

The Influence of Contingency Factors on the Adoption of Traditional and Modern Cost Artifacts in the Hotel Network of the State of Paraná

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Abstract

The literature suggests that the contingency factors: environment, technology, strategy, structure and organizational size, with greater or lesser intensity, influence the attributes of the management accounting system, more specifically in the adoption of costing system artifacts. Nonetheless, there is little evidence about such relationships in the hotel sector. The present article has as main objective to evidence the influence of these factors on the adoption of traditional and modern cost artifacts in the hotel industry of the state of Paraná, Brazil. It is a descriptive study with survey approach, carried out between the months of November and December 2015 with 40 hotels. Data were analyzed statistically using descriptive statistics and canonical correlation. Findings indicate that the majority of the hotels fully implement traditional cost artifacts. Regarding modern cost artifacts, considerable part of the investigated hotels has no plans for adopting and implementing them, a fact that reinforces the predominance of adoption of traditional artifacts in these organizations. It was expected that management accounting systems presented more sophisticated structures, but even in large hotels, data revealed that traditional artifacts have still been used as supportive instruments for the decision-making process. Findings lead to the conclusion that the contingency factors structure and strategy influence more in the adoption of modern cost artifacts than traditional artifacts in the hotel industry of the state of Paraná, Brazil.

Keywords: Contingency factors; Cost artifacts; Hotel industry; Paraná, Brazil.

Resumo

Influência de Fatores Contingenciais na Adoção de Artefatos de Custos Tradicionais e Modernos na Rede Hoteleira do Paraná

A literatura sugere que os fatores contingenciais ambiente, tecnologia, estratégia, estrutura e porte organizacional, seja com maior ou menor intensidade, influenciam os atributos do sistema de contabilidade gerencial (SCG), mais especificamente na adoção de artefatos do sistema de custeio. No entanto, há poucas evidências entre tais relacionamentos especificamente no setor hoteleiro. Este artigo objetiva evidenciar a influência desses fatores na adoção de artefatos tradicionais e modernos de custos na rede hoteleira do estado do Paraná. Trata-se de um estudo descritivo, com procedimentos de interrogação, elaborado mediante a aplicação de pesquisa de

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campo realizada entre novembro e dezembro de 2015 com 40 hotéis. A análise dos dados utilizou estatística descritiva e correlação canônica. Os achados indicam que a maioria dos hotéis pesquisados adotam de forma plena os artefatos tradicionais de custos. Quanto aos modernos, boa parte dos investigados não tem planos para sua adoção, o que reforça a predominância de artefatos tradicionais nas organizações. Mesmo em hotéis de grande porte, em que se espera que os SCG apresentem estruturas mais sofisticadas, artefatos tradicionais como instrumento de suporte à tomada de decisão ainda têm sido utilizados. Conclui-se que os fatores contingenciais estrutura e estratégia influenciam mais na adoção de artefatos modernos de custos do que de tradicionais na rede hoteleira do estado do Paraná.

Palavras-chave: Fatores contingenciais; Artefatos de custos; Rede hoteleira; Paraná-Brasil.

Resumen

Influencia de los factores de contingencia en el adopción de artefactos de costos tradicional y moderno en la red hotelera de Paraná

La literatura sugiere que los factores contingenciales: ambiente, tecnología, estrategia, estructura y tamaño de la organización, con mayor o menor intensidad, influyen en los atributos del sistema de contabilidad de gestión, más específicamente en el adopción de artefactos del sistema de costeo. Sin embargo, existen pocas evidencias de tales relaciones, específicamente en el sector hotelero. Este artículo tiene como objetivo evidenciar la influencia de estos factores en el adopción de artefactos de costos tradicionales y modernos del sector hotelero de Paraná, Brasil. Se trata de un estudio de campo descriptivo con adopción de cuestionario, realizado entre noviembre y diciembre de 2015 en 40 hoteles. Los datos fueron analizados mediante estadística descriptiva y Correlación Canónica. Los resultados indican que la mayoría de los hoteles investigados utiliza plenamente los artefactos tradicionales de costos. En cuanto a los artefactos modernos de costos, la mayor parte de los investigados no tienen planes para su adopción, lo que refuerza el predominio del adopción de artefactos tradicionales en detrimento de los modernos en esas organizaciones. Incluso, en los grandes hoteles, donde se espera que el SGC presente estructuras más sofisticadas, la presencia de artefactos tradicionales como instrumentos de soporte a la toma de decisiones aún es utilizada. Se concluye que los factores contingenciales estructura y estrategia influyen más en el adopción de artefactos modernos de costos que de artefactos tradicionales en redes hoteleras de Paraná, Brasil.

Palabras clave: Factores de contingencia; Artefactos de costos; Redes hoteleras; Paraná, Brasil.

INTRODUCTION

Technological advances, globalization, changes in the social context, as well as the competitive market cause uncertainties in the decision-making process of organizations, which can influence their permanence in the market with competitors, including the entities comprising hotel networks (Beuren & Fiorentin, 2014). The organizational setting is composed of and influenced by several factors, which need to be controlled and adjusted by managers. In this context, Otley (1980) points out that managers, when aware of the factors influencing

organizations and considering them to be controllable, seek to adopt managerial control artifacts and organizational configurations that enable better results.

