


HOTEL COSTING VS. ACCOUNTING COSTING SYSTEM

Andrés Paredes Murcia^A, Marcia Fernanda Vergara Rozo^B,
Jorge Alexander Mora Forero^C



ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 01 September 2023</p> <p>Accepted 12 December 2023</p>	<p>Purpose: This study contrasts the costing process applied in four-star hotels in Bogota with the traditional costing systems identified and used in academic training processes.</p> <p>Theoretical Framework: From the different definitions of cost, reference is always made to the necessary capital expenditures in the company, directly associated with the product or good that is produced, which must be easily identifiable and must also be recoverable at the time of sale of a product. At this point it is important to clarify that the term “cost” is understood as a measure of the consumption of resources related to the demand of the work and activities to be performed, while “expense” is a measure of consumption related to the capacity provided to perform the work, activity and/or process (Mejía & Salazar, 2015, p. 51). In a similar context, Rodriguez (2008) refers to expenditure as the cash outflow within a hotel related to sales and administration departments, and supports the relationship of the cost for manufacturing the product.</p> <p>Design/Methodology/Approach: The focus of the research process was mixed, given the combination of quantitative data collected, as well as the analysis of opinions, facts and contrasts obtained in the process of collecting information that constitute qualitative notes on the latest experiences lived by the group of experts in the development of their functions within the hotels. The variables shown in Figure 3 were present in this information gathering and evaluation process.</p> <p>Findings: Within the results presented, a costing system is differentiated from a costing process showing the relevant variables necessary to be called a “system”.</p> <p>Research, Practical & Social Implications: The pandemic generated by Covid-19 was a limiting factor for reaching this group of hotels and caused the closure of establishments and the cessation of operations in most of the lodging companies. The research group mitigated this fact by convening a group of 17 people to a focus group, as experts, validating them through their work experience since they have held positions in hotels as accountants, cost managers and controllers.</p> <p>Originality/Value: A sample of 43.3% of the four-star hotels in the city of Bogotá D.C. was used, where instruments were applied to present the results that were analyzed with context analysis matrices.</p>
<p>Keywords:</p> <p>Hotel Costs; Cost Systems; Hospitality Costs; Lodging Costs.</p> <div data-bbox="172 949 480 1189" data-label="Image">  </div>	<p>Doi: https://doi.org/10.26668/businessreview/2023.v8i12.3723</p>

^A Magister in Education. Corporación Universitaria Minuto de Dios (UNIMINUTO). Colombia.

E-mail: andres.paredes.m@uniminuto.edu Orcid: <https://orcid.org/0000-0002-4721-7851>

^B Magister in Education. Corporación Universitaria Minuto de Dios (UNIMINUTO). Colombia.

E-mail: maria.vergara-r@uniminuto.edu, Orcid: <https://orcid.org/0000-0003-4879-6741>

^C Magister in Education. Corporación Universitaria Minuto de Dios (UNIMINUTO). Colombia.

E-mail: jorge.moraf@uniminuto.edu Orcid: <https://orcid.org/0000-0001-7764-0370>

CUSTOS DE HOTEL VS. SISTEMA DE CUSTOS CONTÁBEIS

RESUMO

Objetivo: Este estudo contrasta o processo de cálculo de custos aplicado em hotéis de quatro estrelas em Bogotá com os sistemas tradicionais de cálculo de custos identificados e utilizados nos processos de formação acadêmica.

Enquadramento Teórico: A partir das diferentes definições de custo, é sempre feita referência às despesas de capital necessárias na empresa, diretamente associadas ao produto ou bem que é produzido, que devem ser facilmente identificáveis e também devem ser recuperáveis no momento da venda de um produto. Neste ponto, é importante esclarecer que o termo “custo” é entendido como uma medida do consumo de recursos relacionados com a demanda do trabalho e atividades a serem realizadas, enquanto “despesa” é uma medida de consumo relacionada com a capacidade fornecida para executar o trabalho, atividade e / ou processo (Mejía & Salazar, 2015, p. 51). Em um contexto semelhante, Rodríguez (2008) se refere às despesas como o fluxo de saída de caixa dentro de um hotel relacionado aos departamentos de vendas e administração, e suporta a relação do custo para a fabricação do produto.

Design/Metodologia/Abordagem: O foco do processo de pesquisa foi misto, dada a combinação de dados quantitativos coletados, bem como a análise de opiniões, fatos e contrastes obtidos no processo de coleta de informações que constituem notas qualitativas sobre as últimas experiências vividas pelo grupo de especialistas no desenvolvimento de suas funções dentro dos hotéis. As variáveis mostradas na Figura 3 estiveram presentes neste processo de coleta e avaliação de informações.

Constatações: Dentro dos resultados apresentados, um sistema de cálculo de custos é diferenciado de um processo de cálculo de custos que mostra as variáveis relevantes necessárias para ser chamado de “sistema”.

Investigação, Implicações Práticas e Sociais: a pandemia gerada pela COVID-19 foi um fator limitante para chegar a este grupo de hotéis e provocou o encerramento de estabelecimentos e a cessação de atividades na maioria das empresas de alojamento. O grupo de pesquisa mitigou esse fato, convocando um grupo de 17 pessoas para um grupo focal, como especialistas, validando-os através de sua experiência de trabalho, já que ocuparam cargos em hotéis como contadores, gerentes de custos e controladores.

Originalidade/Valor: Foi utilizada uma amostra de 43,3% dos hotéis de quatro estrelas da cidade de Bogotá D.C., onde foram aplicados instrumentos para apresentar os resultados que foram analisados com matrizes de análise de contexto.

Palavras-chave: Custos Hoteleiros, Sistemas de Custos, Custos Hoteleiros, Custos de Hospedagem.

COSTOS DEL HOTEL FRENTE AL SISTEMA DE COSTES CONTABLES

RESUMEN

Objetivo: Este estudio contrasta el proceso de cálculo de costes aplicado en hoteles de cuatro estrellas de Bogotá con los sistemas tradicionales de cálculo de costes identificados y utilizados en procesos de formación académica.

Marco Teórico: A partir de las diferentes definiciones de costes, siempre se hace referencia a los gastos de capital necesarios en la empresa, directamente relacionados con el producto o bien producido, que deben ser fácilmente identificables y también recuperables en el momento de la venta de un producto. En este momento, es importante aclarar que el término “coste” se entiende como medida del consumo de recursos relacionados con la demanda de trabajo y las actividades que deben realizarse, ya que el “gasto” es una capacidad medida de consumo relacionada con el consumo para realizar el trabajo, actividad y/o proceso (Mejía y Salazar, 2015, pág. 51). En un contexto similar, Rodríguez (2008) se refiere a gastos como el flujo de caja dentro de un hotel relacionado con los departamentos de ventas y administración, y apoya la relación de costo para la fabricación del producto.

Diseño/Metodología/Enfoque: El enfoque del proceso de investigación fue mixto, dada la combinación de datos cuantitativos recogidos, así como el análisis de opiniones, hechos y contrastes obtenidos en el proceso de recolección de información que constituyen notas cualitativas sobre las últimas experiencias vividas por el grupo de especialistas en el desarrollo de sus funciones dentro de los hoteles. Las variables que se muestran en la figura 3 estuvieron presentes en este proceso de recopilación y evaluación de la información.

