	32.9	3.76	5	1.148	3
	Businesses are threatened by a shortage of skilled labour.	8.5	12.7	25.4	35.2	18.3	3.42	4	1.179	5
	Companies are threatened by intense price competitiveness.	2.9	1.4	17.1	45.7	32.9	4.04	4	0.908	1

[a] Frequency: (1) never, (2) rarely, (3) sometimes, (4) many times, and (5) always.
[b] There are several modes. The smallest value is presented.
[c] Ranking by the mean.
Source: Authors' own

The results achieved will be now presented and discussed.

Analysis and discussion of results

Management Accounting Practices (MAPs)

From the list of 24 MAPs presented to the respondents (Table 2), we observe that five MAP are most frequently used: "budget for planning", "non-financial indicators, "cost-volume-result analysis", "analysis of fixed and variable costs" and "budget for cost control". Of these MAPs, four are considered traditional and one is considered contemporary. The five least used MAPs are "Kaizen costing", "the EVA-based performance evaluation", the "BSC – Balanced scorecard", the "Target Costing" and the "ABC", all of them classified as contemporary. Thus, these preliminary results seem to outline that companies use traditional MAPs more than contemporary MAPs. These results corroborate the empirical evidence collected in the literature, that traditional MAPs are the most used by organizations (Chenhall & Langfield-Smith, 1998a; Sulaiman et al., 2004; Dick-Forde et al., 2007; Abdel-Kader & Luther, 2008; Pavlatos & Paggios, 2009; Angelakis et al., 2010; Lohr, 2012; Azudin & Mansor, 2018; Pham et al., 2020; Campanale et al., 2021; Massicote & Henri, 2021) despite some studies predict the decreasing use of traditional techniques (Angelakis et al., 2010). These are more focused on determining costs and supporting management planning and control. These were the characteristics identified by respondents in the scope of MA use at their organisations. Regarding the most used traditional MAPs, the empirical evidence is close to the findings of Angelakis et al. (2010), Lohr (2012), and Russo & Guerreiro (2017), with the corporate budget being the most adopted practice. In what concerns the use of contemporary MAPs, this study presents results similar to the studies of Abdel-Kader & Luther (2008) and Campanale et al. (2021) being the "non-financial indicators" and the "analysis of results per customer" the most used contemporary practices.

Table 2
Adopted Management Accounting Practices (MAP)

Traditional MAPs	FREQUENCY (%) [a]					STATISTICS			Rank[b]	MAP[c]%
	1	2	3	4	5	Mean	Mode	Stand. Dev.		
Budget for cost control	12.7	5.6	47.9	25.4	8.5	3.11	3	1.076	5	
Deviation Analysis	15.5	9.9	42.3	29.6	2.8	2.94	3	1.068	6	
Flexible budget	21.1	9.9	39.4	21.1	8.5	2.86	3	1.222	7	
Return of investment	11.3	28.2	32.4	23.9	4.2	2.82	3	1.060	8	
Imputation bases for indirect costs	28.2	22.5	38	8.5	2.8	2.35	3	1.070	12	
Standard Costs	31.4	37.1	11.4	12.9	7.1	2.27	2	1.239	13	33.9
Budget for planning	8.5	4.2	15.5	50.7	21.1	3.72	4	1.111	1	
Cost – Volume- Profit Analysis	14.1	4.2	32.4	43.7	5.6	3.23	4	1.111	3	
Fixed and variable Costs Analysis	8.6	21.4	27.1	31.4	11.4	3.16	4	1.150	4	
Profit by produc analysis	14.1	26.8	28.2	21.1	9.9	2.86	3	1.199	7	
Method of the centre of costs	25.7	20	31.4	15.7	7.1	2.59	3	1.234	10	
Contemporary MAPs										
Non-financial indicators	15.5	5.6	21.1	38	19.7	3.41	4	1.305	2	
Quality costs analysis	22.5	25.4	28.2	19.7	4.2	2.58	3	1.167	11	
Budget of basis zero	47.1	28.6	12.9	5.7	5.7	1.94	1	1.166	17	
ABC Costs	62.3	10.1	13	10.1	4.3	1.84	1	1.244	18	
Profits by client analysis	14.1	29.6	28.2	16.9	11.3	2.82	2	1.211	8	18.9
Competitive position analysis	15.5	28.2	38	12.7	5.6	2.65	3	1.070	9	
Benchmarking	31.4	28.6	28.6	8.6	2.9	2.23	1	1.079	14	
Life cycle cost analysis	32.4	38	16.9	8.5	4.2	2.14	2	1.099	15	
Performance	42.3	21.1	23.9	7	5.6	2.13	1	1.206	16	

