



## REVISTA AMBIENTE CONTÁBIL

Universidade Federal do Rio Grande do Norte

ISSN 2176-9036

Vol. 17, n. 1, Jan./Jun., 2025

Sítios: <https://periodicos.ufrn.br/index.php/ambiente>

<http://www.atena.org.br/revista/ojs-2.2.3-06/index.php/Ambiente>

Article received in: January, 16th, 2024. Reviewed by pairs in: April, 03th, 2024. Reformulated in: May, 17th, 2024. Evaluated by the system double blind review.

DOI: 10.21680/2176-9036.2025v17n1ID38678

**Analysis of the relationship between contingency factors and management accounting practices adopted in the light of contingency theory: a study in hotels in the municipalities of Recife and Ipojuca in the state of Pernambuco**

**Análisis de la relación entre factores de contingencia y prácticas de contabilidad de gestión adoptadas a la luz de la teoría de la contingencia: un estudio en hoteles de los municipios de Recife e Ipojuca en el estado de Pernambuco**

**Análise das relações entre os fatores contingenciais e as práticas de contabilidade gerencial adotadas à luz da teoria contingencial: um estudo nos hotéis dos municípios de Recife e Ipojuca do estado de Pernambuco**

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Google Citations: <https://scholar.google.com/citations?user=KRFZy2YAAAAJ>

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(Article presented at the V UFRPE Controllershship Symposium - 2023)

### Abstract

**Purpose:** The objective of this study is to analyze the relationship between contingency factors and management accounting practices adopted by hotels located in the municipalities of Ipojuca and Recife, in the state of Pernambuco.

**Methodology:** This research is characterized as exploratory-descriptive. For its development, a survey-type survey was carried out. Data collection took place from October 14, 2019 to January 3, 2020. Data analysis was carried out in two stages, namely: the first consisted of performing descriptive statistics and the second stage occurred by applying the test non-parametric Spearman correlation coefficient.

**Results:** The results showed that the practices most used by hotel managers are: a) separation of fixed and variable costs; b) cost assessment of service quality; c) analysis of the cost/volume/profit relationship; d) analysis of the profitability of the service; e) creating a budget to control costs; and f) creating a budget for planning. Regarding the analysis of the relationship between contingency factors (environment, technology, size, structure and strategy), all of them showed at least one statistically significant correlation with some management accounting practice, highlighting the technology and environment factors which were those that presented the highest number of correlations with management accounting practices.

**Contributions of the Study:** The results of this research contribute to the advancement of the debate involving management accounting practices and contingency factors based on results obtained in an important Brazilian economic sector. The results of this study can also be used by managers who seek to mitigate the possible impacts generated by contingencies imposed by the hotel sector, especially technology and performance evaluation.

**Keywords:** Contingency Factors. Management Accounting Practices. Hotels in Pernambuco.

### Resumen

**Objetivo:** El objetivo de este estudio es analizar la relación entre los factores de contingencia y las prácticas de contabilidad de gestión adoptadas por hoteles ubicados en los municipios de Ipojuca y Recife, en el estado de Pernambuco.

**Metodología:** Esta investigación se caracteriza por ser exploratoria-descriptiva. Para su desarrollo se realizó una encuesta tipo encuesta. La recolección de datos se realizó del 14 de octubre de 2019 al 3 de enero de 2020. El análisis de los datos se realizó en dos etapas, a saber: la primera consistió en realizar estadística descriptiva y la segunda etapa ocurrió mediante la aplicación de la prueba no paramétrica del coeficiente de correlación de Spearman.

**Resultados:** Los resultados mostraron que las prácticas más utilizadas por los gerentes hoteleros son: a) separación de costos fijos y variables; b) evaluación de costos de la calidad del servicio; c) análisis de la relación costo/volumen/beneficio; d) análisis de la rentabilidad del servicio; e) crear un presupuesto para controlar los costos; y f) crear un presupuesto para

la planificación. En cuanto al análisis de la relación entre los factores de contingencia (ambiente, tecnología, tamaño, estructura y estrategia), todos mostraron al menos una correlación estadísticamente significativa con alguna práctica de contabilidad de gestión, destacando los factores tecnología y entorno que fueron los que presentaron mayor número de correlaciones con las prácticas de contabilidad de gestión.

**Contribuciones del Estudio:** Los resultados de esta investigación contribuyen al avance del debate sobre prácticas de contabilidad de gestión y factores de contingencia basados en resultados obtenidos en un importante sector económico brasileño. Los resultados de este estudio también pueden ser utilizados por directivos que busquen mitigar los posibles impactos generados por las contingencias impuestas por el sector hotelero, especialmente la tecnología y la evaluación del desempeño.