Hallazgos: Dentro de los resultados presentados, un sistema de cálculo de costes se diferencia de un proceso de cálculo de costes que muestra las variables pertinentes que se necesitan para denominarse “sistema”.

Investigación, Implicaciones Prácticas y Sociales: la pandemia generada por el COVID-19 fue un factor limitante para llegar a este grupo de hoteles y causó el cierre de establecimientos y el cese de actividades en la mayoría de las empresas inmobiliarias. El grupo de investigación mitigó este hecho, convocando a un grupo de 17 personas a un grupo focal, como especialistas, validándolos a través de su experiencia laboral, ya que ocupaban puestos en hoteles como contadores, gestores de costos y controladores.

Originalidad/Valor: Se utilizó una muestra del 43,3% de los hoteles de cuatro estrellas de Bogotá D.C., donde se aplicaron instrumentos para presentar los resultados analizados con matrices de análisis de contexto.

Palabras clave: Hoteles, Sistemas de Coste, Hoteles, Costos de Alojamiento.

INTRODUCTION

From the different definitions of cost, reference is always made to the necessary capital expenditures in the company, directly associated with the product or good that is produced, which must be easily identifiable and must also be recoverable at the time of sale of a product. At this point it is important to clarify that the term “cost” is understood as a measure of the consumption of resources related to the demand of the work and activities to be performed, while “expense” is a measure of consumption related to the capacity provided to perform the work, activity and/or process (Mejía & Salazar, 2015, p. 51). In a similar context, Rodriguez (2008) refers to expenditure as the cash outflow within a hotel related to sales and administration departments, and supports the relationship of the cost for manufacturing the product.

Indeed, this is one of the main differentiating factors in the hotel sector, since whenever reference is made to cost, reference is made to production, and production is understood as tangible goods, whereas in the hotel sector, reference is made to “servuction”, which can be defined as the process of elaboration of a service, that is, the entire organization of physical and human elements in the client/company relationship. According to Castelblanco (2019), the hotel industry is a service-based business, or servuction, which makes its processes flexible in order to attract more customers and thus increase the business's revenue. Depending on the characteristics of the hotel and the services offered, the accounting of some activities and/or products become costly, consolidating or omitting relevant financial information. That is why this research aims to compare the cost systems currently found in accounting theory versus the model applied in the hotel sector, and its relevance in the operation.

One of the main differences with a traditional costing scheme lies in the fact that while normal costs are based on the elements that compose them, such as labor, raw materials and indirect manufacturing costs, servuction is based on the search for customer satisfaction, physical support and frontline personnel. This is one of the great conceptual conflicts that are evident between the theory and application of costs in the hotel industry, which is why, in a first approach, similarities are sought with traditional costs, due to the fact that in the hotel industry the cost is handled only for food and beverages as “secondary” products since they present tangential similarities that allow the association of their components with the three basic elements of cost; however, the main service of the lodging industry is apparently outside the cost system.

Therefore, the research aims to contrast the costing process applied in four-star hotels in Bogota, based on existing theoretical systems. In a first approach, the operation of the lodging business is summarized, and then a brief analysis of the different cost systems applicable to the companies is presented from the theoretical point of view, as well as a description of the application or determination of the costs applied in the hotels that are part of the research.

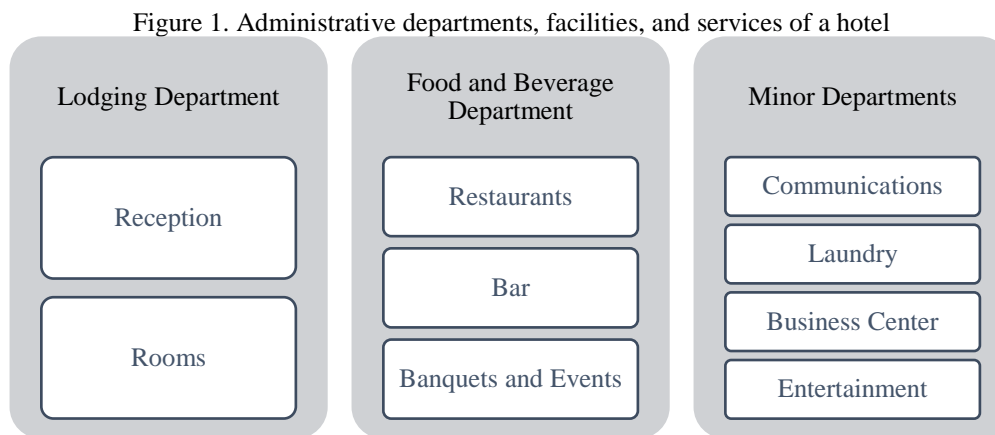
This is an exploratory study that seeks to identify potential relationships between the variables proposed, based on information collected from a representative sample of experts and hotels in the city of Bogotá D.C., where different instruments were applied to obtain data that were later analyzed in a weighted SWOT and projected to a MEFI-MEFE matrix that allows establishing a correlation between the traditional cost systems and the cost models applied in the sector.

Therefore, it is important to compare the information found in the hotel production sector with the existing theory in order to generate new sources of knowledge on the similarities or differences between these variables, which will allow the development of more adequate academic schemes that are truly applied to the production sector. In addition to the above, an answer to the questions of this study will generate an opportunity for the academic institution and the productive sector to get closer, with the purpose of testing the existing theoretical application in a productive environment such as the hotel sector.

In Colombia, the tourism sector has an important participation in the economy, and within this large sector is the hotel industry that offers a variety of intangible and perishable services to its guests, which vary according to the categorization of its facilities, geographic location, seasonality, among others. According to the Hotel and Tourism Association of Colombia (Cotelco) in 2012, based on a study conducted by the entity between 2011 and 2012, the predominant tourist lodging establishments in Colombia are small in size, i.e., hotels with less than 50 rooms, which constitute 66% of the offer. At the same time, 65% of the country's hotel establishments are operated directly by their owners, which means that although there is a presence of establishments that are part of international hotel chains, the predominant hotel industry is national.

Additionally, the main objective of a hotel is the sale of room stays, however, other services such as food and beverage, laundry, transportation, wellness and recreation, to name a few, are offered around this business, as indicated by Walker (2015). Generally, the revenues from these services are related to a department or cost center that helps to identify revenues and

control expenses by area. Figure 1 shows the administrative departments, facilities, and services that constitute a hotel.



Source: Paredes & León (2021).

According to Paredes and León (2021), the lodging department consists of the lodging service, the food and beverage department refers to the transformation of raw materials of edible products, the minor departments are mostly outsourced where the hotel has an intermediary figure, and there are also other departments that can be operated directly by the establishment, but that do not represent a large part of the revenue.

Table 1. Composition of hotel revenues in the period 2008-2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Rooms	63,60%	63,6%	63,6%	66,20%	66,60%	63,1%	59,50%	63,25%	61,80%	64,84%
Food and Beverages	29,40%	29,4%	29,4%	28,10%	28,00%	31,3%	34,60%	26,58%	28,91%	30,29%
Minor Departments	3,30%	3,3%	3,3%	5,70%	5,40%	4,6%	3,80%	4,83%	6,61%	1,93%
Other revenues	3,70%	3,7%	3,7%	0,00%	0,00%	1,1%	2,10%	5,34%	2,68%	2,94%

Source: Own elaboration.

