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INNOVATIVE ORGANIZATION DIMENSIONS AND THE ADOPTION OF MODERN MANAGEMENT ACCOUNTING PRACTICES

DIMENSÕES DA ORGANIZAÇÃO INOVADORA E A ADOÇÃO DE PRÁTICAS MODERNAS DE CONTABILIDADE GERENCIAL

DIMENSIONES DE LA ORGANIZACIÓN INNOVADORA Y LA ADOPCIÓN DE PRÁCTICAS MODERNAS DE CONTABILIDAD GERENCIAL

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Abstract

Purpose: The objective of this study was to analyze the relationship between the innovative organization dimensions and the adoption of modern management accounting (MA).

Design: A sample of 79 companies, obtained through a survey, was submitted to descriptive analysis, exploratory factor analysis and logistic regression.

Originality: The studies that evaluated the relationship between innovation and management accounting sought to verify how MA practices influenced the innovation capacity of organizations. This work seeks a relationship in another sense, based on the premise that innovations influence the way in which MA is designed.

Findings: The results indicate a more intense usage of the traditional second stage MA practices. Regarding to modern MA practices, it has been identified that the innovation dimensions that influence its adoption are people, environment, team work and organizational structure, and these dimensions are those that have a significant relationship with the adoption of these practices, indicating that innovation may be a factor influencing the adoption of modern MA practices.

Theoretical contributions: Research on the topic has identified factors that may influence the adoption or diffusion of modern MA practices, such as decentralization and the size of the company. In this regard, it is possible to see that in addition to these factors already identified, innovation, through the dimensions analyzed, may be another factor that influences the adoption of modern MA practices.

Keywords: Management Accounting. Innovative Organization Dimensions. Management Accounting Practices.

Resumo

Objetivo: Este estudo teve como objetivo analisar a relação entre as dimensões da organização inovadora e a adoção de práticas modernas de contabilidade gerencial (CG).

Metodologia: Obteve-se uma amostra de 79 empresas, a partir de um levantamento, sendo os dados submetidos a análise descritiva, análise fatorial exploratória e regressão logística.

Originalidade: Os estudos que avaliavam a relação entre inovação e contabilidade gerencial buscavam verificar como as práticas de CG influenciavam na capacidade de inovação das organizações. Neste trabalho busca-se uma relação noutro sentido, com base na premissa de que as inovações influenciam a maneira como a CG é desenhada.

Principais resultados: Os resultados indicam a utilização com maior intensidade de práticas de CG tradicionais de segundo estágio. Quanto às práticas modernas de CG, identificou-se que as dimensões da inovação que influenciam sua adoção são pessoas, meio ambiente, atuação em equipe e estrutura organizacional, sendo essas dimensões as que possuem relação significativa com a adoção dessas práticas, indicando que a inovação pode ser um fator que influencia na adoção de práticas modernas de CG.

Contribuições teóricas: As pesquisas sobre o tema identificaram fatores que podem influenciar na adoção ou na difusão de práticas modernas de CG, como a descentralização e o tamanho da empresa. Neste aspecto, é possível perceber que além desses fatores já identificados, a inovação, por meio das dimensões analisadas, pode ser outro fator que influencia na adoção de práticas modernas de CG.

Palavras-chave: Contabilidade gerencial. Dimensões da Organização Inovadora. Práticas de contabilidade gerencial.

Resumen
Propósito: Este estudio tuvo como objetivo analizar la relación entre las dimensiones de la organización innovadora y la adopción de prácticas modernas de contabilidad gerencial (CG).

Metodología: Una muestra de 79 empresas, obtenida por medio de un levantamiento, fue sometida a análisis descriptivo, análisis factorial exploratorio y regresión logística.

Originalidad: Los estudios que evaluaron la relación entre la innovación y la conta
bilidad de gestión buscaron verificar cómo las prácticas de GC influyeron en la capacidad de innovación de las organizaciones. Este trabajo busca una relación en otro sentido, basada en la premisa de que las innovaciones influyen en la forma en que está diseñado el CG.

Resultados: Los resultados indican la utilización con mayor intensidad de prácticas de CG tradicionales de segunda etapa. En cuanto a las prácticas modernas de CG, se identificó que las dimensiones de la innovación que influyen en su adopción son personas, medio ambiente, actuación en equipo y estructura organizacional, siendo esas dimensiones las que tienen relación significativa con la adopción de esas prácticas, indicando que la innovación puede ser un factor que influye en la adopción de prácticas modernas de CG
.
Contribuciones teóricas: La investigación sobre el tema ha identificado factores que pueden influir en la adopción o difusión de las prácticas modernas de GC, como la descentralización y el tamaño de la empresa. En este sentido, es posible ver que, además de estos factores ya identificados, la innovación, a través de las dimensiones analizadas, puede ser otro factor que influye en la adopción de prácticas modernas de GC.