These relations are investigated in the accounting literature through the theoretical approach of the contingency theory. Based on this theory and on the environment in which organizations are situated, it is sought to understand and generate an explanation of how certain factors impact their growth and permanence in the market (Beuren & Fiorentin, 2014), as well as whether such circumstances affect the companies' control system structure (Chenhall, 2007). Beuren and Fiorentin (2014) point out that, because organizations operate under different conditions, which vary depending on the environment to which they belong, these conditions, or contingency factors, may be characterized as threats or opportunities that directly affect the internal processes and structure of entities.

Evidence found in the literature indicates that an increasingly competitive environment, which has influenced changes in organizational structure, service technology, and costing practices, requires greater focus on differentiation strategies (Baines & Langfield-Smith, 2003). It also suggests that contingency theory can contribute to the understanding of which management accounting system (MAS) is adopted within its organizational context (Chenhall, 2007), as well as to the understanding of how the environment, technology, strategy, structure, and organizational size contingency factors, to a greater or lesser extent, influence the MAS's attributes (Beuren & Fiorentin, 2014), as well as the decision to use the costing system, comprising traditional and modern management accounting artifacts (Silva et al., 2014).

Management accounting artifacts, whether traditional or modern, are understood as information systems, management models, costing systems, philosophies implemented by organizations, and performance measurement and evaluation concepts, which can be explored by managers in the development of their activities (Frezatti, 2005; Guerreiro, Cornachione Júnior & Soutes, 2011). Traditional and modern management accounting artifacts have stimulated the development of new research in the accounting field, particularly seeking to assess whether the management control tools used by organizations have evolved and are suited to the needs of managers. In this context, considering the different artifacts found in the literature (Frezatti, 2005; Guerreiro et al., 2011; Soutes, 2006), this study addresses more specifically those related to the costing systems.

Standard Costing, Absorption Costing, and Variable Costing were considered as traditional artifacts for cost management, while Activity-Based Costing (ABC), Time-Driven Activity-Based Costing (TDABC), and Target Costing were considered as modern artifacts (Frezatti, 2005; Guerreiro et al., 2011; Leitão & Silva, 2009; Lima, Egito, & Silva, 2004; Maher, 2001; Soutes, 2006; Soutes & Zen, 2005; Souza, Lisboa, & Rocha, 2003).

The literature has shown, specifically in the country's hotel industry, that there are few results that enable drawing conclusions about the relations between contingency factors and traditional and modern cost artifacts. This industry has been pointed out as one of the leading activities due to its economic growth in recent years (Marquesan, Guzzo, Zawislak, & Tello-Gamarra, 2015), constituting an important research area in Brazil. This segment is characterized by the high degree of competition between competing hotel organizations, which requires

managers to establish actions that support decision-making, with the purpose of promoting the development of their companies (Tsai, Song, & Wong, 2009; Wilke & Rodrigues, 2013; Zonatto, Schuh, & Zonatto, 2014). Such conditions are appropriate for this investigation.

In this context, considering the contingency variables above and the importance of costing systems in the management process of hotel organizations, the following research question was established for the development of this study: What is the influence of contingency factors on the adoption of traditional and modern cost artifacts in the hotel network of the state of Paraná? Thus, this research aims to determine the influence of contingency factors on the adoption of traditional and modern cost artifacts in the hotel network of the state of Paraná.

In situations involving contingencies, the organization may show instability, generating imbalance in its management, which can cause changes in costing systems, with the purpose of adjusting the organizational situation to the environment in which it is situated (Silva et al., 2014). Guerreiro, Frezatti, Lopes, and Pereira (2005) point out that studies about changes in the MAS related to contingency theory have been poorly studied in the accounting field, a fact that opens new opportunities for investigations, including in the state of Paraná.

According to Píccolo and Gândara (2012), the expansion of hotel networks in the state of Paraná has been continuous. In general, it has occurred due to the economic growth of cities and the development of business tourism, as well as to leisure tourism in several cities, because these factors (economic growth and tourism development) end up creating a permanent demand for businessmen in these destinations. Thus, tracing and understanding the influence of contingency factors on the cost artifacts of the state of Paraná's hotel network enables improvements and advances in the management of these organizations.

THEORETICAL FRAMEWORK

Hotel management and cost artifacts

Hotels are part of the tourism system, therefore their activities are directly related to tourism and essential for its continuity. Hotel networks belong to an extremely competitive industry, and are at advantage in relation to local establishments when it comes to advanced technology (Píccolo & Gândara, 2012).

In the last two decades, organizations, including those in the hospitality sector, have undergone significant changes in organizational structure, mainly involving the aspects of competitiveness and information technologies (Burns & Vaivio, 2001). The hospitality sector requires the attention of managers in conducting business, mainly due to the strategic issue, for example, in the discussion of the definition of service prices versus seasonality. Considering the above, it is necessary to trace the particularities of the industry to provide adequate management artifacts in a timely manner, and thus lead to good management of the activity, since the lack of management information or its inadequate transmission may compromise the manager's decision-making process and, consequently, the entity's success (Sharma, 2002).

To provide hotel managers with adequate and relevant information to compete in a fully changing environment, management accounting, including cost systems, needs to start analyzing the actual need of and the best management accounting artifact for each organization (Faria, Trigueiros, & Ferreira, 2012). Sharma (2002) has already pointed out the need for managers to better know the organizational structure of hotels in order to indicate the best management control system to be adopted, given the economic relevance of the hotel industry in several world economies.