Social and Environmental Assessment Performance									
Target costing	67.1	7.1	8.6	14.3	2.9	1.79	1	1.250	19
Balanced scorecard	65.2	7.6	13.6	10.6	3	1.79	1	1.209	19
EVA	66.2	6.2	15.4	7.7	4.6	1.78	1	1.231	20
Kaizen costing	68.1	7.2	13	11.6	0	1.68	1	1.091	21

[a] Frequency: (1) never, (2) rarely, (3) sometimes, (4) many times, and (5) always.
[b] Ranking by the mean.
[c] Mean of total percent responses (4) many times, and (5) always, for each group of MAPs.
Source: Authors' own

To reinforce the answer to the research question about the MAPs used by the companies in the sample, we applied the statistical analysis possible to use, as the variable MAPs does not meet the requirements of a normal distribution. In this sense, we created a variable that encompassed the characteristics of the use of all traditional practices ("MAP_Trad") and another variable for the use of contemporary MAP ("MAP_Cont") through factor analysis. We tested the feasibility of the factor analysis: The Kaiser–Meyer–Olkin (KMO) test indicates a good factor analysis (KMO=0.823) and possible to be performed; Bartlett's test of sphericity showed a p-value < 0.001 (Sig=0.000), so the variables are significantly correlated; and the Measure of Sampling Adequacy (MSA) showed $KMO_i > 0.5$ for all variables (Field, 2013; George & Mallery, 2019).

The relational structure of MAPs is explained by two latent factors, which explain about 57.963% of the total variability: factor 1-"MAP_Trad" which concentrates all traditional MAPs, and factor 2-"MAP_Cont", which concentrates on contemporary MAPs (Table 3).

Table 3
Management Accounting Practices (MAP) Factor Analysis

Traditional MAPs	ROTADED COMPONENT MATRIX[a]			
	Factor 1	Factor 2	Communalities	MSA[b]
Budget for cost control	0.338	0.701	0.606	0.849
Deviation Analysis	-0.006	0.839	0.704	0.794
Flexible budget	0.362	0.683	0.598	0.820
Return of investment	0.459	0.552	0.516	0.778
Imputation bases for indirect costs	0.468	0.487	0.457	0.849
Standard Costs	0.567	0.416	0.494	0.808

Budget for planning	0.253	0.814	0.726	0.860
Cost-Volume-Profit Analysis	0.018	0.892	0.796	0.792
Fixed and Variable Costs Analysis	0.588	0.448	0.547	0.854
Profit by product analysis	0.671	0.213	0.495	0.790
Method of the centre of costs	0.489	0.601	0.600	0.814
Contemporary MAPs				
Non-financial indicators	0.004	0.776	0.602	0.858
Quality costs analysis	0.683	0.419	0.641	0.839
Budget of basis zero	0.602	0.247	0.423	0.851
ABC Costs	0.790	0.113	0.636	0.869
Profits by client analysis	0.688	0.124	0.489	0.906
Competitive position analysis	0.471	0.544	0.518	0.794
Benchmarking	0.621	0.397	0.543	0.836
Life cycle cost analysis	0.719	0.199	0.557	0.827
Performance Social and Environmental Assessment Performance	0.694	0.065	0.485	0.736
Target costing	0.727	0.120	0.543	0.776
Balanced scorecard	0.764	0.125	0.599	0.874
EVA	0.795	0.200	0.671	0.794
Kaizen costing	0.805	0.122	0.663	0.817
Eigenvalue	10.961	2.950		
Variance Explained	45.673	12.290		

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
[a] Rotation converged in 3 iterations
[b] Measure of Sampling Adequacy
Source: Authors' own

The effective creation of these two variables was possible as Cronbach's Alpha Coefficient (α) showed a good internal consistency for "MAP_Trad" (α=0.899) and very good for "MAP_Cont" (α=0.932), according to George & Mallery (2019), and presented in Table 4. Initially, it is found that traditional MAPs (Mean=2.9358) have a higher mean frequency of use than the mean frequency of use of contemporary MAPs (Mean=2.1627).