**Palabras clave:** Factores de contingencia. Prácticas de Contabilidad de Gestión. Hoteles en Pernambuco.

### Resumo

**Objetivo:** O objetivo deste estudo é analisar a relação entre os fatores contingenciais e as práticas de contabilidade gerencial adotadas pelos hotéis localizados nos municípios de Ipojuca e Recife, do estado de Pernambuco.

**Metodologia:** Esta pesquisa se caracteriza como exploratório-descritiva. Para o seu desenvolvimento foi realizado um levantamento do tipo *survey*. A coleta de dados ocorreu no período de 14 de outubro de 2019 a 03 de janeiro de 2020. A análise dos dados foi realizada em duas etapas, a saber: a primeira consistiu em realizar a estatística descritiva e a segunda etapa ocorreu pela aplicação do teste não paramétrico de coeficiente de correlação de *Spearman*.

**Resultados:** Os resultados apontaram que as práticas mais utilizadas pelos gestores dos hotéis são: a) separação de custos fixos e variáveis; b) avaliação de custo da qualidade do serviço; c) análise da relação custo/volume/lucro; d) análise da lucratividade do serviço; e) realização de orçamento para controle de custos; e f) realização de orçamento para planejamento. Quanto à análise da relação dos fatores contingências (ambiente, tecnologia, porte, estrutura e estratégia) todos apresentaram pelo menos uma correlação estatisticamente significativa com alguma prática da contabilidade gerencial, destacando-se os fatores tecnologia e ambiente que foram os que apresentaram maior número de correlações com as práticas da contabilidade gerencial.

**Contribuições do Estudo:** Os resultados desta pesquisa contribuem com o avanço do debate envolvendo práticas da contabilidade gerencial e fatores contingenciais a partir de resultados obtidos em um importante setor econômico brasileiro. Os resultados deste estudo também podem ser utilizados por gestores que busquem atenuar os possíveis impactos gerados pelas contingências impostas pelo setor hoteleiro, sobretudo a tecnologia e a avaliação de desempenho.

**Palavras-chave:** Fatores Contingenciais. Práticas de Contabilidade Gerencial. Hotéis em Pernambuco.

## 1 Introduction

The conditions of an organizational environment are constantly changing, and factors (internal and external) can determine the success or even failure of a business organization. It is necessary to monitor the organization's activities and results so that managers can act in advance in the face of changes. In this sense, management accounting is essential, as it provides relevant information for the decision-making process (Atkinson et al., 2012).

Carrying out management control requires the use of information generated by management accounting, which is responsible for recording all facts that cause changes in the company's assets, whether they are modifying (those that generate an economic result) or just permutative (those that alter assets but do not generate economic results).

Management accounting assists the manager in decision-making, which is its purpose. It uses management accounting practices, which are instruments used by management accounting to achieve its objectives (Souza et al., 2003).

Regarding the factors determining the adoption of management accounting practices, a theory that has been recurrent for its understanding is the contingency theory. Contingency theory is widely used as a theoretical support for studying management accounting and its practices (Otley, 1980).

The literature that deals with management accounting practices suggests that they are tools that, when used in a coherent and timely manner, can bring greater efficiency to the organization, allowing the company to perpetuate itself. In this sense, it is believed to be relevant to analyze how managers use accounting practices within a complex system, such as the hotel sector, given the variety of services that fall within the sector's competence.

Borges and Yamashita (2006) state that the hotel industry mixes the three existing economic sectors; initially, industrial processes involved transforming raw materials sold to guests in environments such as hotel restaurants and bars. Services are provided through the sale of apartments and laundry services. Finally, commercial activity occurs through selling products that have not been transformed, such as drinks and boutique items.

Given the exposed context and given academia's role in seeking solutions to problems present in the environment and human activities, this research points to a problem that involves theories that support the knowledge used in the study of management business and the practical activity of management accounting, within the scope of hotel companies located in Recife and Ipojuca, in the state of Pernambuco.

The growing development of research carried out from the perspective of organizational approaches suggests the importance of identifying and understanding the factors that influence the adoption of management accounting practices since, as mentioned by the authors, a changing environment, such as the environment of organizations, in addition to being challenging for most companies, it raises questions about the best path to follow in organizational activities (Espejo et al., 2009).

The hotel industry is a complex market, and operational activities often overlap with administrative activities in favor of customer satisfaction (Borges & Yamashita, 2006). With the actions to promote tourism in Brazil, the environment in which these companies are installed tends to become increasingly competitive, bringing various situations beyond the companies' control, meaning that they need to be equipped with information to assist in this process.

