

Setting up operating indicators and ratios for independent hotels

Conceição Gomes^a, Luís Lima Santos^b, Cátia Malheiros^c and Paula Cardoso^d

^a Polytechnic Institute of Leiria, Centre of Tourism Applied Research (CITUR)
conceicao.gomes@ipleiria.pt

^b Polytechnic Institute of Leiria, Centre of Tourism Applied Research (CITUR)
llsantos@ipleiria.pt

^c Polytechnic Institute of Leiria, Centre of Tourism Applied Research (CITUR)
cmalheiros@ipleiria.pt

^d Polytechnic Institute of Leiria, Centre of Tourism Applied Research (CITUR)
paula.cardoso@ipleiria.pt

Abstract

Hospitality managers need to optimize the decision making process. Therefore, hotel chains use operating ratios and indicators for their performance evaluation. The Uniform System of Accounts on Lodging Industry (USALI) provides a range of ratios and indicators for all hotel departments in its Part III. However, this information is prepared for hotel chains, given the fact that it is used to support information processing, standardization and comparability.

Some of these ratios and indicators are used, on one hand, by public entities, and, on the other hand, to make comparisons among the hospitality performances of different countries.

The Portuguese corporate structure is composed by micro and small enterprises. This fact has directed us to build a set of suitable ratios and indicators to be used on the management accounting of micro and small independent hotels, since it is possible to adapt USALI to the independent hotels.

The research analyses the importance and the adaptability of USALI indicators and ratios in independent hotels. To accomplish the aim and objectives, the Portuguese case was analysed by conducting a survey to obtain data, which has then been submitted to a statistical analysis. The questionnaire was applied to hotels in the Leiria and Western regions (95 hotels) of the country. The sample was defined considering a percentage of independent hotels.

It was concluded that, regarding operating indicators and ratios, the most frequently used per independent hotels are: room occupancy percentage, average daily rate (ADR), revenue per available room (RevPAR) and average occupancy per room. According to the findings, a *tableau de bord* was created, to be used by small and micro independent hotels.

Keywords: USALI; independent hotels; lodging industry; ratios and indicators

1. Introduction

The lodging industry is a crucial contributor to Portuguese global tourism revenues. Similarly to other European countries, Portugal has many small independent hotels that have to compete in a global scale. In order to obtain success, hospitality managers need to optimize the decision making process. To this aim, management accounting provides useful information.

In order to evaluate the performance of a company, ratios and indicators can be used. There are several kinds of ratios: financial and operating. Financial ratios can be used by all businesses, while operating ratios are specific to a particular industry. This study is about independent hotels and it was focused on operating indicators, which concern only the lodging industry. The hotel industry has got peculiarities that make the use of operating ratios as essential.

There are several operating ratios and miscellaneous formulas. It is possible to find a different formula, according to each author, which complicates the comparison of hotels among them, because there is not any standardization. A synthesis of operating ratios was elaborated through the literature, in order to determine the most used ones and their method of calculation. The USALI allows uniformity at the level of large hotels, which can also be used in relation to small and medium hotels. It would be

convenient to resume the information in a *tableau de bord*, so that small hotels would know what to use in order to compare their information with other hotels and the industry average.

In the lodging industry some operating indicators and ratios are commonly used, namely occupancy rate, ADR and RevPAR. However, there are many other operating indicators and ratios that can be useful to measure the performance through management accounting, either in the rooms department or in the F&B department.

This research focuses on the use and importance of operating ratios in Portugal. Thus, the aim of this study is to identify the ratios and indicators that are being used and their importance for the small independent hospitality units.

This article is structured as follows: first, there is a literature review about the operating ratios and indicators. Then, the methodology used on the research is described. The last part is dedicated to a detailed analysis of research findings, the preparation of the *tableau de bord* and conclusions.

2. Literature review

The travel and tourism industry is an important sector for the Portuguese economy. Indeed, in 2016, it represents a direct contribution of 6.4% for the Gross Domestic Product (GDP) and a direct contribution of 8.1% for employment. However, as the tourism activity is multidisciplinary, its contribution goes beyond the direct effect and, if we look at the statistics, we find a total contribution of 16.6% for the GDP and a total contribution of 16.9% for employment (WTTC, 2016).