Palabras clave: Contabilidad Gerencial. Dimensiones de la Organización Innovadora. Prácticas de Contabilidad Gerencial.

1 Introduction

The companies and the environment in which they are inserted have changed over time and, as a result, management accounting (MA) underwent an evolutionary process, as evidenced by the International Federation of Accountants (IFAC, 1998). This modification of MA process and organizations has impacted on the management accounting professional role, placing it as a partner in decision making, as well as in the management of these entities.

In response to the needs arising from competition between organizations (Reis, 2008) and criticisms of the relevance of management accounting loss, especially evidenced by Johnson and Kaplan (1987), several innovations in MA have emerged over the last few years, as the Activity-Based Costing (ABC), Activity-Based Management (ABM), Balanced Scorecard (BSC), Target Costing, among others (Horngren, Foster, & Datar, 1999; Chiwamit, Modell, & Yang, 2014).

However, although companies have undergone changes and innovations have arisen, several researches (Green & Amenkhienan, 1992; Fullerton & Mcwatters, 2004; Abdel-Kader & Luther, 2006; Leite, Diehl, & Manvailer, 2015) have identified a low implementation of new MA practices, which may indicate a gap between the need of organizations and what is employed by management accounting.

In addition, economic, technological and competitive changes cause that organizations need to continually adapt to the new scenarios (Saquetto, Carneiro, Neto, & Thomazini, 2011; Arabi & Kavianifard, 2013) in order to seek competitive advantages to maintain its current position and stands out from its competitors, with innovation as an ally in this process (Tidd, Bessant, & Pavitt, 2008) and a critical element in its strategy (Beuren & Oro, 2014). In certain contexts, as Andreassi and Sbragia (2002, p. 72) point, in order to remain competitive, the organization must continually insert "new products on the market, with greater cost-benefit for the customer, better quality and faster than that of its competitors".

In this sense, Govindarajan and Trimble (2006) and Chenhall and Moers (2015) affirm that innovation makes that different practices are adopted than those used when the organization did not have this characteristic. In addition, Bautzer (2009, p. 657) treats innovation as "a habit to be developed, with persistence and resilience" and that should not be present only in the research and development (R&D) area, but involve the entire organization (Rothwell, 1980; Volpato & Cimbalista, 2002). Thus, it is necessary to have a conducive environment to its evolution, through the commitment to an innovation culture that involves the company as a whole in a creative atmosphere (Tidd et al., 2008), influencing behaviors and encompassing the innovative organization dimensions, such as the stimulus to creativity, interest in innovating, broad communication (Rothwell, 1980; Oliveira, 2006; Tidd et al., 2008), among others.

In this way, considering the contextual changes that lead to technological innovations in organizations and the changes that these innovations can cause in management accounting (Govindarajan & Trimble, 2006; Chenhall & Moers, 2015), as well as the low adoption of modern MA practices already evidenced in previous studies (Green & Amenkhienan, 1992;

Fullerton & Mcwatters, 2004; Abdel-Kader & Luther, 2006; Leite et al., 2015) and the absence of empirical evidences regarding to the innovations on management accounting effects, this study seeks to answer the following research question: what is the relationship between the innovative organization dimensions and the adoption of modern management accounting practices in companies benefited by the financial agencies that support the innovations development? In order to answer this problem question, the objective is to analyze the relationship between the dimensions of the innovative organization and the adoption of modern management accounting practices in companies benefited by financial aid from agencies that support the innovations development.

National and international studies that evaluated the relationship between innovation and management accounting sought to verify how management accounting practices, traditional or modern, influenced the organizational innovation capacity, helping in the innovations development (Arabi & Kavianifard, 2013; Bisbe & Malagueño, 2015) or creating barriers to this process (Bonner, Ruekert, & Walker, 2002). In this sense, this study intends to advance in this theme, seeking a relationship in another sense, from the relationship between innovation and the adoption of modern management accounting practices, based on the premise that innovations influence the way MA is designed (Govindarajan & Trimble, 2006; Chenhall & Moers, 2015).

2 Theoretical Underpinnings

2.1 Innovative organization dimensions

In order to occur innovation, the organization needs a structure that supports it and, in this sense, Costa (2011) states that becoming an innovative company is a challenge that requires profound changes in the operational structure. Volpato and Cimbalista (2002) mention that people are the central element of an innovative organization, being the source of innovative ideas and obtaining competitiveness.