The hotel sector needs well-defined controls, enabling the establishment to offer better customer services while these enterprises become more competitive (Callado & Amorim,

2017). In agreement with this position, Dutra (2019) argues that with globalization, there has been an increase in competitiveness in this sector, requiring the adoption of strategies that increase efficiency and make hotels more competitive in the face of a general environment that is increasingly focused on the search for excellence.

Considering the relevance of developing the study of alternative theories that discuss analysis variables for understanding management accounting in research in applied accounting, it should provide new insights for management practice. To achieve this, it is important to identify and understand the factors that influence adopting management accounting practices through research from organizational approaches.

The sector investigated is complex and needs well-defined control management, making it a suitable environment for academic investigations. Finally, considering the strategic position of hotel activity in Pernambuco, given the region's tourist flow and the sector's economic relevance, we sought to answer the following question: **Are contingency factors related to management accounting practices?** To answer the proposed question, this research was carried out within the scope of hotels in Recife and Ipojuca in Pernambuco.

This study met the aspect regarding originality, as a literature review revealed that management accounting practices have already been tested with different theories in different economic segments. However, no research was found involving hotel companies in the state of Pernambuco, which suggests that empirical research needs to fill a gap.

Carrying out this work was feasible, as there was enough time to collect data from hotel companies, and registering with hotel contacts facilitated communication to send the questionnaire or arrange to collect data in person.

According to Beuren and Fiorentin (2014), contingency factors (environment, technology, strategy, structure, and organizational size), regardless of their informational weight, will influence the attributes of the management accounting system. Therefore, each economic activity will be better managed, making it relevant to study hotels in Ipojuca and Recife, located in Pernambuco, Brazil.

## 2 Theoretical Reference

### 2.1 Management Accounting

Management accounting is the product of preparing operational and financial information intended for an organization's internal managers (Soutes, 2006). To help understand the role of management accounting, Gorla and Lavarda (2012) state that it aims to construct reliable information that enables managers to manage the organization in a more competitive environment.

In 1998, the International Federation of Accountants (IFAC) released a statement called International Management Accounting Practice 1 (IMAP 1), which describes the objectives and tasks of management accounting. The report presents the evolution of management accounting, characterized by four stages, noting that these occurred gradually (Marques et al., 2016).

This research will use the terminology brought by Almeida and Callado (2018), based only on the management accounting practices listed by Abdel-Kader and Luther (2008) and Leite, Diehi, and Manvailer (2015). These practices were segregated according to the evolutionary stages presented in the IFAC framework.

The characterization proposed by Almeida and Callado (2018) separates practices into the following aspects: a) related to cost and financial control, b) referring to performance

evaluation, and c) relating to planning and budgets. It is important to note that the stages of evolution are not mutually exclusive. Therefore, they will complement each other, and it will not be necessary for one to not exist for the other to be observed. Many studies separate these practices into traditional and modern (Reis & Teixeira, 2013; Assunção et al., 2014; Panosso et al., 2017).

Management accounting practices inserted in the first and second evolutionary stages will be called traditional practices for better understanding. In contrast, those in the third and fourth stages of evolution will bring us modern practices. This brief description of traditional and modern practices is important to identify whether modern practices are increasing within organizations.

## 2.2 Contingency Theory

Contingency Theory emerged from reflection on contingency factors, which guide decision-making in certain situations. The foundations of previous theories influenced its thinkers, mainly systemic theory (Espejo, 2008).

Structural contingency theory refers to how an organizational structure needs to adjust to factors such as the size of the organization and the strategy used for it to produce high performance (Donaldson, 2015). For the same author, the performance of the organizational structure will depend on how well it adjusts to contingency factors.

Junqueira (2010) states that "Contingency Theory" was only used in 1967. Joan Woodward's 1958 work *Management and Technology* must be considered seminal on the contingency approach.

According to Tillema (2005), contingency literature distinguishes four levels of analysis: 1) level beyond the organization (including contingency factors, such as national culture and industry market structure); 2) organizational level (e.g., organizational strategy and organizational structure); 3) subunit level (e.g., company operating environment, business unit strategy, and department size) and; 4) individual level (e.g., individual knowledge).

Taking into account that the contingency theory is expressly marked by defending that there is no single way to manage an organization, this work adopted five factors widely treated in the literature, namely: 1) environment, 2) technology, 3) strategy; 4) size and; 5) structure, which have the potential to influence the design of management control in these organizations (Chenhall, 2003). The factors are discussed below.

### Environmental Contingency Factor

According to Löfsten and Lindelöf (2005), the environment can be understood as a term used to analyze various characteristics of the organizational environment that influence the management control system of companies.

In this research, the items proposed by Hansen and Van Der Stede (2004) and Guerra (2007) are used, namely: a) attitude of the competition; b) competition for labor; c) competition for raw materials/inputs; d) technology in the production process; e) legal, political and economic restrictions; f) customer tastes; g) product diversity; h) diversity of technology; i) diversity of markets; j) swollen market; i) companies dictate the rules of the sector and; h) entry barrier for other companies.