Espejo, Costa, Cruz and Almeida (2009) argue that, in order to achieve the pre-established organizational objectives, it is necessary that the MAS – in this case, through its traditional and modern cost artifacts – takes into account all the differences of the users' informational needs. In this study, we considered Standard Costing, Absorption Costing, and Variable Costing as traditional cost artifacts, and we considered ABC, TDABC, and Target Costing as modern cost artifacts (Frezatti, 2005; Guerreiro et al., 2011; Leitão & Silva, 2009; Lima et al., 2004; Maher, 2001; Soutes, 2006; Soutes & Zen, 2005; Souza et al., 2003). Chart 1 shows the characteristics of each of these cost artifacts.

Chart 1 – Characteristics of traditional and modern cost artifacts

Artifact		Characteristics
Traditional	Absorption costing	It consists in the allocation of all production costs or service delivery costs to the goods or services produced, direct costs through direct appropriation and indirect costs through distribution criteria.
	Standard costing	This is a method in which the production/service delivery cost is established before the start of the productive process, being determined according to information from previous periods and simulated experiments that take into account the deficiencies in the production/service delivery factors, available within the productive process of each organization.
	Variable costing	It consists in the determination of variable and fixed costs, that is, those that fluctuate proportionally to the production and service sales/delivery volume and the costs that remain stable in relation to the production and service sales/delivery volume. In this method, only variable production costs (direct and indirect) are allocated to the goods and services produced.
Modern	ABC	It consists in the determination, analysis and control of the costs involved in the activities and processes of an organization. In this method, the activities and processes in the production/service sectors of an industrial organization or service provider are traced, with allocation of the costs to the products through the use of these activities' drivers or cost generators.
	TDABC	This method requires the estimation of only two variables for its implementation: the cost of supplying resources to a given activity and the time demanded for execution. Its main objective is to reduce the difficulty in determining several resource drivers by reducing them to only one, i.e., time.
	Target costing	In this method, costing is performed by subtracting an estimated price (or market price) from the desired profitability margin, with the purpose of achieving a desired production cost. In short, the target cost is calculated while considering the sales price minus the desired profit.

Source – Adapted from Frezatti (2005), Soutes (2006), Leitão and Silva (2009), Martins (2010), and Guerreiro et al. (2011)

Contingency factors

By considering the assumptions of the systemic approach, contingency theory demonstrates that the organization is characterized as an open system, in that the environment external variable, independently, has influence on the internal variables, such as technology, structure, organizational size, and strategy (Espejo, 2008). It is observed that contingency factors, such as the environment, behavioral aspects, which comprise resistance to changes and leadership styles, as well as technology, structure, organizational size and strategy can be determinants of economic activities (Baines & Langfield-Smith, 2003; Espejo, 2008).

The environment is considered a contingency factor that is external to the organization, which according to Chenhall (2003, p. 136) can be characterized as being “particular attributes such as intense price competition of potential or existing competitors, or the probability of change in the availability or differentiation of services.” As for the technology contingency, it comprises the way the organizational processes are carried out, which includes the knowledge of business activities, people involved, hardware and software (Chenhall, 2003). Hyvönen (2007, p. 353) defines it as “the use of information technology innovations in general.”

The structure contingency factor, treated as an internal and controllable element, is considered the way organizations demonstrate their authority and the responsibilities of employees. This variable shows how the activities and the attributions of authorities are divided while aiming at organizational objectives (Maximiano, 2004; Sharma, 2002). Espejo (2008) argues that the existence of a greater degree of decentralization in the company’s structure indicates that it tends to be more organic. On the other hand, when its structure includes the centralization of activities, it tends to be configured as more mechanistic.

Organizational size is one of the factors that impact the structure and control forms of organizations. Larger companies have more resources than smaller ones to implement more modern management practices (Abdel-Kader & Luther, 2008). Chenhall (2003) argues that most of the studies developed in the accounting field only investigate large organizations, justifying that they incorporate practices associated with a management control system considered as more formal.

Finally, the strategy factor is defined as “a set of decision-making rules to guide the behavior of an organization” (Ansoff & McDonnell, 1993, p. 70). Chenhall (2007) characterizes strategy as being the factor by which managers become influenced by the nature of the external environment, as well as its culture, the control to make decisions and structural mechanisms.

Evidence found in the literature suggests that accounting has regained its relevance and responded to the informational needs of organizations through new accounting artifacts and changes in the management systems used by companies, which are capable of producing information that support the decision-making of managers, adapting the organizational instability to market demands. Consequently, they allow managers to achieve a performance that is more consistent with the decision-making process (Johnson & Kaplan, 1993).

However, there are also results of studies developed on this theme suggesting that, despite the benefits that can be achieved with the use of such modern management techniques, their effective adoption has not been widespread (Chenhall & Langfield-Smith, 1998; Faria et al., 2012). This gap has stimulated the development of new studies in the accounting field.

In this context, considering the above, it is expected that the environment, technology, strategy, structure, and organizational size contingency factors, whether to a greater or lesser extent, influence in some way the MAS adopted by hotel companies in the state of Paraná, more specifically in relation to the decision of using the costing system (Beuren & Fiorentin, 2014; Silva et al., 2014). As the economic growth of the hotel industry has been continuous, it has undergone significant changes related to organizational structure (Burns & Vaivio, 2001; Marquesan et al., 2015).