Thus, organizations need an innovative context to be innovative. According to Tidd et al. (2008), this context is necessary for creative ideas to emerge and be implemented. In the international literature, some studies dealing with the characteristics of innovative organizations have been identified, such as Rothwell (1980), which showed characteristics from previous empirical studies and Galbraith and Kazanjian (1986 apud Grant, 2010), where these characteristics are segregated between the structure dimensions, processes, reward systems and

people. In addition, Tidd et al. (2008) deal with the organization more broadly than previous authors and, from the innovative organization components presentation, encompass more characteristics.

In national researches, Oliveira's (2006) model was identified. It was developed from two other models in the national literature on the subject, by Mendel, Oliveira and Mendel (2004) and Cunha and Santos (2004), both elaborated from national and international literature. This model encompasses the previously treated models aspects and adds other dimensions such as physical environment, innovation and technology and environment.

Thus, for an organization be innovative, a propitious context is necessary, which includes some characteristics in certain dimensions. Thus, from the aforementioned authors, it is understood as an innovative organization those that has, in nine main dimensions, the characteristics presented in Table 1, constructed as a synthesis of the studies addressed.

Table 1
Innovative organization dimensions and characteristics

Dimensions	Innovative organization aspects	Authors
Commitment to innovation	Strategy and management focused on innovation. Focus on quality and customers. Partnership with suppliers and research laboratories, in the innovations development search.	Rothwell (1980); Oliveira (2006); Tidd et al. (2008)
Communication	Communication in a broad way, where employees are aware of the organization's goals, mission and vision. Internal communication vehicle usage and an environment in which information can circulate freely. Communication with the scientific community.	Rothwell (1980); Oliveira (2006); Tidd et al. (2008)
Physical environment	Conducive physical environment to the employee income, without noise and with adequate space to carry out the activities.	Olivera (2006)
Innovation and technology	Easy access to material resources needed for its activities. Patent policy. Investment in R & D and structure that allows its development (R & D department and laboratory).	Rothwell (1980); Oliveira (2006)
People	Positive encouragement, training, recognition and formal and informal encouragement. Openness for people to get involved with the organization, to suggest and to question. Flexible environment regarding to time and place where the activities will be carried out.	Oliveira (2006); Tidd et al. (2008)
Organizational learning	Sharing knowledge within the organization, encouraging people to share their knowledge, experiences and new ideas.	Oliveira (2006); Tidd et al. (2008)
Environment	Compliance to the environmental legislation. Concern with the environment as part of the organization's context, producing environmentally safe products, recycling materials and promoting environmental awareness.	Oliveira (2006)
Team work	The organizational climate of trust and team spirit.	Galbraith e Kazanjian (1986 apud Grant, 2010); Oliveira (2006); Tidd et al. (2008)
Organizational structure	Decentralized hierarchical control, with flexibility and open to new ideas. Continuous improvement process.	Galbraith e Kazanjian (1986 apud Grant, 2010); Oliveira (2006); Tidd et al. (2008)

Source: Prepared by the authors (2018).

From the above, it is understood as an innovative organization, in this research, the one that has characteristics which allow the innovation development and which, additionally, has an environment conducive to its continuity and expansion, influencing people to be creative and innovative.

2.2 Evolutionary stages and management accounting practices

In order to management accounting perform its function, helping to reduce risks in decision making (Atkinson, Banker, Kaplan, & Young, 2000), to achieve the organizational objectives (Atkinson et al., 2000, Espejo, 2008) and to add value managers use practices that will assist in providing information (Morais, Coelho & Holanda, 2014).

These practices have been treated in the literature by distincts denominations, and in Brazil it is common the terms artifacts (Soutes, 2006; Espejo, 2008), but also practices (Costa, Gassner, Espejo, & Pacheco, 2010; Imlau & Gasparetto, 2017), tools (Teixeira, Gonzaga, Santos & Nossa, 2011; Melo Segundo, 2012) and instruments (Santos, Rengel, Paris Paterno, & Beuren, 2009; Mário, Alves, Carmo, Silva, & Jupetipe, 2013). In the international literature, the most used term is management accounting practices, according to Imlau and Gasparetto (2017), being the term used in this research to refer to the methods, artifacts, practices, tools and instruments used by management accounting.

Over time, the MA has gone throughout various periods or stages of evolution, and new practices have emerged in response to new demands (Chenhall & Langfield-Smith, 1998; Teixeira, 2015). These practices are classified in different ways, being segregated between the evolutionary stages defined by the International Federation of Accountants (IFAC) and between traditional and modern.