According to Hansen and Van Der Stede (2004) and Guerra (2007), it is understood that the environmental factor is highly relevant to understanding the nuances of business organizations, and the items discussed helped to capture how hotels react to them.

### **Contingency Factor Technology**

Technology is considered a pioneering contingency factor, as it was the first to be addressed in contingency research. However, research findings have not been satisfactory (Donaldson, 2015).

The technology factors considered in this research, according to Hyvönen (2007), Decker, Groot, and Schoute (2007), and Leite, Diehl, and Manvailer (2015), are a) electronic commerce; b) customer relationship management; c) supply chain management; d) data storage; e) exchange of data electronically; f) integrated Enterprise Resource Planning (ERP); g) a single technology core to achieve greater efficiency in processes; h) more than one technology core to obtain moderate efficiency and flexibility in processes and; i) multiple technology cores to achieve innovation and flexibility in processes.

### **Contingency Factor Strategy**

Strategy is a means by which managers are influenced by the nature of the external environment, structural mechanisms, culture, and control in making decisions (Chenhall, 2007). For this author, these factors will define the organization's strategy.

The strategy factors considered in the research, according to Hansen and Van Der Stede (2004) and Miles, Snow, Meyer, and Coleman Jr. (1978), are: a) seeking high product quality; b) offering support to product customers; c) develop unique product characteristics; d) the company's brand image is better than the competition; e) invest in research and development more than the competition; f) have a lower sales price than the competition; g) focus on products and markets that are already present; h) be a pioneer in serving new markets and offering new products and; i) serve new markets and offer new products after demonstrating their viability.

### **Size Contingency Factor**

According to Abdel-Kader and Luther (2008), an issue related to company size is that larger organizations have more resources to adopt more sophisticated management practices than smaller organizations. Thus, it is understood that the smaller the organization's size, the less likely these companies are to use modern management accounting practices.

For Oliveira and Callado (2018), the contingency factor' size of the organization' initiates discussions about internal contingency factors that can interfere with the organization's management control practices. According to Donaldson (2015), organizational size refers to the number of people in an organization. As size increases, the number of people reporting directly to the CEO becomes below the ideal level, so inclusion is necessary from an intermediate management level.

In this research, the classification of the Brazilian Institute of Geography and Statistics (IBGE) will be used, which treats the company's size by the number of employees the organization has on its staff.

## Contingency Factor Structure

For Chenhall (2007), the contingency factor 'organizational structure' is established in the organization's formats, influencing work efficiency, employee motivation, information flows, and the control system.

The structural factors considered in the research, according to Baines and Langfield-Smith (2003), are: a) encouraging the execution of tasks by work teams; b) the possibility of executing tasks by multifunctional work teams; c) use of training programs to qualify managers; d) use of training programs to qualify employees; e) encouragement of participatory management; f) has few hierarchical levels; g) flexible structure and allows rapid adaptation to changes in the market; h) functional structure and; i) divisional structure.

## 3 Methodological procedures

This item presents the methodological path developed in this research to achieve the objective proposed at the beginning of this work. Initially, the research universe and sample are presented. The research construct (questionnaire) items and the procedures adopted to assist data analysis are below.

### 3.1 Research Population

The research population comprised hotel companies located in the municipalities of Recife and Ipojuca in Pernambuco. The reason for choosing these municipalities was the high concentration of hotel units. According to the Brazilian Institute of Geography and Statistics (IBGE) (2012), 43.3% of establishments in Pernambuco were in Recife, followed by the municipality of Ipojuca.

The Registry of Tourist Service Providers—CADASTUR (Brazil, 2019), found on the Ministry of Tourism website, was used to identify the population studied. This register contains a list of companies providing accommodation services in Brazil, allowing the municipality to identify all establishments registered on the federal government website.

The CADASTUR list presents 63 companies distributed across the two municipalities, 43 in Recife and 20 in Ipojuca. To reach this quantity, inns, hostels, and companies only associated with property management were excluded from the list. Therefore, the research was carried out only with establishments classified as hotels.

### 3.2 Data collect

The collection method used to carry out this research was a survey. A questionnaire was used for this study and divided into two sections. It includes 63 questions the organizations' managers answered. It consists of objective questions, most of which use a 5-point Likert scale to measure each variable's importance level.

### 3.3 Data collection and analysis procedures

This subtopic aims to present and discuss the procedures and data obtained when the questionnaire was applied to the managers of hotels participating in CADASTUR in Recife and Ipojuca in Pernambuco. Data collection occurred from October 14, 2019, to January 3, 2020.