It is evident that the *raison d'être* of these establishments is lodging; however, the hotel company should be understood as a business unit in which the service, industrial and commercial activities that correspond to its own departments converge (Baez Casillas, 2009)

Having made a profile of the hotel industry from the operation, from the essence of its corporate purpose, it now corresponds to join it with financial management; for this, Scheel Mayenberger (2017) presents the Information System for Operational Control and Financial Management, known as SICO. The structure of this system goes through the guest cycle, where the control process in sales, purchases, expenses and inventories is emphasized; however, it is

interesting to note the following appreciation made by Paredes & León (2017), regarding the application of SICO in the hotel sector.

It is clear that all hotel departments work together to satisfy customer needs, generate customer loyalty and therefore increase revenues, but the causal relationship in accounting indicates that this revenue corresponds to an associated cost, so it is now necessary to validate the existence or not of this cost of sales, its accounting management in the cost systems currently used in hotel establishments, as well as to determine which services are costed, and the methods or systems used for this purpose.

THEORETICAL FRAMEWORK

Hotel Cost

A hotel cost is the value given to a consumption of production factors within a hotel where it provides a service as an economic activity (Perez et al., 2016; Cantos et al., 2020). Likewise, costs are an information system responsible for the accumulation and analysis of relevant information for internal use, which managers use in the planning, control and evaluation of the hotel (Paredes, 2017; Arrollo et al., 2020). However, the global hotel industry has demanded cost changes due to its progress and improvement in the sector (Akbar et al., 2018; Iranmanesh et al., 2022).

However, hotel companies have everything organized that is why, with the knowledge, skills and tool depend on the costs applied in the sector (Haro et al., 2014; Chang et al., 2019). In fact, it is very important economics in relation to hotel costs (Alzboun et al., 2016; Robin et al., 2016; Ferreira et al., 2019). Because of the above, the hotel industry is profitable with low long-term investment in assets and in many cases production costs are even recorded empirically, considering that hotel costs are a very useful tool (Suarez, 2019; Mayorga et al., 2020; Peng et al., 2020).

However, the review of costs reveals few theoretical and empirical contributions in the hotel business context. Also, hotel research uses financial and occupancy indicators as cost indicators applied in the hotel sector (Chen, 2007; Alberca, 2013; Vujnović et al., 2021). Therefore, keeping quality costs in the hotel industry under systematic control constitutes a strategic decision with a strong social connotation. However, costs are fundamental in hotel facilities having economic results (Salem et al, 2020; Herrera et al., 2021).

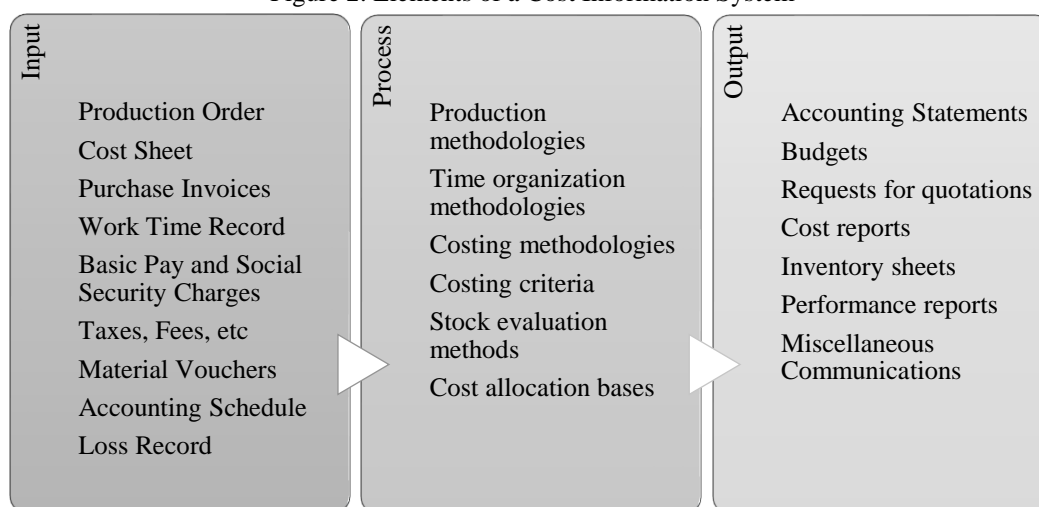
Traditional Costing Systems

An example of this thinking is represented by Saez Torrecilla (1997) who in his article “The Conventional Cost Systems and the ABC Method: Comparative Analysis” mentions historical, standard, full and variable costs as cost models. More recently, Rodriguez (2008) and Torres (2010) in their books, talk about standard costing and actual costing as cost models; but it is precisely in this document that the authors are interested in addressing the cost systems and not the methodologies or methods for calculating a cost in the different industries.

The traditional costing system is based on a long planning horizon and is subject to a number of constraints. They have also been extensively modified and updated, leading to more advanced ones (koltsakli et al., 2018). In addition, some studies estimate traditional costing systems for particular storage cost assumptions (Ziegler et al., 2019). Similarly, there are certain criteria for analyzing and implementing the system having a brief description of the development of optimization methods, reliability indices and costing analysis methods (Khan et al., 2018).

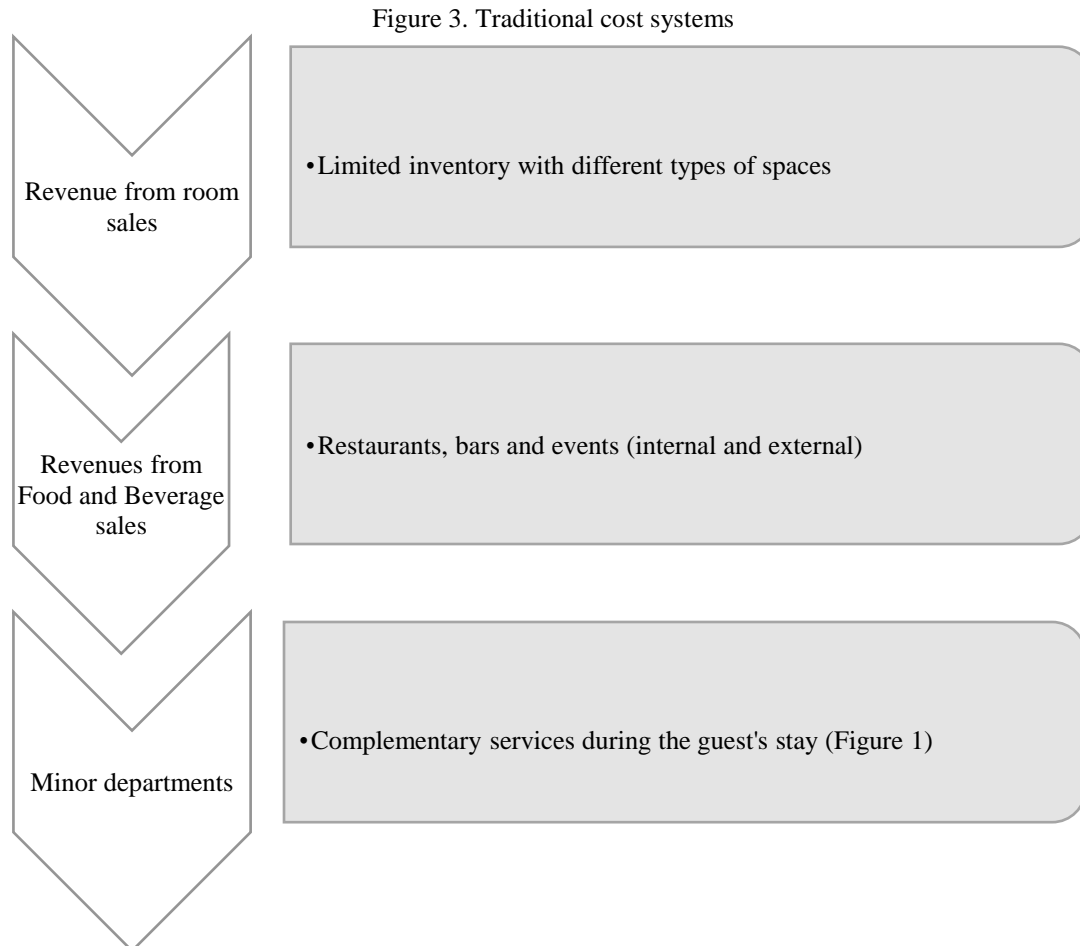
It is clear that the authors agree on the purpose of the system, which is to facilitate decision making in the company, contribute to optimize resources and generate processes or production standards. But Arenas (2014) proposes an outline of the cost system showing the different elements that make up each phase of the process. Figure 2 shows how the system model proposed by ISO (based on inputs, process and output) is integrated with the elements and processes necessary for the costing of any activity, product or service.