Table 4
Reliability Coefficient – Cronbach's Alpha

	Reliability Statistic (item-total)	Reliability Statistic ("MAP_Trad" items)	Reliability Statistic ("MAP_Cont" items)
Cronbach's Alpha	0.947	0.899	0.932
N. of items	24	11	13

Source: Authors' own

We must nevertheless evaluate if these differences in the utilization of MAPs are statistically significant, being necessary to perform more robust statistical tests and, preliminarily, to evaluate the normality of the two variables ("MAP_Trad" and "MAP_Cont") through the Kolmogorov-Smirnov test (K-S test). The values found in the K-S test, both for "MAP_Trad" and for "MAP_Cont", are highly significant (Sig=0.000), indicating that the two distributions deviate from normality (Table 5).

Table 5
Tests of Normality for MAPs

Items	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
MAP_Trad	0.181	58	0.000	0.927	58	0.002
MAP_Cont	0.196	58	0.000	0.889	58	0.000

[a] Lilliefors Significance Correction
Source: Authors' own

As the assumption of normality was not met, the Wilcox non-parametric test was used, which allows us to compare the means of the ordinances of the two distributions, making it possible to assess whether the frequency of use of traditional MAPs is higher than the frequency of use of contemporary MAPs (George & Mallery, 2019). Thus, there is statistical evidence to state that the use of traditional MAPs is greater than the use of contemporary MAPs, as Sig < α = 0.05 (Sig=0.000) and the mean of positive ranks is greater than the mean of negative ranks (30.68 > 17.11).

And finally, to test whether the relationship between the two variables exists, Spearman's correlation coefficient was calculated. There is statistical evidence to state that there is a relationship between the use of traditional MAPs and the use of contemporary MAPs as Spearman's correlation coefficient is different from zero and Sig ≤ α = 0,05 (Table 6). The correlation is positive (0.671) and significant (Sig=0.000), so the use of traditional practices influences the use of contemporary practices: if the use of one increases, the use of the other also increases. This consolidates the assertion that traditional MAPs and contemporary MAPs tend to complement each other (Chenhall & Langfield-Smith, 1998b; Tuanmat & Smith, 2011).

Table 6
Spearman's Correlation Test between Traditional and Contemporary MAPs

Correlations			PCG_Trad	PCG_Cont
Spearman's rho	PCG_Trad	Correlation Coefficient	1.000	.671**
		Sig. (2-tailed)		0.000
	PCG_Cont	Correlation Coefficient	.671**	1.000
		Sig. (2-tailed)	0.000	

** Correlation is significant at the 0,01 level (2-tailed).
Source: Authors' own

It was also our intention to explore whether the profile of the respondent, in terms of gender, education, and function, would be related to the MAPs used by the company. Applied the Kruskal-Wallis non-parametric test, we only found that for the MAPs "Analysis of deviations" gender has a significant association (Kruskal-Wallis$_{(4)}$=5.312; p-value=0.021). Concerning the respondent's level of education, there is no difference in the degree of MAPs use (null hypothesis of the test was not rejected), so there is no statistical evidence to state that MAPs use is considerably different at, at least, one level of education. And this can be explained by the fact that the respondents have very similar levels of formal education. Regarding the function that the respondent performs, the null hypothesis of the test was rejected for the MAP "Analysis of results by customer" (Kruskal-Wallis$_{(4)}$=12.793; p-value=0.012). This way, the use of this MAP is different depending on the function that the respondent performs. Thus, this empirical evidence seems to somewhat reinforce Scapens' (2006) suggestion that the personalities and backgrounds of key individuals may affect the choice of management accounting methods in practice. In our study, the respondents are mostly owners/top managers of the company.

Following the results obtained, we tried to identify which contingency factors may explain this diversity of MAPs. In this sense, we applied a set of tests to explain the relationship between the adoption of the MAPs and the contingency factors studied.

Contingency factors

The environment of the companies in the sample was characterized as essentially hostile. One would expect to find more Contemporary MAPs to respond to the environment, as empirical evidence collected in the literature assumes the need for an appropriate fit between the environment and organisational systems (Chenhall & Langfield-Smith, 1998a, 1998b; Baines & Langfield-Smith, 2003; Sulaiman et al., 2004). However, from the statistical point of view, it was not possible to test this assumption, to the extent that the KMO test presents a mediocre value (KMO=0.610), although Bartlett's test of sphericity presents a good value (<0.001), the internal consistency (α) presented makes not possible the creation of the three variables "Dynamism" (α=0. 639), "Heterogeneity" (α=0.608) and "Hostility" (α=0.468) and of the global

variable "Uncertainty" (α=0.574), as well as the execution of more robust statistical tests, to assess normality, correlations or compare means. The results of this study show that SMEs studied are inserted in a heterogeneous, hostile, and stable organisational environment, where competitiveness in terms of prices, fierce competition in the activity sector, and the restrictions of the legal, political and economic order are the main factors that influence the organizational environment. Several studies on management accounting indicate that the use of MAPs is more frequent in conditions of uncertainty for better decision-making (Alattar et al., 2009; Andersén & Samuelsson, 2016).