The evolutionary stages of management accounting, defined by IFAC (1998) in its document entitled IMAP 1, were segregated according to the needs and events of each period. While for the classification between traditional and modern, it is observed in both national and international literature the usage of the traditional term to classify the practices that emerged in the early years of the twentieth century (Chenhall & Langfield-Smith, 1998; Joshi, 2001; Sulaiman, Ahmad, & Alwi, 2004; Abdel-Kader & Luther, 2006; Soutes, 2006) and, when it comes to the most recent practices, internationally the terms "contemporary" (Chenhall &

Langfield-Smith, 1998; Sulaiman et al., 2004) and "newer" (Joshi, 2001; Abdel-Kader & Luther, 2006) are used, while Brazilian literature uses the term "modern" (Soutes, 2006).

Regarding to the management accounting practices, in this research, according to Table 2, those most discussed in national and international studies are analyzed, as verified by Imlau and Gasparetto (2017), being classified in traditional and modern according to IFAC's evolutionary stages, from Sulaiman et al. (2004), Soutes (2006) and Abdel-Kader and Luther (2006). In this study, it was made the option to classify the benchmarking practice as modern fourth-stage, according to Abdel-Kader and Luther (2006).

Table 2
Management accounting practices used in this study

Management Accounting Practices	Tradit.	Mod.	Stages				Authors
			1	2	3	4	
Budgeting	X			X			Sulaiman et al. (2004), Soutes (2006)
Breakeven point	X			X			Sulaiman et al. (2004), Abdel-Kader and Luther (2006)
Absorption costing	X		X				Soutes (2006)
Variable costing	X		X				Soutes (2006)
Contribution margin	X			X			Sulaiman et al. (2004), Abdel-Kader and Luther (2006)
Benchmarking		X				X	Abdel-Kader and Luther (2006)
		X			X		Soutes (2006)
Product profitability analysis	X			X			Sulaiman et al. (2004), Abdel-Kader and Luther (2006)
Balanced Scorecard (BSC)		X				X	Sulaiman et al. (2004), Soutes (2006)
Target costing		X			X		Sulaiman et al. (2004), Soutes (2006)
Just in time		X			X		Soutes (2006)
Strategic planning		X			X		Soutes (2006)
Customer profitability analysis	X			X			Sulaiman et al. (2004), Abdel-Kader and Luther (2006)
Activity-based costing (ABC)		X			X		Sulaiman et al. (2004), Soutes (2006), Abdel-Kader and Luther (2006)
Economic value added (EVA)		X				X	Abdel-Kader and Luther (2006), Soutes (2006)
Standard costing	X		X				Sulaiman et al. (2004), Soutes (2006)
Cash flow	X			X			Abdel-Kader and Luther (2006), Soutes (2006)
Simulations		X				X	Soutes (2006)
Capital budgeting	X			X			Soutes (2006)
Cost of quality		X			X		Sulaiman et al. (2004), Abdel-Kader and Luther (2006)
Activity-based management (ABM)		X			X		Soutes (2006)
Kaizen		X			X		Sulaiman et al. (2004), Soutes (2006)
Transfer pricing	X			X			Soutes (2006)
Theory of constraints (TOC)		X			X		Soutes (2006)
Constant currency	X			X			Soutes (2006)

Tradit.: Traditional. Mod.: Modern.
Source: Sulaiman et al. (2004), Soutes (2006), Abdel-Kader and Luther (2006), Imlau and Gasparetto (2017).

Regarding to the relationship between innovation and the usage of management accounting practices, modern MA practices are used, represented by those classified in the third and in the fourth evolutionary stages of IFAC. The option of evaluating modern management accounting practices stems from the fact that these were developed in response to the new market demands, where companies are currently inserted, in greater competitiveness and dynamicity environments.

3 Research Methods

3.1 Population and sample

A quantitative survey was carried out through the application of a questionnaire to a population composed by 787 companies that received financial assistance for the innovations development between 2009 and 2016, through programs and institutes to support the innovations development: Synergy Innovation Program, SENAI Institute of Innovation, Economic Subsidy Program (directly passed on to companies) and TecNova Program (passed through foundations for research support and Brazilian secretariats and institutes).

The selection of companies that received financial support for the innovations development is justified by the need for the organizations surveyed to be innovative to some degree, even in terms of innovation outputs, since this is the variable used in the study to define the innovative posture of the sample companies.

Data were collected until February 02th, 2018 and a total of 107 responses were obtained, being used 97 for data analysis, representing a little more than 12% of the initial population.

3.2 Research tool

The instrument used in was elaborated from the theoretical framework presented and the dimensions and characteristics of the innovative organization, consisting of four blocks that comprise the general information about organization, respondent, characterization of the organization's innovative posture and management accounting practices usage.