Figure 2. Elements of a Cost Information System



Source: Arenas (2014).

Based on this contribution by Arenas, which is very complete and integrates several factors, the traditional cost systems are contrasted by different authors, mostly from a management accounting point of view.



Source: Own elaboration.

These points, together with those that comply with an organized systemic scheme of input, process and output, which provide the necessary integrity, confidence and facilitate decision making, were the determining factors to establish the costing systems to be presented in this document.

Process Costing System

Different from the work order system, process costing allows to work when there are products similar to each other.

The process costing system allows production costs to be accumulated by department or cost center, and is applicable to homogeneous service providers, of a continuous and

uninterrupted nature, where it is difficult to differentiate one service unit from the others (Choy Zevallos, 2012, p. 12). It has a systematic overview of the latest knowledge on process costing system (Li et al., 2020). In addition, the process costing system is more sensitive to reductions in long-term inventory costs than to reductions in corresponding costs (Dowling et al., 2020).

It is not necessary to contain in each process the elements of the cost since it varies according to the process or production progress, so the cost is obtained from the inventory account. According to Rodriguez (2008), the cost “is obtained through the liquidation in each process or production department according to its degree of progress, to start the next process, and so on, until its completion and delivery for sale” (p. 81).

One of the products that in the hotel sector would be associated in the first instance to the process costing system is the sale of accommodation, since in that department, products of similar characteristics are sold, however, there is no output to another department since everything happens in the rooms department, from the customer's reservation, the preparation (arrangement) of the room, the reception of the guest and subsequent departure (check out).

ABC Activity-Based Costing System

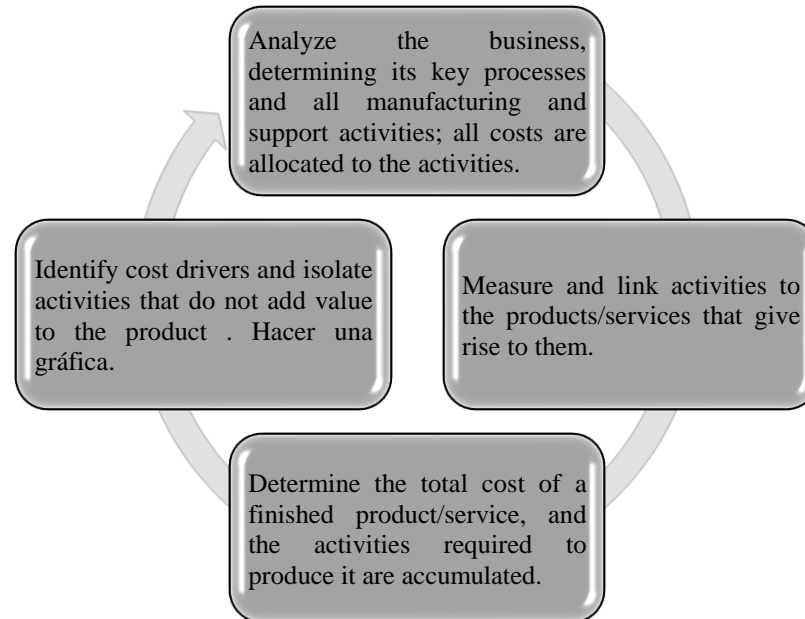
The activity-based costing system considers all the resources required for the production of a product, including the activities required in that process. A more precise definition is stated by Torres (2010), for whom the “activity-based costing looks for the direct relationship between the resource consumption of each activity required by a product, service or object of cost” (p. 17).

Activity-based costing facilitates alignment with the organizational strategy and the optimization of the processes carried out. In this sense, “it consists of focusing on the activities performed by the company, in a horizontal view and following the flow of processes” (Arroyo et al., 2020, p. 369). The “secret” to good costing is to consider the apportionment of indirect costs among the products or services produced and that the objective of this costing is to quantify the relevant costs (Calleja, 2013).

Using this costing system is time consuming and that is why the people or areas in charge of this task prefer to apportion indirect costs equally among the products produced.

At present, there are several documents that show how the ABC costing system could be applied in hotels; however, Calleja (2013) and other authors suggest the following steps to be carried out:

Figure 4. Steps to apply the ABC costing system in hotels



Source: Own elaboration.

Although it is true that this system is not something new, since it dates back to the 80's, when it was promoted by Cooper Robin and Kaplan Robert, its implementation has been gradual and some industries are reluctant to implement it because they do not have solid information that allows an adequate structuring of the system.

It is an interesting system to apply in the hotel sector, since “activity-based costing is recommended for businesses that have very different products among them, with high levels of automation and in which the indirect cost occupies an important proportion within the three cost elements” (Torres, 2010, p. 17); in addition to this, the author suggests the following:

Paragraph 19 of IAS 2 “Inventories” establishes that in the event that a service provider has inventories, it shall measure them at the costs involved in their production. These costs are mainly composed of labor and other costs of personnel directly involved in the provision of the service, including supervision personnel and other attributable indirect costs (Choy Zevallos, 2012, p. 11).

Costing Methods

As mentioned at the beginning, some authors have described in their papers costing methods that are easily confused with systems. This does not mean that they are not susceptible to be mentioned, but before doing so, it is pertinent to differentiate the conception of the method and system used in this paper.

The method should be understood as a special form of a procedure, the order in which it is executed. According to Gordillo Forero (2007), “the method is considered as the way to obtain an end in an orderly manner, from a set of rules” (p. 123). The system on the contrary is understood as the “set of elements or formation of internal connections whose interaction produces the appearance of new qualities, not inherent to the isolated components that constitute the system” (Estévez Torres, 2016, p. 8). While the system integrates, the method can operate in isolation, and this is the reason why these concepts are so easily confused. So, costing methods are the techniques used to obtain the cost of a product, while the costing system does not have an established process.