The responses were obtained in person, marked on the printed questionnaire, sent by email, and marked on the Google Forms platform. Sixteen valid responses were received, resulting in a rate of 25.4%, concerning the research universe, whose data were organized in an electronic spreadsheet. Regarding data processing, the Gretl-2019d for Windows software was used as an assistance tool.

The total number of responses received in each of the two municipalities participating in the research universe was seven in the municipality of Recife, which corresponds to 44% of the sample, and nine in the municipality of Ipojuca, which corresponds to 56%.

Data analysis was carried out in two stages. First, the descriptive statistics results were presented with absolute and relative frequencies. The second stage involved applying the non-parametric Spearman correlation coefficient test, which was the most appropriate due to the ordinal scale characteristics of the variables investigated.

It should be noted that results that demonstrated statistical significance from 5% were considered for the analyses to be closer to reality. For the analysis, the intensity levels of the correlation size were considered and broken down by the Thumb rule.

### 3.4 Variables Investigated

To achieve the purpose of this research, variables were created and divided into groups, classified according to the measurement scale. Two groups were formed. In group I (contingency factors), variables related to Organizational Environment, Technology, Business Size, Organizational Structure, and Business Strategy were investigated, all on an ordinal scale. In Group II (Managerial Accounting Practices), variables related to cost and financial control practices, performance evaluation practices, and budgeting practices were investigated.

**Table 1**

*Variables relating to management accounting practices*

<b>Costing and financial control</b>	<b>Performance evaluation</b>	<b>Budget</b>
Inventory control	Cost/volume/profit	Budget for cost control
Fixed and variable costs	Analysis of service profitability	Budget for planning
Cost assessment	Customer profitability analysis	Long term forecast
Target cost	Non-financial measures for processes	Activity-based budgeting
Activity-based costing	Non-financial measures for/customers	Flexible budget
Interorganizational cost management	Analysis of competitors' strengths and weaknesses	Zero-based budgeting
Open book accounting	Benchmarking of activities	
	Benchmarking of services	
	Value chain analysis	

Source: survey data.

## 4 Presentation and Analysis of Results

For a better understanding of the analysis of results, this topic is divided into two analysis blocks: the first consists of the presentation of descriptive statistics of the data, and the second consists of the results from applying the non-parametric Spearman correlation coefficient test.

#### 4.1 Descriptive statistics

This first analysis block presents the research results as descriptive statistics obtained after data processing. The results are arranged in relative and absolute frequency according to their occurrences.

##### **Information related to the use of costing and financial control practices, performance evaluation, and budgeting**

This topic presents the results of the management accounting practices investigated in this research and is presented in section 4 of the questionnaire. The practices "perform inventory control models," "separation of fixed and variable costs," and "evaluation of the cost of the quality of the product/service provided" were the costing and financial control practices identified as being the most used. The practice that proved to be least used was "perform open book accounting," considering that 50% of managers said they did not use this tool.

Regarding the use of performance evaluation practices, only two practices, namely: "non-financial measures for employees" and "non-financial measures for customers," were not identified as being used by most managers. Among the performance evaluation practices that proved to be most used were "analysis of the cost/volume/profit relationship" and "product/service profitability analysis."

The budgeting practices that managers most used were "performing a budget to control costs" and "performing a budget for planning," and the practice that was identified as the least used was "performing zero-based budgeting."

The next block of analyses contains the results of the Spearman correlation coefficient test ( $r$ ) of management accounting practices related to contingency theory factors.

#### 4.2 Inferential Analysis

This topic is intended to present and analyze the results obtained in research using inferential statistics. Management accounting practices were related to the other variables and observed with which they demonstrated a statistically significant relationship, observing the 5% level of significance.

##### **Relationship between the environmental contingency factor and the adoption of costing and financial control practices**

Table 2 presents the results of the Spearman correlation tests ( $r$ ), considering the groups of variables associated with the contingency factor environment and costing and financial control practices.

**Table 2**

*Relationship between the environmental contingency factor and the adoption of costing and financial control practices*