In addition to the above, it is also expected that environmental issues such as competition, technology, tastes and preferences of clients; technological issues such as e-commerce and customer relationship management; structure issues such as expansion or supply of new services and relevant investments; large-sized organizations; and strategy factors such as differentiated characteristics and high quality of service, with the organization being recognized in the market, influence the adoption of differentiated cost artifacts, which are considered current and relevant (Baines & Langfield-Smith, 2003; Beuren & Fiorentin, 2014; Chenhall, 2007; Cooper & Kaplan, 1998; Faria et al., 2012; Guerra, 2007; Rodniski & Souza, 2014; Silva et al., 2014).

Considering these arguments, in order to conduct this research we established the general hypothesis that contingency factors have more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná. For a more specific analysis of the contingency factors, the following hypotheses were established:

H1: The environment contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

H2: The technology contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

H3: The structure contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

H4: The organizational size contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

H5: The strategy contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

METHODOLOGY

This section presents the methodological procedures of the research. Based on Cooper and Schindler (2003), it can be affirmed that the research addresses survey procedures through a questionnaire, in addition to being a formal, *ex post facto*, descriptive, transversal, statistical, and field study.

This study has a population of 104 hotels in the state of Paraná, associated with the Brazilian Association of the Hotel Industry of the State of Paraná (ABIH-PR). The sample consisted of 40 hotels that voluntarily responded to the research, thus being a non-random sample, which covered 38.46% of the study population. The sample is classified as non-probabilistic, achieved by accessibility, because the questionnaires were sent to all hotels that compose the effective population and there was no way to previously define which ones would participate (Fonseca & Martins, 1996). Chart 2 presents the research construct.

Chart 2 – Research construct

Category	Subcategory	Question	Proxy	Authors
I – Institutional profile	Respondent characterization	01 to 07	Alternatives	Prepared by the authors.
	Hotel characterization	08 to 12	Alternatives	
II – Contingency factors	Environment variable	13 to 17	Scale from 1 to 5: very stable (1); stable (2); intermediate (3); dynamic (4); very dynamic (5).	Gordon and Narayanan (1984), Chenhall and Langfield-Smith (1998), Sharma (2002), Hansen and Van der Stede (2004), Hyvönen (2007), Dekker, Groot, and Schoute (2012), and Espejo (2008).
	Technology variable	18 to 21	Scale from 1 to 5: no use (1); studying feasibility of use (2); low-intensity use (3); moderate-intensity use (4); high-intensity use (5).	
	Structure variable	22 to 26	Scale from 1 to 5: never delegates (1); has already delegated, but no longer does (2); delegates little (3); often delegates (4); total delegation (5).	
	Size variable	27	Scale from 1 to 3: up to 50 housing units (HU) (1); from 51 to 100 HU (2); above 100 HU (3).	Silva (2000) and Espejo (2008).
	Strategy variable	28 to 31	Scale from 1 to 5: not important (1); of little importance (2); important (3); very important (4); extremely important (5).	Chenhall and Langfield-Smith (1998), Hansen and Van der Stede (2004), and Espejo (2008).

(continues...)

Chart 2 – Continuation

Category	Subcategory	Question	Proxy	Authors
III – Cost artifacts	Traditional artifacts	32 to 34	Scale from 1 to 5: no plans to adopt (1); adoption evaluated and ruled out (2); under evaluation (3); initial adoption (4); full adoption (5).	Maher (2001), Souza, Lisboa, and Rocha (2003), Soutes (2006).
	Modern artifacts	35 to 38		
	Use and purpose of the artifacts	39 to 44	Scale from 1 to 5: totally disagree (1); disagree (2); neither disagree nor agree (3); agree (4); totally agree (5); and alternatives.	Abdel-Kader and Luther (2006) and Faria, Trigueiros, and Ferreira (2012).

Source – Prepared by the authors

As research instrument, we used the questionnaire, with closed questions, which was divided into three blocks: institutional profile, containing characterization of the respondent (questions 1 to 7) and of the organization (questions 8 to 12); contingency factors (questions 13 to 31); and cost artifacts (questions 32 to 44). Regarding the contingency factors, the construct was adapted from the international studies shown in Chart 2 and from the study by Espejo (2008), which has also been validated in Brazil.

For application of the research instrument, we opted to send the questionnaires to the members who occupied the positions of administrator, accountant, controller, financial director or other, provided they were managers, via email, with previous telephone contact. Data were collected between November 2 and December 31, 2015.

The collected data were tabulated in electronic spreadsheets and analyzed with the help of statistical analysis techniques. First, descriptive analysis was performed. Subsequently, the canonical correlation was used. For descriptive analysis, the Statistical Package for Social Science (SPSS) software, version 22.0, was employed. The canonical correlation was performed using the STATGRAPHICS Centurion software to verify the correlation between the variables studied.

DATA ANALYSIS

Descriptive analysis

The respondents' characteristics showed that, of the total 40 managers who participated in the research, 62.5% (25) are male, most being in the age range between 26 and 35 years old (35%) and over 45 years old (32.5%). It was found that 45% (18) occupy the function of manager and 40% (16) occupy the function of accountant/controller, and most of the respondents have worked in the company for a period of more than ten years (35%). However, as for the time in the current position, we highlight those who have been in the position for up to three years, with 40% (16). The results show that, despite a long time working in the company, most have been in the current position of manager for a short time.