Basically, three methods can be identified in this group:

Standard Costing: Rodriguez (2008) considers that standard costing is a system and not a method and indicates that both the cost elements and the information must be predetermined and available in order to generate the production order.

Normal costing: “In the normal costing system, raw material and labor are recorded with actual data and an assignation rate is calculated to distribute the indirect cost to production” (Torres, 2010, p. 15). A budget of consumption and how to distribute indirect costs in production must be made. None of the three cases above describes a process to be developed; however, a relationship between these methods and some of the systems already described is evident, so it is possible to infer that they may be part of the conformation of a system, even though at first sight they may be understood as ways of classifying costs.

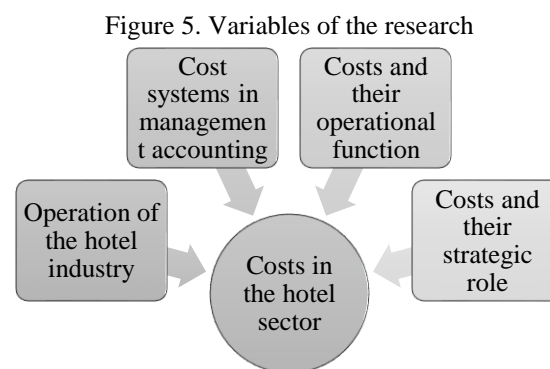
METHODOLOGY

Paredes Murcia and León Cárdenas (2021) show that in Bogotá D.C. (Colombia) there is a population of 75 hotels categorized as four stars under the parameters of the NTSH-006 standard. On this data and respecting the parameters of the simple sampling method of finite populations, an initial sample of 32 subjects is established.

The pandemic generated by Covid-19 was a limiting factor for reaching this group of hotels and caused the closure of establishments and the cessation of operations in most of the lodging companies. The research group mitigated this fact by convening a group of 17 people to a focus group, as experts, validating them through their work experience since they have held positions in hotels as accountants, cost managers and controllers.

At the end of the exercise, a survey was administered to 20 representatives of hotels in the initial category, while the 17 experts were summoned to two focus group sessions, not face-to-face but with a synchronous connection.

The focus of the research process was mixed, given the combination of quantitative data collected, as well as the analysis of opinions, facts and contrasts obtained in the process of collecting information that constitute qualitative notes on the latest experiences lived by the group of experts in the development of their functions within the hotels. The variables shown in Figure 5 were present in this information gathering and evaluation process.



Source: Own elaboration.

In the academy there are currently some studies on the application of costs or cost systems in the hotel sector, however, so far there is no study that contrasts the way costs are operated in these establishments with the systems already recognized or established as such; for such reason this study is exploratory, according to the contributions of Hernández Sampieri et al. (2014), who state that:

Exploratory studies rarely constitute an end in themselves. They generally determine trends, identify areas, environments, contexts and situations of study, potential relationships between variables [...] These inquiries are characterized by being more flexible in their method in comparison with descriptive, correlational or explanatory studies (p. 91).

The analysis of the data collected was carried out in several phases. First, quantitative information was collected from the surveyed establishments, with the aim of characterizing the subjects investigated, since this information also contributes to a simple analysis of variables.

In a second phase, the characteristics of the different costing systems were contrasted against the costing process identified in situ (including those expressed by the experts), thus outlining the praxis around the existing theory reflecting the position and perception of hotel costs for the group of participating experts.

Finally, the qualitative data were weighted and the quantitative data were added in factor evaluation matrices, considering both the internal factors (specific to the establishments in the way costs work) and the external factors, which in this case refer to the existing systems recognized in management accounting. This analysis was consolidated in a SWOT matrix, which gives way to the internal factors evaluation matrix (IFEM), whose purpose is to measure “whether the internal forces of the organization as a whole are favorable or unfavorable, or whether the internal environment of the same (sic) is favorable or unfavorable” (Ponce Talancón, 2006, p. 5), and the external factors evaluation matrix (EFEM), according to which, “the simplest way to evaluate whether the forces of the external environment are favorable or unfavorable for an organization is to compare the result of the total weighted weight of opportunities as well as threats” (p. 7).

For the construction of the matrices, the same steps proposed by Paredes and León in a similar study are used, which are detailed in Table 2; as on that occasion, the value determined for each of the factors was established in the focus group with the experts in the area. This information is represented at the end with a sphere graph that allows to locate three possible scenarios: grow, retain or harvest.

Table 2. Steps for the elaboration of IFEM-EFEM matrices

Paso	Internal Factors Evaluation Matrix (IFEM)	External Factors Evaluation Matrix (EFEM)
1	Make a list of the organization's strengths and weaknesses.	Make a list of the company's external opportunities and threats.
2	Assign a weight between 0.0 (not important) and 1.0 (very important), the weight given to each factor expresses its relative importance, and the total of all weights together should add up to 1.0.	Assign a relative weight in a range from zero (irrelevant) to 1.0 (very important), the weight shows the relative importance of each factor, noting that opportunities should have more weight than threats, being necessary to establish that the sum of all opportunities and threats should add up to 1.0.
3	Assign a rating between 1 and 4, in order of importance, where 1 is irrelevant and 4 is evaluated as very important.	Weigh with a rating from 1 to 4 for each of the factors considered determinants of success, in order to assess whether the company's current strategies are really effective, 4 being a superior response, 3 being an above average response, 2 being an average response and 1 being a poor response.
4	Multiply the weighting of each factor for its corresponding rating to determine a weighted rating for each factor, either strength or weakness.	Multiply the weight of each factor by its rating to obtain a weighted rating.
5	Sum the weighted ratings for each factor to determine the weighted total for the organization as a whole.	Add the weighted scores for each variable to determine the total weighted score for the organization under study.

Paso	Internal Factors Evaluation Matrix (IFEM)	External Factors Evaluation Matrix (EFEM)
Analysis	what is relevant is to compare the total weighted weight of strengths against the total weighted weight of weaknesses, determining whether the internal forces of the organization as a whole are favorable or unfavorable, or whether the internal environment of the organization is favorable or unfavorable.	the key to the External Factors Evaluation Matrix is that the value of the total weighted weight of the opportunities is greater than the total weighted weight of the threats.

Source: Paredes Murcia & León Cárdenas (2021).

DISCUSSION AND RESULTS

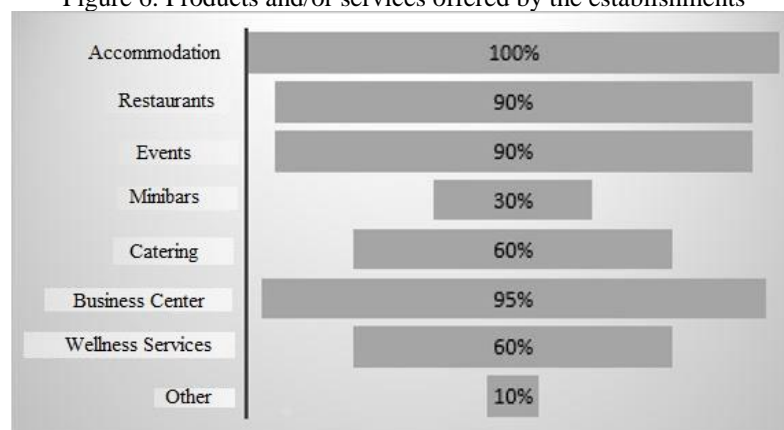
The analysis of the results is presented in two parts, firstly a simple direct analysis of the information collected, and secondly a weighting of the descriptors analyzed according to the construction of the IFEM-EFEM matrix.