<b>Environmental Contingency Factor</b>	<b>Costing and financial control practices</b>	Performs inventory control model	Separation of fixed and variable costs	Cost assessment of the quality of the product/service provided	Apply target cost methodology	Activity-based costing	Interorganizational cost management	Performs Open Book Accounting
Competitor Attitudes		<b>-0,516**</b>	0,071	-0,183	0,414	<b>0,697***</b>	0,006	0,156
Competition for labor		-0,181	<b>0,520**</b>	0,236	0,455	<b>0,514**</b>	-0,039	0,275
Competition for purchasing inputs		0,198	0,465	0,495	<b>0,757***</b>	0,284	0,249	0,423
Technology necessary for the production process		0,186	0,385	<b>0,622**</b>	<b>0,834***</b>	<b>0,506**</b>	<b>0,573**</b>	<b>0,535**</b>
Legal, political, and economic restrictions in the sector		0,107	-0,043	0,150	0,366	0,095	<b>0,627**</b>	<b>0,676***</b>
Customer tastes and preferences		0,174	0,404	0,412	0,171	0,150	0,359	<b>0,568**</b>
Diversity of products found on the market		0,174	0,404	0,412	0,171	0,150	0,359	<b>0,568**</b>
Diversity of technology adopted in production		-0,056	<b>0,511**</b>	0,419	<b>0,522**</b>	<b>0,681***</b>	0,296	0,426
Diversity in the characteristics of the markets served by the company		-0,024	0,239	0,341	0,098	0,305	0,313	<b>0,517**</b>
Too many companies for too little market		-0,306	-0,045	-0,218	0,148	0,401	0,034	-0,010
Few companies dictate the rules of the sector		-0,367	-0,024	-0,301	0,315	0,366	-0,148	-0,294
There are major obstacles making it difficult for other hotels to enter		-0,242	0,233	0,121	0,260	0,315	0,126	0,241

**Note:** \*\* Significance level of 5%; \*\*\* Significance level of 1%.

**Source:** Survey data.

When analyzing the relationship between the contingency factor 'environment' and cost and financial control practices, it was observed that the practice of 'inventory control modeling' was the only one that showed a moderate negative correlation related to the factor 'competitive attitudes.' The practice of 'separating fixed and variable costs' exhibited a moderate positive correlation with the factors 'competition for labor' and 'diversity of technology adopted in production.' Additionally, 'evaluating costs of service quality' demonstrated a moderate positive correlation with the factor 'technology for production.' Considering the results, it is inferred that the higher the level of technology adopted in hotels to assist in the production process, whether in reservation management or report production,

the greater the concern with service quality and the assessment of costs to maintain quality within acceptable levels to the organization.

The practice of "applying target cost methodology" showed a positive and high-intensity correlation with two factors, namely, "competition for purchasing inputs" and "technology necessary for the production process." This same practice also demonstrated a positive but moderate correlation with the factor "diversity of technology adopted in production."

In this sense, it is understood that the more factors that interfere in the company's dynamics, the more important it is to use costing practices and maintain financial control of business operations. The target cost is characterized as a modern practice and was the one that showed the most intensity in the correlation with two variables of the environmental factor.

"Activity-based costing" showed a moderate and positive correlation with the factors "competition attitudes," "competition for labor," "technology necessary for the production process," and "diversity of technology adopted in production." Understanding this relationship means that activity-based costing is only possible by implementing technological tools that enable measurement and apportionment for the organization's existing cost centers.

As for "inter-organizational cost management," this practice showed a moderate and positive correlation with the factors "necessary technology for the production process" and "legal, political and economic restrictions in the sector." Thus, as the technology implemented in the organization can assist in measuring an organization's cost centers, this practice is also related to inter-organizational cost management, as it has the function of reducing costs, increasing business value, and monetizing products/services (Cooper, & Slagmulder, 2003).

The practice of "performing open book accounting" had the most occurrence when related to the variables of the environmental contingency factor. This practice showed a positive and moderate correlation with 5 (five) factors, namely: "technology necessary for the production process," "legal, political and economic restrictions of the sector," "customer tastes and preferences," "diversity of products found on the market"; and "diversity in the characteristics of the markets served by the company."

With these results, it is inferred that the hotels participating in the research are concerned with reducing costs and optimizing results since these are presented as the main objectives of the practice of "performs open-book accounting" (Aguiar, Rezende, & Rocha, 2008). The correlation was positive; it is interpreted that the more the "environmental" contingency factors influence the organization, the more accounting information is shared with the supplier network.

### **Relationship between the environmental contingency factor and the adoption of performance assessment practices**

The "competition attitudes" factor showed a positive and high-intensity correlation related to "analysis of competitors' strengths and weaknesses," indicating a concern in analyzing what other hotels present to the market.

The "competition for labor" factor showed a moderate and positive correlation only with the practice of 'profitability analysis per customer.' However, the factor "competition for purchasing inputs" correlated with 5 (five) practices, namely: "analysis of the cost/volume/profit relationship," "non-financial measures for employees," "non-financial measures for customers," "perform benchmarking for some service provided" and "non-financial measures for internal processes." This last factor demonstrated a more intense correlation than the first 4 (four) practices.

When the factor "competition for purchasing inputs" points to a correlation with the "cost/volume/profit" practice, it is inferred that the manager understands how important it is to obtain the inputs at the best possible price, observing the quality, as he knows what the cost margin that must be worked on to maintain positive organization results.