Block 1 (Innovative organization dimensions) was constructed from the synthesis of the characteristics that constitute the organization as innovative, with the objective of identifying this position. The instrument that sought to capture this characteristic was composed of 41 statements, distributed among the 9 innovative organization dimensions, being, for example,

"Leading in terms of innovation is part of the organization's plans and goals" for Commitment to Innovation dimension, and "Integration between team members is encouraged by the organization" for Team Work dimension. In Block 2 (Management Accounting Practices), the objective was to identify the adoption of practices, based on those that are more addressed in national and international research identified by Imlau and Gasparetto (2017). For that, 25 assertions were used, 2 related to strategic planning and 23 related to each of the other management accounting practices used, being, for example, "Know how much the company needs to sell in the month / year to cover fixed expenses" for Breakeven point, and "Determines the costs of quality (costs of prevention, evaluation and internal and external failures)" for Cost of quality.

In order to collect data on the innovative organization, each assertion of the questionnaire was measured using a 5-point Likert scale, with "1" totally disagreeing and "5" totally agreeing. To the analysis of the adoption of management accounting practices, assertions were also measured using a 5-point Likert scale, "not applicable" corresponding to the non-use of the practice, "1" related to low intensity use and "5" for heavy usage.

In Block 3 (General information about the organization), the organization was characterized based on basic information such as name, number of employees and sector of activity, whether it belongs or belonged to a business incubator, the year in which the activities has initiated and if it has a department responsible for accounting-management information.

The research was directed to the organization controller or to the person who performs a similar function, that is, the person responsible for management accounting/controllership or the management information generation. Thus, in Block 4 (Respondent Information) respondents were asked about their profile, such as gender, schooling and effectively occupied position, as well as the experience degree in the activity.

Before the questionnaire was applied, an analysis was carried out with experts from the accounting area to identify possible inconsistencies, which required adjustments. After a pre-test with two accounting professionals, responsible for the management information generation in the companies where they work, with the objective of identifying possible flaws in the research instrument, no further changes were necessary.

3.3 Collecting and analyzing data procedures

The questionnaires were applied through Google Forms platform. From the organizations contact, obtained on the sites or provided by the foundations, a telephone contact was made to

obtain the direct e-mail from the person in charge of elaborating the management information so that the questionnaire could be sent. It was also used the social network LinkedIn tom keep contact, starting from the search of the companies' website and, among the registered employees, it was searched for the accountant and controller of some of the organizations to expand the sample of the research, when the first form of contact has not been possible.

Data were tabulated in Excel software and statistical analysis was performed using the IBM SPSS Statistics version 23 software.

For the innovative organization construct, Cronbach's alpha was calculated, in order to analyze the internal consistency of the questionnaire and its reliability, and it was obtained values for each dimension among 0.605 and 0.888, given what Hair Jr., Black, Babin, Anderson, and Tatham (2009) defend as acceptable.

Several variables were used in the research instrument construction regarding to the innovation measurement, however, in order to identify the relationship between each innovation dimension and the management accounting practices usage, it was decided to transform the variables related to each dimension in a single determinant factor, which maximizes the explanatory power of the dimension as a whole, using, the exploratory factorial analysis (EFA).

To the application of the FA technique it was used the method of analysis from common factors and Varimax method of rotation. The KMO (Kaiser-Meyer-Olkin) test and the Bartllet sphericity test were also used, which showed the suitability of the FA application from the proposed by Fávero, Belfiore, Silva and Chan (2009) and Hair Jr. et al. (2009). Additionally, for the application of logistic regression, which is “a special form of regression in which the dependent variable is non-metric, dichotomous (binary)” (Hair Jr. et al., 2009, p. 223), it was necessary to group the answers regarding to the management accounting practices usages in two groups, in order to transform them from scalar variable to dummy variable, with answers 0 (not applicable), 1 and 2 considered as non-use or low intensity usage (dummy 0) and responses 3, 4 and 5 were classified as moderate to high usage (dummy 1), making the application of logistic regression possible.

After identifying the dominant factor for each innovative organization dimension and confirming the data reliability, binary logistic regression was applied using the determinant factor of innovative organization as independent variable and the practices usage as a dependent variable, considering a level confidence of 95% for analysis purposes.

4 Results

4.1 Profile of respondents and organizations

From the results obtained, it was identified that the majority of the respondents perform the functions of director (26%) and manager (15%), while 12 respondents (12%) exercise the role of controller in the organizations analyzed. The other respondents have varied positions, such as accounting and financial analyst, managing partner, accountant, CEO, administrative manager, project manager, among others. This finding may indicate that, in general, among the analyzed organizations, there is no professional in the area controllership or, moreover, that the responsibility for the elaboration of management information does not belong to this professional.