Direct Analysis

Of the sample, 87% of the hotels are categorized as 4-star, 8% as 5-star and 5% as 3-star. It should be clarified that since experts were interviewed, the 13% that do not correspond to 4-star hotels are answers given according to the category of their last or current place of work, but their experience in 4-star hotels was validated in the interview (subject of the study); In the same way, the profile of the interviewee was validated from their profession, obtaining 71% of professionals in different administrative branches, 16% technicians or technologists in the tourism and administrative sector and 13% empirical or in the process of training.

Regarding the products offered, all the establishments provide lodging services as their main activity, as shown in Figure 4, and it should be remembered that this concept generates 63.6% of the average income for this type of industry.

Figure 6. Products and/or services offered by the establishments



Source: Own elaboration.

Although the business center is the second most representative product, it is not a strong revenue generator, with less than 4.28% average in the 10 years of analysis presented by Cotelco (Table 1); however, the sale of food and beverages in 90% of the hotels, consolidates this second line of income of 29.6% presented.

Despite the relevance of lodging as the main product and source of income in the establishments, only 29.5% of the establishments have some type of costing process in this department; in contrast, 95% of the establishments apply costing models, systems or processes in the restaurant and events areas and 80% to the catering services offered, all three sections belonging to the food and beverage department. Table 3 shows more clearly this comparison, which shows a shortcoming or opportunity for improvement in the reality of the relationship between revenue and cost in hotel establishments.

Table 3. Relationship of revenue and cost processes to hotel department

	% Of hotels with the service	% Of revenues represented	% Application of cost processes
Rooms	100%	64%	30%
Food and Beverages	80%	29,6%	80%

Source: Own elaboration.

Of these costing processes applied by the establishments to the different products, none of the hotels recognize all the costs generated in the provision or production of their offerings in an account 6 or 7 according to the Unified Chart of Accounts (PUC); only some of them recognize the cost of food and beverages as a cost of sales of the operation but do not calculate in the financial statements the cost of rooms, wellness services and other products or services offered by the hotels.

Regarding the person responsible for the cost process in the establishments, 56.8% have a person exclusively responsible for these tasks and is called cost auditor, cost analyst, cost manager, among other names. In 32.4% of the cases, this task is assumed by the comptroller and/or accountant of the organization together with the other functions of his position. Only 5.41% of the cost tasks are assumed by the general manager; however, in this particular case it is due to the pandemic contingency, since there were personnel cutbacks due to this situation.

From the strategic point of view, the aim is to establish whether the information gathered on costs allows the company to establish the sales value of its product. Again, for 100% of the sections belonging to the food and beverage department, this is a fundamental factor, but only 27% use this information for this purpose in the rooms department.

Descriptor Analysis

At the time of designing the data collection instrument, it was based on postulates (descriptors) associated with two scenarios (internal and external) that evaluate different factors of incidence in the facility, as shown in Table 4.

Table 4. Factors analyzed

Internal Factors (methods)	External Factors (systems)
Coverage	Work order costing
Coverage and responsible	Process costing
Representativeness in planning	Absorption costing
Representation in administrative management	ABC Costing
Strategic representativeness	Other costing systems
Representativeness in internal control	

Source: Own elaboration.

With this information, a general SWOT is initially constructed, summarized in Table 5, which will later be weighted in evaluation matrices. It is pertinent to clarify that the total number of descriptors evaluated and averaged was 59, which is why they are not shown individually in this document. The percentage results are the product of an average of the percentages evaluated by the research subjects in each question asked.

Table 5. SWOT analysis matrix

Strengths	Opportunities
14 descriptors with strengths, representing an average score of 91.82%.	10 descriptors with evident strengths, with an average of 84.75%.
Weaknesses	Threats
13 descriptors with weaknesses, which on average represent a score of 29.5%.	22 descriptors resulting as threats represent 22.27%.

Source: Own elaboration.

The presence of threats is very strong in the results obtained, remember that the external factors (opportunities and threats) are associated with the evaluation of the costing systems in the establishments, while the internal factors (strengths and weaknesses) are associated with the current methods developed in the companies.

In this first analysis, it is evident that the process developed internally by the hotels is in line with the establishment's requirements, since there is a 91.82% favorability against 29.5% of weaknesses. However, if not only the initial percentages but also the number of descriptors

associated with each category are considered, it is disturbing to see that the strengths are greater than the weaknesses by 51.9%, against 48.1%, which is a very short margin indeed.

When reviewing the opportunities and threats, the panorama is a little stronger in the quantities found, since the 22 threat descriptors found are equivalent to 68.8% compared to 31.2% of opportunities, which indicates an evident misalignment with the traditional costing systems that are being evaluated as external factors.

The SWOT analysis provided an overall view of the descriptors in terms of the cost systems and what is applied within each facility, and it is now time to analyze these descriptors grouped into the originally established scenarios, internal and external.

The first analysis is of the internal factors. For the weighting, the previously described procedure is followed step by step in Table 2, considering the following percentage scale.

- ✓ Greater weakness (1): for descriptors whose instrument scores are between 0% and 39.9%.
- ✓ Lower weakness (2): for descriptors whose instrument scores are between 40% and 59.9%.
- ✓ Lower strength (3): for descriptors whose instrument scores are between 60% and 79.9%.
- ✓ Greater strength (2): for descriptors whose instrument scores are above 80%.

Tables 6 and 7 show the results of the analysis of internal IFEM and external EFEM factors.

Table 6. Internal factors evaluation matrix – IFEM

Strengths			
Factor	Weight	Classification	Scoring
Coverage and responsible	0.10	2.75	0.28
Representation in administrative management	0.23	2.40	0.54
Strategic representativeness	0.23	4.00	0.90
Representativeness in internal control	0.23	2.63	0.59
Sub-total strengths	0.775		2.31
Debilidades			
Factor	Weight	Classification	Scoring
Representativeness in planning	0.23	2.00	0.45
Sub-total weaknesses	0.225		0.45
Total ifem	1.00		2.76

Source: Own elaboration.

The individual classification result is the average of the descriptors associated with the factor being evaluated.

The 2.76 obtained as the final score denotes that there are more strengths than weaknesses in the costing process developed in the establishments subject to the research. The greatest strength is concentrated in the strategic representativeness that the established procedures generate in the hotels; however, its greatest weakness is in the participation of the activities that are developed with the planning process: the coverage and those responsible for the establishments are well defined, they are susceptible to improvement, but the score obtained is acceptable, as well as the antagonism of these activities in the internal control of the establishments.