The last factor that presented a statistically significant relationship with performance evaluation practices was "there are major obstacles hindering the entry of other hotels," which showed a positive and moderate correlation with "profitability analysis per customer," "non-financial measures for employees," and "non-financial measures for customers."

Financial analyses are of paramount importance within an organization. However, an evolution can be seen in using non-financial indicators that are equally important within an organization that deals directly with customers and evaluates employees who will deal directly with the public.

### **Relationship between the environmental contingency factor and budgeting practices**

The factor "technology necessary for the production process" showed a positive and moderate correlation with the practice of "long-term forecast." The variable "legal, political and economic restrictions of the sector" was the most related one, as it was correlated with 5 (five) budgeting practices: "long-term forecast," "activity-based budget," "performs budget to control of costs," "creates a budget for planning," and "has a flexible budget."

The first two showed a positive and high correlation, and the others showed a positive and moderate correlation. The practice of "activity-based budgeting" demonstrated the most intense correlation. This practice serves as a management aid to measure the equipment and employees needed to meet the idealized period.

The factors "customer tastes and preferences," "diversity of products found on the market," and "diversity in the characteristics of the markets served by the company" showed a positive and moderate correlation with only one budgeting practice, which was "a flexible budget." Therefore, it can be inferred that companies are willing to invest in changes to attract new customers by offering new services.

### **Relationship between the technology contingency factor and costing and financial control practices**

Of the 63 relationships analyzed, 13 showed a statistically significant correlation. The factor "customer relationship management" showed a positive and moderate correlation with the practices "separation of fixed and variable costs" and "activity-based costing." The factor "supply chain management" showed a moderate and high positive correlation with the practices "applies target cost methodology" and "activity-based costing," respectively.

The "data storage" factor showed a positive and moderate correlation with the practice "separation of fixed and variable costs" and a positive and high-intensity correlation with "applies target cost methodology" and "activity-based costing." As for the variable "integrated management system," a positive and high correlation was obtained with the practice "applies target cost methodology" and a moderate correlation with "separation of fixed and variable costs" and with "activity-based costing."

Concluding the relationships analyzed, the factor "multiple technology cores to obtain innovation and flexibility in processes" showed a moderate and high positive correlation with two practices: "separation of fixed and variable costs" and "applying the methodology of target cost," respectively.

### **Relationship between the technology contingency factor and performance assessment practices**

This analysis presented the highest number of correlation occurrences among all groups of variables that were investigated. To make the study more objective, correlations that presented high intensity were treated according to Thumb's rule for interpreting the size of the correlation coefficient.

The factor "customer relationship management" showed a positive and high correlation with the practices "cost/volume/profit relationship analysis," "product/service profitability analysis," and "value chain analysis." Meanwhile, the "supply chain management" variable positively correlated with only one performance evaluation practice: "value chain analysis."

Three positive and high correlations were obtained when relating the contingency factor "more than a single technology core to obtain efficiency and moderate flexibility in processes" with the practices "non-financial measures for internal processes," "performs benchmarking for some activity" and "performs benchmarking for some service provided." The last factor was the one most related to practices, with four occurrences in total.

The contingency factor "multiple technology cores to achieve innovation and flexibility in processes" showed a positive and high-intensity correlation with "analysis of the cost/volume/profit relationship," "non-financial measures for internal processes," "performs benchmarking for some activity," and "performs benchmarking for some service provided."

### **Relationship between the business size contingency factor and costing and financial control practices, performance evaluation, and budgeting**

Among the three groups of practices that were analyzed, the one that showed the most occurrences of correlation with the Size factor was the "performance evaluation" practices. The practices of this group that demonstrated a positive and moderate correlation with size were: "analysis of the cost/volume/profit relationship," "non-financial measures for internal processes," "non-financial measures for employees," "non-financial measures for customers," "performs benchmarking for some activity" and "performs benchmarking for some service provided."

Considering that the correlations were all positive, it is understood that the larger the company, the more it uses performance assessment practices, which is an adequate concern in the companies surveyed. The contingency factor "size" also showed a positive and moderate correlation with the practice "applies target cost methodology."

### **Relationship between the contingency factor organizational structure and costing and financial control practices**

The fourth and penultimate group of contingency factors analyzed was organizational structure. This factor showed a correlation with only two costing and financial control practices. The factor "flexible structure with quick adaptation to changes" presented a positive and moderate correlation with the practice of "inter-organizational cost management," and the factor "functional structure (each activity with the specialized department)" presented a positive and high-intensity correlation with the practice of "applying target cost methodology."

The correlation between the contingency factor "flexible structure with rapid adaptation to changes" and the practice "inter-organizational cost management" can be explained by the fact that the more flexible the company structure, with rapid adaptation to changes, the easier it becomes the practice of chain cost management.