In terms of organizations, it was observed that 70% of the companies have less than 100 employees, which may be due to the analyzed companies' characteristics, which are mostly technology companies. Regarding to the companies' size, Sebrae (2013) methodology was used for this classification, segregating between industrial (44% of the sample) trade and services (56% of respondents).

Regarding to the existence of an accounting-management department, as evidenced in Table 3, it was verified that most of the companies analyzed (69%) has, formally constituted, a department or area responsible for accounting-management information, being 55% of cases, micro and small enterprises.

Table 3

Existence of accounting-management department in the analyzed companies

Size	Has Accounting-Management Department		Does not have an Accounting-Management Department	
	Frequency	**%**	**Frequency**	**%**
Micro enterprise (ME)	18	27%	17	57%
Small Business Company (SBC)	19	28%	11	37%
Medium Company	15	22%	1	3%
Big companies	15	22%	1	3%
Number of companies	**67**	**100%**	**30**	**100%**
%	**69%**		**31%**	

Source: Search data (2018).

Thus, it is observed that the accounting-management department is present in most of the analyzed organizations, being present mainly in medium and large size, probably due to the better structuring of these organizations and / or greater complexity in management.

4.2Management accounting practices adopted by organizations

Regarding to the practices adopted, among the traditional ones and of first stage, variable costing is the one used with greater intensity among the companies analyzed, as also obtained by Joshi (2001). Among the industrial organizations, the most widely used practice is absorption costing, while in the commercial and service sectors it is variable costing.

In addition, only the large-sized firm analyzed does not use absorption costing, similar to that found by Chenhall and Langfield-Smith (1998) when analyzing large firms, where 80% used this practice.

In relation to the traditional practices of second stage, the one used with greater intensity is the breakeven point, as much between the industrial companies as between the companies of commerce and services. In addition, the customer profitability analysis was identified with greater intensity of usage than the product profitability analysis, similar to that identified by Abdel-Kader and Luther (2006), being this predictable result since the information of profitability by customer demands the usage of a more complex costing method than those that predominate in the sample organizations.

Regarding to modern of third stage practices, the elaboration of strategic planning is the most intensively employed, while ABC is the one used with less intensity. This result is similar to those obtained by Naranjo-Gil, Maas and Hartmann (2009), who identified that 31% of companies did not use ABC and 49% used it with low intensity.

It is worth noting that 96% of companies elaborate and implement strategic planning, of which 71 (76%) do both steps with the same intensity of usage. This result is similar to that found by Chenhall and Langfield-Smith (1998), where more than 90% of the industrial companies analyzed used strategic planning.

To the modern practices of fourth stage, the one used with greater intensity is the simulation and, in contrast, the practice used with less intensity is the economic value added (EVA). Among the commercial and service companies, it is worth noting the usage of benchmarking (91%). The results corroborate the findings of Naranjo-Gil et al. (2009), where 90% of companies in the public health sector in Spain used this practice.

In general, the practices with the greatest intensity of usage are traditional, especially of second stage, with emphasis on breakeven point and budget, which are widely researched and disseminated practices.

To the percentage of companies that indicated the practices they used, the breakeven point and the budget are practices used with high intensity by the majority of the companies of the sample. Traditional practices remain among the most used and the strategic planning (elaboration and implementation) and simulations, which are modern MA practices, are also among the 10 most widely used.

4.3Innovative organizations

Cronbach's Alpha was calculated for the innovative organization construct, in order to verify the reliability, and it was necessary to eliminate some assertions during the process. Thus, assertions 2.2 and 2.4 of the communication dimension, assertive 4.1 of the innovation and technology dimension, and assertive 9.2 of the organizational structure dimension were eliminated.

The dimensions with the highest agreement among the analyzed companies were physical environment, team work and commitment to innovation, in contrast, the dimension with less agreement was physical environment. Regarding to the Physical Environment dimension, most companies (84%) responded by agreeing with the related statements, such as Mendel et al. (2004), who identified a high degree perception in the presence of this dimension in the analyzed company.

In the Team Work dimension, it is observed the commitment of the organizations with the integration between the employees and the strengthening of the team spirit, given that 84% of the total responses were in agreement with the assertions presented. It should be noted in this dimension that Mendel et al. (2004) identified a high degree of perception of its importance among the innovation determinants. It is also observed the existence, to a large extent, of a climate for exposing ideas with a focus on problem solving, since in 92% of the cases, organizations have agreed partially or totally with the related assertion.