As for competitive strategy, age group, and activity sector, Table 7 presents the results obtained.

Table 7
Adoption of MAPs by Strategy, Age, and Economic Activity of the organization

Traditional MAPs	Strategy[ab]		Age[ac]		Economic Activity[ac]	
	χ^2	Signif. Assint.	χ^2	Signif. Assint.	χ^2	Signif. Assint.
Budget for cost control	6.495	0.090	2.102	0.717	4.354	0.360
Deviation Analysis	0.921	0.820	5.782	0.216	4.174	0.383
Flexible budget	6.045	0.109	1.655	0.799	3.351	0.501
Return of investment	0.907	0.824	5.668	0.225	5.014	0.286
Imputation bases for indirect costs	0.080	0.994	8.405	0.078	3.470	0.482
Standard Costs	0.411	0.938	2.702	0.609	1.572	0.814
Budget for planning	3.567	0.312	3.489	0.480	3.191	0.526
Cost –Volume-Profit Analysis	2.631	0.452	3.128	0.537	1.859	0.762
Fixed and Variable Costs Analysis	0.996	0.802	3.208	0.524	5.381	0.250
Profit by product analysis	2.551	0.466	4.284	0.369	18.382	0.001
Method of the centre of costs	3.497	0.321	6.986	0.137	5.005	0.287

Contemporary MAPs	Strategy[ab]		Age[ac]		Economic Activity[ac]	
	χ^2	Signif. Assint.	χ^2	Signif. Assint.	χ^2	Signif. Assint.
Non-financial indicators	3.881	0.275	2.618	0.624	2.581	0.630
Quality costs analysis	1.253	0.740	3.399	0.493	5.214	0.266
Budget of basis zero	0.829	0.843	2.762	0.598	7.901	0.095
ABC Costs	0.903	0.825	9.673	0.046	1.709	0.789
Profits by client analysis	2.166	0.539	1.890	0.756	15.699	0.003
Competitive position analysis	1.622	0.654	2.370	0.668	7.649	0.105
Benchmarking	1.144	0.766	9.512	0.049	10.693	0.030
Life cycle cost analysis	0.903	0.825	6.000	0.199	12.957	0.011

Performance Social and Environmental Assessment Performance	1.088	0.780	5.609	0.230	9.915	0.042
Target costing	1.643	0.650	4.646	0.326	6.419	0.170
Balanced scorecard	1.593	0.661	12.286	0.015	5.297	0.258
EVA	1.118	0.773	9.054	0.060	5.827	0.212
Kaizen costing	1.521	0.677	11.112	0.025	5.493	0.240

[a] Kruskal Wallis test;
[b] Degrees of Freedom =3;
[c] Degrees of Freedom =4;
$\chi 2$ – Chi-square.
Source: Authors' own

The analysis of Table 7 shows that there is no statistical evidence to state that the adoption of a specific type of strategy is significantly different in at least one of the groups. This result seems to contradict what the literature suggests to the extent that 54.9% of respondents claim to follow a differentiation strategy, which would be expected that these companies follow more Contemporary MAP because Baines & Langfield-Smith (2003) identified that companies that follow a differentiation strategic focus adopt advanced MA practices, which does not occur in this study. However, this absent relationship is in line with the findings of Almeida, Machado & Panhoca (2012) and differs from that found by Amara & Benelifa (2017). As a complement to the Kruskal-Wallis test and to analyse the difference between companies adopting a differentiation strategy and those adopting other strategies, as far as MAPs are concerned, the Man-Whitney test was performed, using the variables created ("MAP_Trad" and "MAP_Cont"). Analysing Table 8, the initial result is confirmed, as there is no statistical evidence to claim that the use of MAPs is different depending on the strategy adopted.