Table 7. External Factors Evaluation Matrix – EFEM

Opportunities			
System	Weight	Classification	Scoring
Work Order Costing	0.25	2.23	0.56
Absorption costing	0.25	2.00	0.50
Sub-total opportunities	0.50		1.06

Threats			
System	Weight	Classification	Scoring
Abc costing	0.25	1.60	0.40
Process costing	0.25	1.80	0.40
Sub-total threats	0.50		0.80
Total efem	1.00		1.86

Source: Own elaboration.

It should be remembered that when referring to the weighting made by EFEM, the different cost systems identified in the state of the art are being considered. For this reason, the weight of the systems is the same for all of them, in order to avoid generating any inclination at the time of establishing the results.

The result of 1.86 (which, although not in the lowest category), does not allow to establish a specific identity of the costing process developed in the facilities investigated with the costing systems analyzed in this document.

At an individual level, it is necessary to state that the closest approach to the components of a costing system is made with the work order and absorption costing system. Curiously, the lowest score established is with the ABC costing system, and the expression “curiously” is given because it is in this costing system where studies and applications have been tried to be generated in previous researches.

IFEM, EFEM is a context analysis tool whose individual analysis of the matrices allows to obtain a general idea of the company's position in the two environments, the objective now is to combine both results and present them in a graphical form for having a clearer idea of the action or actions to be taken based on the information obtained. The Figure contains 9 quadrants as shown in Figure 5, where the location of the bubble in quadrants I, II and IV implies that the company should grow and build on the evaluated context; quadrants III, V and VII suggest retaining and maintaining, working on the same concepts and principles that are being developed; and quadrants VI, VIII and IX guide the analysis to disinvest and abandon the evaluated context.

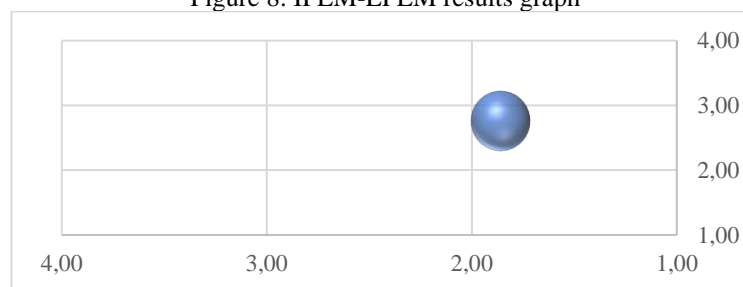
Figure 7. IFEM-EFEM graphic quadrants

I	II	III
IV	V	VI
VII	VIII	IX

Source: Own elaboration.

In this case, the context evaluated has to do with the relevance of the traditional cost systems as an external factor, versus the cost model or scheme currently used by the different hotels as an internal element; this contrast of scores is shown in Figure 8.

Figure 8. IFEM-EFEM results graph



Source: Own elaboration.

The location of the bubble is clearly oriented to quadrant VI, where the healthy decision is to abandon the evaluated context. However, it cannot be left aside that there is participation of quadrants III and V, whose orientation is to maintain, so the analysis should be a little broader and not be limited to a dichotomous response.

In this particular case, the idea that must be abandoned is that with the conditions that currently prevail in the companies of this sector, the idea of relating hotel costs to traditional systems is not the same.

CONCLUSIONS

The hotel industry presents a variety of products in its offer to customers. Although at first glance it is located in the sector of intangible services such as lodging, there are also other types of consumable goods such as food and beverages that are part of the portfolio of the establishments and in no way should be costed in the same way. In fact, it is evident that the hotel establishments do not have a costing system associated with their products or services, and on the contrary, they use costing methods to obtain a final result.

An interesting finding in this process is to determine that the costing method used in the lodging sector does not cost for its main product, which is the sale of rooms. On the contrary, when referring to the costing process, the protagonist was the secondary product, which is the sale of food and beverages, ignoring the costing for the department that generates more than 56% of the company's income.

In the costing processes found in the research subjects, it was observed that although there is a person in charge or delegated in the costing scheme, it is not related to any system as such and that, on the contrary, a methodology of its own is proposed where the closest is the absorption cost model and it is done by difference at the end of the period, but this model only applies to the food and beverage department.

To choose the appropriate costing system, “the organizational structure of the company, the nature of the manufacturing process and the type of cost information required by the different levels of management must be understood” (Sinisterra, 2006, pg. 34). And, of the traditional systems that can be most identified with the operation of lodging establishments, the ABC costing system and process costing were found; however, it is necessary to remember that the research subjects in the interviews conducted stated the high costs for their operation in the event of implementing 100% of any of these options.

In addition, the costing process developed in the establishments investigated is in contrast to NIC 2 for service companies,

Paragraph 19 of NIC 2 “Inventories” establishes that in the event that a service provider has inventories, it shall measure them at the costs involved in their production. These costs

consist mainly of labor and other costs of personnel directly involved in the provision of the service, including supervisory personnel and other indirect costs attributable to them.

Labor and other costs related to sales and general administrative personnel are not included in the cost of inventories but are expensed in the period in which they are incurred. A service provider's inventory costs will not include profit margins or non-attributable indirect costs that are often taken into account in the prices invoiced by the service provider (Choy Zevallos, 2012, p. 11). As evidenced in the process, these labor costs and other personnel costs, in addition to indirect costs, are accounted for directly in the expense accounts, thus following the same behavior as the selling expenses mentioned in the NIC.

Finally, there remains a topic to reflect on, inviting future development and deepening of this topic. It is about the training process of costs for people working in this particular industry, because (and from the research team's own experience) the training received in the accounting area, specifically in costs, is related to the systems outlined in this paper, but from the educational field there is still no reference that takes the hotel costing process to the classroom from the praxis, theorizing and giving scientific and academic robustness to this topic, being an excellent opportunity for development and union of the productive and academic sector.

REFERENCES

- Alzboun, N.; Khawaldah, H.; Backman, K. & Moore, D. W. (2016) "The effect of sustainability practices on financial leakage in the hotel industry in Jordan". *Journal of Hospitality and Tourism Management* 27: 18–26.
- Alberca, P., & Parte, L. (2013). Evaluación de la eficiencia y la productividad en el sector hotelero español: un análisis regional. *Investigaciones Europeas de Dirección y Economía de la Empresa*, 19(2), 102-111
- Akbar, Y. H., & Tracogna, A. (2018). The sharing economy and the future of the hotel industry: Transaction cost theory and platform economics. *International Journal of Hospitality Management*, 71, 91-101.
- Arenas, N. E. (2014). *Diseño de un sistema de información de costos: aplicación a un apart hotel*. Mendoza: Universidad Nacional de Cuyo. Facultad de Ciencias Económicas. Obtenido de <https://bdigital.uncu.edu.ar/6708>.
- Arroyo, F., Santamaría, Á. E., & Mendoza, A. (2020). Sistema de costos basado en actividades – el caso del Hotel Panorama del municipio de Sincelejo, Colombia. *Revista Espacios Vol. 41 (47)*, 367-381. doi:10.48082/espacios-a20v41n47p26
- Baez Casillas, S. (2009). *Hotelería*. Ciudad de México : Patria S.A.