Regarding to the Commitment to Innovation dimension, 77% of the responses were either Totally Agree or Partially Agree with the proposals presented, evidencing an engagement by the organizations in being innovative. It is also observed that among the assertions of this dimension, the one that obtained the highest level of agreement (95%) was related to the organization's interest in leading in terms of innovation, indicating that the organizations analyzed have in their plans and goals this objective, corroborating with that quantitatively

found by Oliveira (2006), where almost 80% of the respondents agreed that innovation was considered in the elaboration of the strategy of the analyzed organization.

The Environment dimension was the one that presented the least agreement between the analyzed dimensions (45%), so it is possible to identify that organizations do not adopt or adopt with low intensity rules and environmental certification criteria and neither maintain, or at least not regularly, environmental education programs, given the low percentage of agreement with the corresponding assertions. Nevertheless, regarding to the analysis of the waste resulting from the production process, 52% indicated to perform such activity, stating to Agree Partially or Totally with the related assertion.

Thus, greater alignment (greater agreement) is observed with the dimensions that have a close relation with the organization people, and the organizations analyzed have a concern with the environment where people are inserted, as well as the formation of a team spirit, to create a collaborative working environment where it is possible to share and develop new ideas.

4.4 Relationship between the innovative organization dimensions and the adoption of modern management accounting practices

The application of the exploratory factorial analysis, generated separately for each dimension, allowed us to identify a representative determinant factor of the dimensions related to the innovative organization, which explains 51% or more of the total variance of the variables of each analyzed dimension.

During the EFA process, it was opted for some assertions exclusion due to the presence of negative or low factorial load and also low commonality. As a result, the following assertions were eliminated: 1.2 (commitment to innovation dimension), 2.5 (communication dimension), 4.2 (innovation and technology dimension), 5.2 (people dimension), 6.2 (organizational learning dimension) and 9.2 (dimension organizational structure). Thus, the assertions that maintained a factorial load above 0.5 were maintained. After the assertions were eliminated, the Cronbach's alpha was generated again and the results remained satisfactory.

Regarding to the KMO test, which varies from 0 to 1, all the values obtained in the dimensions were above 0.5, being considered acceptable the application of the EFA. In addition, Bartlett's sphericity test was also satisfactory, with (0.000) as a level of significance for all analyzes, therefore, adequate for the application of the technique.

Thus, with the identification of the determinant factor for each of the analyzed dimensions, it was possible to verify the relationship between these and the adoption of modern practices of management accounting by the companies analyzed, through the application of logistic regression. Initially it was analyzed how each dimension determining factor impacts on the usage of each modern practice and the results of the significance are evidenced in

Table **4**

Table 4

Logistic regression model for analysis between the innovative organization dimensions and the adoption of modern management accounting practices

	BENCH	BSC	TC	JiT	SP - P	SP – I	ABC	EVA	SIMUL	CQ	ABM	Kaizen	TOC
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
COMI	0,003	0,172	0,002	0,010	0,003	0,003	0,078	0,004	0,008	0,024	0,025	0,042	0,000
COMMU	0,001	0,000	0,002	0,031	0,002	0,004	0,052	0,001	0,003	0,012	0,003	0,003	0,000
PHYSEN	0,169	0,583	0,026	0,246	0,043	0,071	0,191	0,077	0,180	0,430	0,415	0,294	0,078
INNTEC	0,010	0,070	0,014	0,102	0,014	0,006	0,165	0,033	0,002	0,007	0,057	0,012	0,004
PEOP	0,004	0,002	0,001	0,015	0,000	0,000	0,020	0,008	0,004	0,002	0,001	0,003	0,000
ORGLE	0,118	0,134	0,012	0,123	0,009	0,070	0,372	0,306	0,042	0,037	0,229	0,095	0,180
ENVIR	0,002	0,008	0,001	0,039	0,002	0,001	0,001	0,001	0,005	0,000	0,002	0,000	0,000
TEAMW	0,031	0,043	0,001	0,004	0,002	0,001	0,029	0,018	0,017	0,013	0,022	0,019	0,013
ORGEST	0,019	0,001	0,000	0,009	0,001	0,001	0,003	0,003	0,018	0,004	0,002	0,001	0,003

BENCH: Benchmarking; BSC: Balanced Scorecard; TC: Target Costing; JiT: Just in Time; SP – P: Strategic Planning – Preparation; SP – I: Strategic Planning – Implementation; ABC: Activity-Based Costing; EVA: Economic Value Added; SIMUL: Simulations; CQ: Cost of Quality; ABM: Activity-Based Management; TOC: Theory of Constraints;
Source: Search Data (2018).