Regarding the characteristics of the hotels surveyed, it was observed that most have 11 to 20 (30%) or 21 to 40 (30%) employees. Only 15% (6) of the hotels have more than 100 employees. It was also observed that the predominant annual bed occupation rates range between 31% and 50% for 32.5% (13) of the hotels, and are above 70% for 37.5% of them (15). It is observed that most organizations occupy more than half of the installed capacity to provide services in the hotels.

The results also showed that most hotels have 11-20 years (25%) or above 30 years of existence (40%), and 52.5% (21) have no internal accounting sector. After the initial characterization of the research respondents and establishment of the profile of the hotels that compose the sample analyzed in this study, we conducted descriptive statistics related to the contingency factors. Table 1 presents the results of the analysis of the size variable.

Table 1 – Descriptive analysis of the organizational size variable

Organizational size variables	<i>Fi</i>	<i>fi</i>	Cumulative <i>fi</i>
Up to 50 housing units – small size	6	15.00%	15.00%
From 51 to 100 housing units – medium size	11	27.50%	42.50%
Above 100 housing units – large size	23	57.50%	100.00%

Source – Research data

Regarding company size (Table 1), it is observed that most hotels (57.5%) have more than 100 housing units, being considered as large-sized in the group of organizations analyzed. Table 2 shows the results found for the environment, technology, structure, and strategy variables.

Table 2 – Descriptive analysis of the environment, technology, structure, and strategy variables

Variables		Mean	Med	Min	Max	Standard deviation
Environment	Attitudes of competition	3.68	4	1	5	1.095
	Competition for workforce	3.38	4	1	5	1.213
	Technology applied to the provision of services	3.13	3	1	5	1.305
	Legal, political and economic constraints in the industry	3.55	4	1	5	1.037
	Tastes and preferences of the industry's customers	3.43	4	1	5	1.217
Caption: 1 = very stable, 2 = stable, 3 = intermediate, 4 = dynamic, 5 = very dynamic.						
Technology	Electronic Commerce	3.90	5	1	5	1.464
	CRM (Customer Relationship Management)	3.43	4	1	5	1.631
	Data storage	4.10	5	2	5	1.057
	Exchanging data electronically	3.98	4	1	5	1.209

(continues..)

Table 2 – Continuation

Variables		Mean	Med	Min	Max	Standard deviation
Caption: 1 = no use, 2 = is studying the feasibility of use, 3 = use in low intensity, 4 = use in moderate intensity, 5 = use in high intensity.						
Structure	Expansion or supply of new services	2.98	3.5	1	5	1.368
	Hiring and dismissal of personnel	3.70	4	1	5	1.324
	Selection of relevant investments	2.80	3	1	5	1.344
	Budget allocation	2.85	3	1	5	1.406
	Pricing decisions	2.65	3	1	5	1.424
Caption: 1 = never delegates, 2 = already delegated, but no longer does, 3 = delegates little, 4 = often delegates, 5 = total delegation.						
Strategy	Seek high service quality that is greater than the competition	4.03	5	2	5	1.143
	Develop differentiated characteristics of the service	3.63	4	1	5	1.353
	Better image of the hotel than the competition	4.03	5	2	5	1.166
	Have a lower service price than the competition	2.93	3	1	5	1.639
Caption: 1 = totally disagree, 2 = disagree, 3 = neither disagree, nor agree, 4 = agree, 5 = totally agree.						

Caption: Med = median; Min = minimum; Max = maximum.

Source – Research data

According to the mean shown in Table 2, the results for the environment variables are balanced; however, in the “attitudes of competition” and “legal, political, and economic constraints of the industry,” variables, dynamism is more present than stability. These results show that the hotels participating in the research perceive the environment in which they are situated differently, which is why a distinction is expected between the configurations of the management control system used by these organizations, as argued by Otley (1980) and Chenhall (2007).

Based on the mean and on the low standard deviation of the technology variables, it is observed that “data storage,” “electronic data exchange,” and “electronic commerce” (Internet page that enables the electronic commerce of services) predominate in the scale of use in moderate intensity of these mechanisms in the hotel industry. In this respect, Espejo (2008) have already highlighted that there is a growing trend of using e-commerce as a technological instrument, as a means of highlighting the channel of communication with the market.

In the structure construct’s variables, focusing on the specification of delegation of authority, the results presented show, through the mean and low standard deviation, that the level of delegation of authority is greater when “hiring and dismissing employees,” in which delegation occurs in a frequent manner. In the other variables, it is observed that the hotels delegate little. These results also corroborate the differences observed between the hotels surveyed, which may result in the adoption of different management control structures in these organizations.

When analyzing the strategy construct's variables, hotels seem to emphasize the pursuit of high quality of services, the recognition of the hotel's image as superior to the competition, and the development of differentiated characteristics of services in their strategies. These results corroborate the recommendations of Chenhall and Langfield-Smith (1998), Hansen and Van der Stede (2004), and Espejo (2008). In this context, it can be concluded that the hotels surveyed place emphasis on the strategy aimed at differentiation and quality, instead of lower prices than competitors.

Table 3 shows the degree of adoption of traditional and modern cost artifacts.