The other correlation with statistical significance is associated with the contingency factor "functional structure" with "applies the target cost methodology." It can be understood from the fact that the company maintaining a specialized department makes it easier to execute better management accounting practices.

### **Relationship between the contingency factor organizational structure and performance assessment practices**

The results of the Spearman correlation tests ( $r$ ) between the groups of variables, "organizational structure contingency factor" and the "performance evaluation" practices, show that only two factors did not demonstrate a correlation with any of the ten performance evaluation practices that were analyzed. The factor "stimulates participatory management" showed a positive and high correlation with the practices "performs benchmarking for some activity" and "performs benchmarking for some service provided."

The factor "flexible structure with quick adaptation to changes" correlated positively and with high intensity with "non-financial measures for employees" and "value chain analysis." The factor "functional structure (each activity with the specialized department)" was correlated with the practices "non-financial measures for internal processes" and "performs benchmarking for some service provided," also with high intensity and directly proportional.

The correlation between the contingency factors "organizational structure" and the management accounting practices "performance evaluation" proved relevant, as it covered thirty of the ninety possible relationships with statistical significance. This result shows that adopting management accounting practices concerning performance evaluation is more related to the company's structure than costing and financial control practices.

### **Relationship between the contingency factor business strategy and costing and financial control practices**

The last factor investigated with management accounting practices was "business strategy." According to the results, the factor "develops unique characteristics of the product" showed a positive and moderate correlation with "separation of fixed and variable costs."

The factor "seeks the company's image to be the best among its competitors" was the one that presented the most occurrences of correlation, totaling three, and with "separation of fixed and variable costs," the correlation was positive and of high intensity. The others were also positive but were of moderate intensity. Regarding the factor "investing in research and development more than competitors," they also demonstrated correlations of high and positive intensity, but with the practice "applies target cost methodology."

In this analysis, it is essential to highlight that adopting a business strategy determines the company's actions. Therefore, decision-making is required and must be supported by information that can be provided by management accounting.

Therefore, it is understood that some correlations would be necessary, such as: "search for a high quality of the service provided" with "evaluation of the quality of the product/service provided," which did not occur. Another would be the contingency factor,

"having a lower sales price than the competition," which requires strict cost control, therefore "inventory control," "separation of costs between fixed and variable," and "application of cost- goal", which was also not observed in the correlations.

### **Relationship between the contingency factor business strategy and performance assessment practices**

The results obtained through the analysis showed statistically significant relationships between the groups that dealt with business strategies and performance evaluation practices. The factor "seeks the company's image to be the best among competitors" showed a positive and moderate correlation with two practices, namely: "cost/volume/profit analysis" and "value chain analysis."

The factor that presented the most correlations, all positive, was "investing in research and development more than competitors," which had a high correlation with "performs benchmarking for some service provided" and "value chain analysis."

With the following practices, the correlation was moderate: "cost/volume/profit relationship analysis," "profitability analysis per customer," "non-financial measures for internal processes," "non-financial measures for employees," "non-financial measures financial services for customers" and "performs benchmarking for some activity." This factor is the one that most impact the use of the practices mentioned since out of the 10, it correlated with 8 of them.

The negative and significant correlation between the factor "having a lower sales price than the competition" and the practice "use of non-financial measures for employees" stands out, as it was unexpected. The factor "having a lower sales price than the competition" involves economic/financial measures. In contrast, the "use of non-financial measures for employees" generates non-financial information for decision-making in another company area.

## **5 Conclusion**

This work aimed to analyze the relationship between contingency factors and management accounting practices adopted by hotels in Ipojuca and Recife. The analysis of the relationship between contingency factors (environment, technology, size, structure, and strategy) showed at least one statistically significant correlation with some management accounting practices, highlighting the technology and environment factors that presented the highest correlations with management accounting practices.

Based on the results observed, it is possible to consider the presence of significant evidence regarding the statistical relationships identified between the contingency factors and some of the management practices considered, emphasizing the relationships between performance measurement and the contingency factors, technology, and organizational structure.

Considering that contingency factors determine the management model of each company, it can be concluded that the companies investigated are only partially adopting the management accounting practices necessary to provide good support for their managers' decision-making. It is understood, therefore, that these companies need to better align the adoption of management accounting practices with their contingency factors following the literature on business management that deals with contingency theory.



This work sought to contribute to discussions about how contingency factors influence company management decisions. Notably, the sample size presented itself as a limiting factor in the research. For future research, it is recommended that the sample studied be increased and other contingency factors related to business management be verified, especially after the pandemic that affected a large part of the economic sectors, mainly in the hotel sector.

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