In Physical Environment and Organizational Learning dimensions, it is possible to affirm that these factors do not have a significant relation with most of the modern MA practices analyzed. On the other hand, the dimensions People, Environment, Team Work and Organizational Structure have a significant relationship (significance below 5%), at a level of 95% confidence, with the fact that organizations adopt with greater intensity modern management accounting practices. These dimensions are directly linked to people organization, with stimulus to their development, flexibility in the execution of their tasks and in decision making.

For People dimension, the relation between this and the adoption of modern MA practices can occur because the human factor is essential for any organizational change, since a new practice, for example, will only be implemented or used efficiently if people are motivated. In companies where this dimension is met, people are encouraged to innovate, to

expose their ideas, are trained and recognized, allowing them to have knowledge and contact with modern practices related to their area, and may suggest the use of these, when they find required. This behavior is in line with what Volpato and Cimbalista (2002) claim, where people would be the central element for innovation, in the sense that they need to be seen as a source of competitiveness, based on their innovative potential and, at the same time, companies need to create a long-term commitment to their employees, providing a stable environment and creating a loyalty relationship.

In relation to the Environment dimension, it can be stated that the fact that the organization has focused attention on environmental legislation or on environmental certification criteria, is concerned with the environment and with the impacts caused to nature, causing employees to be environmentally aware, influences the adoption of modern MA practices with greater intensity.

In terms of Team Work, the creation of an environment where people are encouraged to work together, with the development of a reliable organizational climate may be related to the adoption of modern MA practices. This relationship can arise from the need of the commitment of people and their teams to implement different practices from those previously used in organizations, as this change demands trust between people as well as collaboration among the teams involved.

To the Organizational Structure dimension, it is inferred that the fact organization is flexible, has decentralized control, open to new ideas and focuses on continuous improvement process, significantly influences the adoption of modern management accounting practices with greater intensity, this influence can be a result of the characteristic that gives people greater freedom for the decision to adopt new ideas and focus on the search for organizational processes improvement.

Conclusion

This study discusses the adoption of management accounting practices and innovation in organizations, in order to show the relationship between the adoption of modern practices and the innovative organization dimensions. The literature on the subject shows that, due to the new demands, new management accounting practices were developed, despite this, the discussions that permeate the area identified a low adoption of these practices by companies in different contexts and countries.

In studies like Green and Amenkhienan (1992), Fullerton and Mcwatters (2004), Abdel-Kader and Luther (2006) and Leite et al. (2015), it was identified a low utilization of modern management accounting practices in sample, being used with greater intensity the traditional practices, mainly those of second stage, indicating, therefore, that the practices arisen from the second half of the 20th century were not intensely introduced in the management of the analyzed companies.

In terms of innovation dimensions, it was identified that the organizations are more aligned (greater agreement) with the dimensions that have close relation with people and their development, evidencing that there are, on the part of the analyzed organizations, concern with the environment where the people are inserted, as well as their development and knowledge sharing and the team spirit formation among the collaborators, in order to create a collaborative work environment, where it is possible to share and develop new ideas.

Still in relation to the dimensions, it was identified that some have the capacity to influence more strongly the adoption of modern practices than others. This is due to the characteristics of the dimensions, since those related to the employees' motivation to carry out the activities and to their development, as well as related to greater flexibility in decision making and adoption of ideas tend to have the ability to influence the adoption of modern MA practices. In this sense, the influence of innovation in the adoption of management accounting practices was present among the analyzed companies, when verifying that certain innovative organizations dimensions have significant relation with the adoption of these practices.

Research on the subject has identified factors that may influence the adoption or diffusion of modern management accounting practices, such as decentralization (Abernethy & Bouwens, 2005), company size (Askarany & Smith, 2008), Chief Financial Officers (CFO's) characteristics, organization profile (Naranjo-Gil et al., 2009) and technology information (Halbouni & Nour, 2014), in this respect, it is possible to identify, from this research, that besides these already identified factors, the innovation, through analyzed dimensions, may be another factor that influences the adoption of modern MA practices.

This study provides insights for further research in the sense that the low adoption of modern management accounting practices may be related not only to the practice characteristic itself but, above all, to the organizations characteristics that adopt them or the environment where are inserted, indicating the need for joint analyzes of adoption with other factors influencing this relationship.

When evaluating the research results, some limitations should be considered. Such limitations may indicate gaps for future research on the subject. Thus, it is suggested that, in future investigations, a different sample, such as the usage of companies that have received innovation awards, to try to identify the innovation level of this organizations and MA practices used. It is also suggested that, together the innovative characteristic, it should be used other factors that may influence the adoption of modern management accounting practices, such as the entrepreneurial orientation suggested by Bisbe and Malagueño (2015), and, in addition, that to expand the management accounting scope when analyzing the impacts of innovation on the Management Control System as a whole.

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