Table 3 – Degree of adoption of traditional and modern cost artifacts

Artifacts	There are no plans		Evaluated and ruled out		Under evaluation		Initial adoption		Full adoption		Total		Mean	SD
	Fi	fi	Fi	fi	Fi	fi	Fi	fi	Fi	fi	Fi	fi		
Traditional														
SC	7	17,50%	2	5,00%	9	22,50%	7	17,50%	15	37,50%	40	100%	3,53	1,485
AC	4	10,00%	2	5,00%	6	15,00%	5	12,50%	23	57,5%	40	100%	4,03	1,368
VC	5	12,50%	6	15,00%	5	12,50%	12	30,00%	12	30,00%	40	100%	3,50	1,396
Modern														
ABC	15	37,50%	1	2,50%	2	5,00%	8	20,00%	14	35,00%	40	100%	3,13	1,786
TDABC	21	52,50%	7	17,50%	9	22,50%	2	5,00%	1	2,50%	40	100%	1,88	1,091
TC	15	37,50%	1	2,50%	6	15,00%	7	17,50%	11	27,50%	40	100%	2,95	1,694

Caption: SC = Standard Costing; AC = Absorption Costing; VC = Variable Costing; ABC = Activity-Based Costing; TDABC = Time-Driven Activity-Based Costing; TC = Target Costing; Mean = mean; SD = Standard Deviation.

Source – Research data

According to Table 3, the full adoption of traditional artifacts in hotels is predominant in Absorption Costing with 57.5% (23), in Standard Costing with 37.5% (15), and in Variable Costing with 30% (12). Based on the mean, Absorption Costing shows the highest result, with emphasis on initial adoption. In the analysis of the modern artifacts, there is predominance of non-existence of plans for adoption, with 52.5% (21) for TDABC and 37.5% (15) for ABC and Target Costing. ABC has the highest mean, with a trend towards the evaluation process for adoption purposes.

According to the above results, the ABC with the highest mean in the modern artifacts for adoption purposes shows a trend towards a future standardization in adoption. A uniform accounting system provides standardized information and guidance not only to professionals associated with accounting, but also to managers, owners, entrepreneurs, and other users of accounting information (Raymond & DeFranco, 2015). Considered less arbitrary, the literature shows that ABC has been shown to be relevant in situations where it is necessary to analyze processes that involve restructuring and improvement of the services provided (Abbas, Golçalves, & Leoncine, 2012; Guerreiro et al., 2011).

Based on these results, a high adoption rate for traditional artifacts and a low adoption rate for modern artifacts are observed, which corroborates the findings of Lima, Egito, and Silva (2004), Leitão and Silva (2009), and Faria et al. (2012), this last study having been carried out in the hotel network of the Algarve region, in Portugal. However, in the study by Faria et al. (2012), the most adopted artifact found was Variable Costing.

The previous results allow us to affirm that: the environment of the hotels that participated in the research is dynamic or very dynamic; there is moderate use of technologies; authority is delegated frequently for the hiring and dismissal of personnel; and that most hotels are large-sized and focused on high quality, differentiation of services and image. It was also found that there is a preference for traditional cost artifacts. However, as for modern artifacts ABC and Target Costing, there is a future trend of greater adoption.

Canonical correlation

The influence of contingency factors on traditional and modern cost artifacts in the hotel network of the state of Paraná was verified with the canonical correlation between them, and Cronbach's alpha was applied preliminary to verify the construct variables' consistency. According to Hair, Black, Babin, Anderson, and Tatham (2009), the Cronbach's alpha test is a type of reliability test that is used to evaluate a summed scale in which several assertions are summed up to form a total score for a construct. Hair et al. (2009, p. 100) point out that Cronbach's Alpha is a "measure of reliability ranging from 0 to 1, with values from 0.60 to 0.70 considered as the lower limit of acceptability."

For the contingency factors' construct, the results showed a Cronbach's Alpha of 0.748 for the environment factor, 0.924 for the technology factor, 0.975 for the structure factor, 0.786 for the size factor, and 0.934 for the strategy factor. For the cost artifacts' construct, the results pointed to a Cronbach's Alpha of 0.644 for traditional cost artifacts and 0.858 for modern cost artifacts. According to the above, the Cronbach's Alphas of the variables groups are within the acceptability limit, most of which show a very good consistency level, with an indicator above 0.900.

Below, we present the data's description and analysis, through the canonical correlation between the groups of contingency factors and traditional and modern cost artifacts researched. Table 4 shows the canonical correlation between the environment contingency factor group and the cost artifact variables groups studied.

Table 4 – Canonical correlation between the environment contingency factor group and the traditional and modern cost artifacts groups

Artifacts	Linear combinations	Auto value	Canonical correlation	Wilks' Lambda	Chi-Square	D.F.	P-value
Traditional	1	0.5993	0.7741	0.3335	37.8758	15	0.0009
	2	0.1510	0.3886	0.8326	6.3172	8	0.6117
	3	0,0191	0.1383	0.9808	0.6663	3	0.8811
Modern	1	0.5845	0.7645	0.3690	34.3924	15	0.0030
	2	0.0896	0.2993	0.8882	4.0881	8	0.8491
	3	0.0243	0.1559	0.9756	0.8495	3	0.8376

Source – Research data

It may be noted that we calculated three different linear combinations (linear combinations column) for the traditional artifacts and three for the modern artifacts, which represent the number of variables that compose the artifacts group. The *p-value* of the first linear combination of the traditional and modern artifact variables is significant at the 5% level, 0.0009 and 0.0030. The highest canonical correlation coefficient is that of the traditional artifacts: 0.7741 of this linear combination. Based on this result, it is considered that the environment contingency factor has more influence on the adoption of traditional cost artifacts than modern artifacts in the hotel network of the state of Paraná, and thus hypothesis H1 is rejected.