Table 8
Mann-Whitney Test for MAPs by strategy

Statistics	MAP_Cont	MAP_Trad
U de Mann-Whitney	353.500	564.000
Wilcoxon W	704.500	1060.000
Z	-1.483	-0.117
Significancy Assint. (Bilateral)	0.138	0.907

Source: Authors' own

As for the age group of the organization, only the MAPs "ABC", "Benchmarking", "BSC", and "Kaizen Cost" differ as to the age group of the organization (Table 7). Unlike Russo & Guerreiro (2017), who found that all traditional and contemporary management accounting techniques have similar use in the various age groups of the companies studied, our findings do not support this and become close to Holmes & Nicholls (1988) study, which indicates that the younger SME age group use more accounting information. In other words, in our study, there is a differentiated use of the identified Contemporary

MAPs and that may be associated with the characteristics of our sample: to younger companies, whose owners/general managers have high levels of formal education and that tend to work in the company for most of their lives.

As far as economic activity is concerned, the results (Table 7) indicate that MAPs "Analysis of results by product", "Analysis of results by client", "Benchmarking", "Life cycle cost analysis", and "Environmental and social performance assessment" differ according to economic activity, with four of these MAPs being characterised as contemporary. Again, given the profile of the owner/general manager of the companies in our sample, there seems to be a link between the youth of the companies, with high levels of education of those in charge. This empirical evidence seems to corroborate Amara & Benelifa (2017), who argue there is no relationship between the level of sophistication of the MAPS used and the sector of activity in which SMEs operate. Russo & Guerreiro (2017) found no statistical evidence between the most used MAPs and the activity sector. Holmes & Nicholls (1988), on the other hand, found that manufacturing, wholesale, business/finance, and services sectors tend to prepare and use more accounting information than other sectors. The results of this study seem to indicate a change in the adoption of MAPs, as our sample is mainly made up of companies in the "Services" branch (49.3%) and distinguished as the results suggest that these companies follow Contemporary MAPs.

Conclusions, limitations, and future research

This study reinforces the empirical evidence that traditional MAPs are the most used by SMEs, although contemporary MAPs are widely cited as more suitable solutions for the current times of fierce competition. The purpose of MA use remains the determination of costs and the planning and control of costs. Therefore, the budget is the most used MAP. This result seems to suggest there is a shift on the most used traditional MAPs, vis-à-vis the reviewed literature.

As a result of the characteristics of the sample made up of younger companies, with qualified managers and whose seniority in the company tends to correspond to most of the company's life, it shows that they tend to use more contemporary MAPs. This reflects not only some kind of maturity of the knowledge acquired but also effects on the learning curve as far as the management of these companies is concerned. Nevertheless, although the vast majority of participating companies use MA information, this is not fully formalized, as there is no manual of functions and procedures, nor the use of integrated management systems. The scenario we found continues to be that of an owner who closely monitors compliance with planned targets but does it empirically, without more sophisticated specialised, and computerised technical support.

Among the contingent factors that influence the use of MAPs, we studied the Organizational

Environment (characterized by being heterogeneous, hostile and stable, but without significant influence on the adoption of MAP); the Competitive Strategy (no relationship was observed with any MAP, which contradicts some empirical evidence in the literature, in that the sample says it follows a differentiation strategy but that is not reflected in the adoption of contemporary MAPs), the Age Group (the "ABC", "Benchmarking", "BSC" and "Kaizen Cost" have differentiated use according to the age of the company, which being the sample composed of companies mostly younger but with managers with high levels of education seems to translate a new reality); the Economic Activity (we found some evidence of differentiated MAP adoption by activity sector, with a choice for contemporary MAPs in a sample composed essentially by companies of the Services and Commerce sectors, which increases the empirical evidence of this type of activity sectors).

The conclusions of this study should be read in the light of the sample considered and analysed, and of the instrument used. Thus, one of the main limitations of the present study was the low overall participation of the companies. The questionnaire as an instrument used has its limitations. The list of MAPs, despite being broad, in line with the literature review, and validated by other studies, may not have been adequately analysed, and the choices, as well as the classification, may have been out of touch with the reality of the companies studied. Despite the limitations, this study contributes to increasing the knowledge of MAPs in Brazilian companies, and perhaps to the definition of public policies that may strengthen the business fabric towards its development. The education in MA, highlighting contemporary practices, may deserve greater interest and dissemination by the Brazilian academic community. Given that the study does not exhaust the investigation of the MAPs in SMEs, nor the factors that influence their adoption, this study can be expanded to companies from other Brazilian states and other developing countries.

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