- Chang, Y. W., Hsu, P. Y., & Lan, Y. C. (2019). Cooperation and competition between online travel agencies and hotels. *Tourism Management*, 71, 187-196.
- Chen, (2008). Aplicación del enfoque de frontera estocástica para medir la eficiencia de la gestión hotelera en Taiwán. *Investigaciones Europeas de Dirección y Economía de la Empresa*, 28 (3) (2007) , pp. 696 – 702
- Choy Zevallos, E. E. (2012). El Dilema De Los Costos En Las Empresas De Servicios. *Quipukamayoc-Revista de la Facultad de Ciencias Contables. Vol. 20 N.º 37*, 7-14.
- Dowling, J. A., Rinaldi, K. Z., Ruggles, T. H., Davis, S. J., Yuan, M., Tong, F., ... & Caldeira, K. (2020). Role of long-duration energy storage in variable renewable electricity systems. *Joule*, 4(9), 1907-1928.
- Estévez Torres, Z. E. (2016). Estudio crítico de la Teoría de Sistemas y su aplicación en empresas seleccionadas. *El Observatorio de la Economía Latinoamericana*, 1-18. Obtenido de <https://www.researchgate.net/publication/332240730>
- Ferreira, T. A., Borges Ferreira, G., Johann, J., & Flor Bertolini, G. R. (2019). Hotel sustentable: Viabilidad económica de su implementación a partir de la percepción de los consumidores. *Estudios y perspectivas en turismo*, 28(2), 447-464.
- Garcia, J. (2020). *Contabilidad de costos un enfoque en direccion*. Ciudad de Mexico: Mc Graw Hill.
- Haro, C., Gândara, JM, Rastrollo, M. Á., & Mondo, T. (2014). La internacionalización en las cadenas hoteleras. Una revisión teórica. *Estudios y Perspectivas en Turismo* , 23 (3), 626-644.
- Herrera Cárdenas, P. L., & López Rodríguez, M. (2021). El turismo: la gestión de la calidad y sus costos. *Cofin Habana*, 15(2).
- Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, M. d. (2014). *Metodología de la investigación. (6.a ed.)*. México: McGraw-Hill.
- Khan, F. A., Pal, N., & Saeed, S. H. (2018). Review of solar photovoltaic and wind hybrid energy systems for sizing strategies optimization techniques and cost analysis methodologies. *Renewable and Sustainable Energy Reviews*, 92, 937-947.
- Koltsaklis, N. E., & Dagoumas, A. S. (2018). State-of-the-art generation expansion planning: A review. *Applied energy*, 230, 563-589.
- Leng, J., Liu, Q., Ye, S., Jing, J., Wang, Y., Zhang, C., ... & Chen, X. (2020). Digital twin-driven rapid reconfiguration of the automated manufacturing system via an open architecture model. *Robotics and Computer-Integrated Manufacturing*, 63, 101895.
- Li, F., Duan, J., Tian, S., Ji, H., Zhu, Y., Wei, Z., & Zhao, D. (2020). Short chain perfluoroalkyl and polyfluoroalkyl substances in cost systems: presence, impacts and treatment. *Chemical Engineering Journal*, 380, 122506.
- Mejía Argueta, C., & Higueta Salazar, C. (2015). Costo de servir como variable de decisión estratégica en el diseño de estrategias de atención a canales de mercados emergentes,. *Estudios Gerenciales, Volume 31, Issue 134*, 50-61.

- Organización Internacional de Normalización. (2015). Sistemas de gestión de la calidad — Fundamentos y vocabulario (ISO 9000:2015). Obtenido de <https://www.iso.org/obp/ui/#iso:std:iso:9000:ed-4:v1:es>
- Paredes Murcia, A., & León Cárdenas, J. M. (2017). Contabilidad y auditoría en las organizaciones hoteleras colombianas. *Revista Visión Contable* N° 15, 57-78. doi:<https://dx.doi.org/10.24142/rvc.n15a3>
- Paredes Murcia, A., & León Cárdenas, M. (2021). La Auditoría: Fuente de Información Estratégica en la Industria Hotelera. *Revista, Turismo y Sociedad*, 207-229. doi:<https://doi.org/10.18601/01207555.n28.10>
- Peng, X., Lee, S., & Lu, Z. (2020). Employees' perceived job performance, organizational identification, and pro-environmental behaviors in the hotel industry. *International Journal of Hospitality Management*, 90, 102632.
- Perez, S., & Perez, F. (2016). Planficacion financiera de las empresas: el rol de los impuestos o tributos. *Publicando*, 3(8), 563-578.
- Ponce Talancón, H. (2006). La matriz FODA: una alternativa para realizar diagnósticos y determinar estrategias de intervención en las organizaciones productivas y sociales. *Contribuciones a la Economía*, 1-16. Obtenido de <https://eco.mdp.edu.ar/cendocu/repositorio/00290.pdf>
- Robin, C. F.; Valencia, J. C.; Muñoz, G. J.; Astorga, P. S. & Martínez, D. Y. (2016) “Attitude and behavior on hotel choice in function of the perception of sustainable practices”. *Tourism & Management Studies* 12(1): 60–66.
- Rocha Valencia, LA, & Martínez Vélez, AR (2012). Utilidad de la información del costo de alojamiento para la toma de decisiones: un estudio en los hoteles de la ciudad de Medellín. *Revista Politécnica*, 8 (14), 115-123.
- Saez Torrecilla, Á. (1997). Los Sistemas de Costes Convencionales y el Método ABC: Análisis Comparativo. *Revista de Contabilidad – Spanish Accounting Review*. 01.01, 167-183.
- Salem, R., Bahadori-Jahromi, A., Mylona, A., Godfrey, P., & Cook, D. (2020). Energy performance and cost analysis for the nZEB retrofit of a typical UK hotel. *Journal of Building Engineering*, 31, 101403.
- Salehi, M., Filimonau, V., Asadzadeh, M., & Ghaderi, E. (2021). Strategies to improve energy and carbon efficiency of luxury hotels in Iran. *Sustainable Production and Consumption*, 26, 1-15.
- Scheel Mayenberger, A. (2017). *Evaluación operacional y financiera aplicada a la industria hotelera*. Bogotá D.C.: U. Externado de Colombia.
- Singjai, K., Winata, L., & Kummer, T. F. (2018). Green initiatives and their competitive advantage for the hotel industry in developing countries. *International Journal of Hospitality Management*, 75, 131-143.

Sorí, Y. A., Rodríguez, R. J. P., & González, Y. R. (2022). Procedimiento de análisis de los costos medioambientales en el hotel pullman cayo coco/environmental costs analysis procedure at the pullman cayo coco hotel. *Universidad & Ciencia*, 11(1), 171-187.

Suárez, M. M. (2019). ¿Cómo realizar una gestión de costos en el rubro hotelero para la mejor toma de decisiones?. *Inquietud Empresarial*, 19(2), 39-51.

Vujnović, N., & Dović, D. (2021). Cost-optimal energy performance calculations of a new nZEB hotel building using dynamic simulations and optimization algorithms. *Journal of Building Engineering*, 39, 102272.

Walker, J. R. (2015). *Administración de la hospitalidad*. (4a. ed.). México: Pearson Educación.

Ziegler, M. S., Mueller, J. M., Pereira, G. D., Song, J., Ferrara, M., Chiang, Y. M., & Trancik, J. E. (2019). Storage requirements and costs of shaping renewable energy toward grid decarbonization. *Joule*, 3(9), 2134-2153.