Table 5 presents the canonical correlation between the technology contingency factor group and the traditional and modern cost artifacts groups.

Table 5 – Canonical correlation between the technology contingency factor group and the traditional and modern cost artifacts groups

Artifacts	Linear combinations	Auto value	Canonical correlation	Wilks' Lambda	Chi-Square	D.F.	P-value
Traditional	1	0.7849	0.8859	0.1891	58.2846	12	0.0000
	2	0.0735	0.2711	0.8796	4.4896	6	0.6107
	3	0.0506	0.2249	0.9493	1.8176	2	0.4030
Modern	1	0.7430	0.8619	0.2387	50.1331	12	0.0000
	2	0.0583	0.2416	0.9289	2.5794	6	0.8595
	3	0.0134	0.1160	0.9865	0.4743	2	0.7888

Source – Research data

Table 5 shows that the highest existing correlation is in the first linear combination, between the set of variables of the technology contingency factor and traditional artifacts, with 88.59%. It is noted that the descriptive level (*p-value*) of the first linear combination was 0.0000, less than 5%. Based on these results, the technology contingency factor has more influence on the adoption of traditional cost artifacts than modern artifacts in the hotel network of the state of Paraná. Thus, hypothesis H₂ is rejected.

Table 6 shows the canonical correlation between the structure contingency factor group and the cost artifacts groups studied.

Table 6 – Canonical correlation between the structure contingency factor group and the traditional and modern cost artifacts groups

Artifacts	Linear combinations	Auto value	Canonical correlation	Wilks' Lambda	Chi-Square	D.F.	P-value
Traditional	1	0.7526	0.8675	0.1592	63.3846	15	0.0000
	2	0.2747	0.5241	0.6437	15.1949	8	0.0555
	3	0.1123	0.3352	0.8876	4.1134	3	0.2495
Modern	1	0.8384	0.9156	0.0726	90.4455	15	0.0000
	2	0.4396	0.6630	0.4500	27.5453	8	0.0006
	3	0.1967	0.4436	0.8032	7.5605	3	0.0560

Source – Research data

Table 6 shows that the highest correlation with 5% significance level is in the first linear combination, between the set of variables of the structure contingency factor and modern artifacts, with 91.56%, which, according to Hair et al. (2009), indicates a very strong positive association. Based on these findings, it is not possible to reject hypothesis H3, that the structure contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

The non-rejection of H3 corroborates the evidence found in other studies conducted from the contingency perspective in the accounting field, conducted in other organizational contexts (Baines & Langfield-Smith, 2003; Beuren & Fiorentin, 2014; Chenhall, 2007; Cooper & Kaplan, 1998; Guerra, 2007; Rodniski & Souza, 2014; Silva et al. 2014). These studies consider that the need to achieve competitive advantages, increased supply of services, and expansion of organizational structure with new investments impact the adoption of cost systems, aiming at differentiated methods.

Table 7 – Coefficients for the canonical variables of the modern cost artifacts and structure contingency factor groups

Structure factor and modern artifacts		
Groups	Variables	Linear combination
		1
Structure factor	AOS	0.5479
	CDP	0.0578
	SIR	0.6826
	ALO	0.2357
	DDP	-0.5063
Modern artifacts	ABC	1.0207
	TDABC	0.0270
	TC	-0.0419

Source – Research data

Table 7 shows that the canonical coefficients of the modern artifacts and structure factor groups show a trend of higher delegation of authority to the managers of the organization's decision areas in the selection of relevant

investments (SIR) (0.6826) and in the expansion or supply of new services (AOS) (0.5479), and are determinants of the higher adoption of the ABC modern artifact (1.0207) and lower adoption of the Target Costing modern artifact (-0.0419). According to Sulaiman, Nazli Nik Ahmad and Alwi (2004), ABC tends to be the artifact that contributes the most to the increase in the entities' capacity to fulfill their goals.

Table 8 shows the canonical correlation between the size contingency factor group and the artifacts groups studied.

Table 8 – Canonical correlation between the size contingency factor group and the traditional and modern cost artifacts groups

Artifacts	Linear combination	Auto value	Canonical correlation	Wilks' Lambda	Chi-Square	D.F.	P-value
Traditional	1	0.6590	0.8118	0.3409	39.2769	3	0.0000
Modern	1	0.4815	0.6939	0.5184	23.9785	3	0.0000

Source – Research data

Table 8 shows that the highest correlation with 5% significance level is in the linear combination between the set of variables of the size contingency factor and traditional artifacts, with 81.18%. This finding indicates the rejection of hypothesis H4, that the organizational size contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

Table 9 presents the canonical correlation between the strategy contingency factor group and the traditional and modern cost artifacts group.

Table 9 – Canonical correlation between the strategy contingency factor group and the traditional and modern cost artifacts groups

Artifacts	Linear combinations	Auto value	Canonical correlation	Wilks' Lambda	Chi-Square	D.F.	P-value
Traditional	1	0.7047	0.8394	0.2693	45.9065	12	0.0000
	2	0.0635	0.2521	0.9122	3.2133	6	0.7816
	3	0.0257	0.1605	0.9742	0.9134	2	0.6334
Modern	1	0.7383	0.8592	0.2270	51.8834	12	0.0000
	2	0.1242	0.3524	0.8678	4.9611	6	0.5488
	3	0.0090	0.0952	0.9909	0.3189	2	0.8526

Source – Research data

It is observed that the highest correlation with 5% significance level is in the first linear combination, between the set of variables of the strategy contingency factor and modern artifacts, with 85.92%, which, according to Hair et al. (2009), indicates a high positive association. These findings do not allow rejecting hypothesis H5, that the strategy contingency factor has more influence on the adoption of modern cost artifacts than traditional artifacts in the hotel network of the state of Paraná.

The results corroborate the evidence found in other contexts (Baines & Langfield-Smith, 2003; Beuren & Fiorentin, 2014; Chenhall, 2007; Cooper &

Kaplan, 1998; Guerra, 2007; Rodniski & Souza, 2014; Silva et al., 2014). The evidence from these studies shows that the search for differentiated cost systems that are considered current and useful tend to supply the informational need of managers, contributing to the development of differentiated characteristics and high quality of services, as well as organizational image.

Table 10 – Coefficients for the canonical variables of the modern cost artifacts and strategy contingency factor group

Strategy factor and modern artifacts		
Groups	Variables	Linear combination
		1
Strategy factor	BAQ	0,2544
	DCPU	0,3906
	IMMC	0,2424
	PSMC	-0,2016
Modern artifacts	ABC	0,9718
	TDABC	-0,0155
	TC	0,0415

Source – Research data

Table 10 shows that the coefficients corresponding to the first canonical pair of the modern artifacts and strategy factor group show a trend to increase in relevance in the development of differentiated characteristics of services (DCPU) (0.3906) and in the pursuit of high quality of services, much higher than that of the competition (BAQ) (0.2544). They are determinants of the higher adoption of the ABC modern artifact (0.9718) and lower adoption of the TDABC modern artifact (-0.0155).

In summary, considering the sample investigated, the results found show that the environment, technology, structure, organizational size, and strategy contingency variables can contribute to the understanding of factors that influence the adoption of traditional and modern cost artifacts in the management of hotel companies in the state of Paraná, a fact that stimulates the performance of new studies on this subject.

FINAL CONSIDERATIONS

This research aimed to highlight the influence of contingency factors on the adoption of traditional and modern cost artifacts in the hotel network of the state of Paraná. The contingency approach applied to verify the costing systems adopted by hotels in this region of the country provides a new view of the hotel organizations which contributes to the understanding of the factors influencing the adoption of cost artifacts.

The results found indicated that most hotels in the state of Paraná fully adopt the traditional cost artifacts, with emphasis on Absorption Costing. As for the modern artifacts, a significant number of the hotels investigated reported having

no plans for their adoption. These results are consistent with those found in previous studies, which suggests predominance of the adoption of traditional artifacts, to the detriment of modern ones, even if those may not be considered the most suitable for decision-making in management.

Some managers reported that Activity-Based Costing and Target Costing were in an initial stage of adoption in their organizations. These results suggest that, in this area, in the future, it is possible that such artifacts are used by a larger number of hotel organizations, which may reveal a change in the cost control standards to be used by these organizations. Such evidence stimulates the performance of new studies.

Among the different contingency variables used to investigate the correlation between the contingency factors (environment, technology, structure, organizational size, and strategy) and the adoption of the traditional and modern cost artifacts investigated, the results found from the canonical correlation suggest that the structure and strategy contingency factors are those that have more influence on the adoption of modern cost artifacts than of traditional ones in the hotel network of the state of Paraná, which supports the non-rejection of hypotheses H3 and H5. Both the structure contingency factor and the strategy factor are determinants of the higher adoption of the ABC modern artifact. Thus, it can be concluded that these variables help understand the factors that influence the adoption of traditional and modern cost artifacts in the management of hotel companies in the state of Paraná.

Despite the potential limitations, this research provides evidence that contributes to the literature of the area, considering the non-identification of similar studies developed under the configuration proposed in this research, in the context observed. It contributes by showing the influence of contingency factors on the adoption of traditional and modern cost artifacts in hotel organizations, generating information that can stimulate the reflection on opportunities for improvements and advances in the management practices adopted by these organizations. Since the study was limited to the analysis of a sample established in the state of Paraná, for future research we suggest the inclusion of hotel organizations of other states and regions of the country, in order to trace similarities and differences, as well as to make comparisons that enable the understanding of factors that influence the adoption of modern management accounting artifacts and the consolidation of a uniform hotel accounting system.

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CONTRIBUTIONS

Cleston Alexandre dos Santos: Definition of the research problem and objectives, development of the theoretical proposition, performance of the bibliographic review and establishment of the theoretical foundations, choice of methodological procedures, data collection, data analysis, preparation of tables, graphs and figures, calculations and projections, critical review of the manuscript, writing of the manuscript, adjustment of the manuscript to the RTA standards.

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