In Portugal, without considering guest houses and rural tourism establishments, 74% of the tourist lodging facilities are hotels and the 4-star hotels (34%) are the majority of this supply (INE, 2016). As the other European countries, the Portuguese hospitality sector is composed by a majority of small independent hotels. In fact, 94% of the lodging enterprises have less than 10 employees (INE, 2017). On the other hand, the hospitality chains represent an important part of the supply: Pestana and Vila Galé are Portuguese and the two biggest in terms of supply, followed by Accor Group, Tivoli and Marriott. Regarding the performance of the sector, the occupancy rate of bed reaches 50.2% in 2016 with a 2 823 619 € total revenue and a Revpar of 44.60 €.

Hospitality managers use financial indicators more frequently (Atkinson & Brander-Brown, 2000 and Haktanir & Harris, 2005, cited by Melia & Robinson, 2010) but, in their study, Sainaghi et al. (2013) conclude that it is necessary to use both kind of ratios: financial and non-financial. This need is more important when the hotel does not belong to a chain; in fact, those are more able to reach higher profitability efficiency (Chiu & Huang, 2011).

In an increasingly competitive environment, each company inserted in the hotel industry needs to constantly evaluate its performance, transversely to the organization. In this sense, the performance evaluation based on operating ratios appears to be a useful tool for day-to-day operation of companies seeking success and future expansion. Schmidgall (2011) refers that operations ratios aid hotel managers in evaluating the operating activities of a hotel.

Anderson *et al.* (1999) state that managers have been using performance indicators with the objective of attaining efficiency, like average occupancy rates and average room rates. Other indicators are revenue/wage cost, gross profit/revenue, net profit/revenue, according to Baker and Riley (1994) cited by Anderson *et al.* (1999). Wijesinghe (1993) cited by Anderson *et al.* (1999) and Chen (2009) refer breakeven room occupancy, highlighting that the indicator is accurate in its results. Kimes (1989), cited by Anderson *et al.* (1999), introduces a basic concept, Perishable Asset Revenue Management (PARM), which has the aim of finding out an optimal point between average daily rates and occupancy rates. Wassenaar and Stafford (1991), cited by Anderson *et al.* (1999), recommend a lodging index - average revenue per room (vacant or occupied).

Similarly, Chin and Barney (1995) refer some of the indicators that should be used by hotels for a best performance: room or bed occupancy, average room rate, revenue per available room, sales per employee hour worked, average spend per head and seat turnover.

More specifically, the most commonly used ratios in the studies of the operating performance of hotels are occupancy rate, ADR and RevPAR (Tuță and Micu, 2013; Sainaghi *et al.*, 2013; Hua *et al.*, 2015; Lamelas & Filipe, 2012; O'Neill & Carlback, 2011; Phillips, 1996; Chin & Barney, 1995).

In their literature review, Sainaghi *et al.* (2013) also mentioned the total revenue per available room (TrevPar) and the gross operating profit per available room (GOPPAR).

In a study dedicated to the clubing industry, Schmidgall & DeFranco (2004) identified three operating ratios considered important and adopted by the inquired (controllers and financial officers): payroll, food and beverage cost percentages. These three ratios are also used in hotel industry in the F&B department. It seems clear that the type of activity influences the results. According to Bhamornsathit & Katawandee (2016), occupancy rate, ADR and RevPAR are the most common ratios. Related with costs, the food cost percentage, beverage cost percentage and labor cost percentage are the most used ratios.

The F&B department is frequently considered less profitable than rooms department (Moser, 2002). In fact, the weight of contribution margins is lower and most of the costs are variable. Thus, these kind of operations requires a closed control to reduce wastage, to make good pricing, to buy at the right price and quality, in order to obtain a higher profit (Louise, 2004).

Food, beverage and labor costs are the most regularly used by hospitality and restaurant managers (Miller et al., 2002; Dittmer, 2003), but there are other relevant ratios and indicators that can be very useful to improve the operating result, such as seat turnover, average check (average meal price) and techniques like menu analysis (for example, menu engineering, that uses contribution margin and sales percentages of each menu item) (Jagels & Coltman, 2004). Besides these, there are other lesser-known and underused, like RevPASH (Otto, 2012; Louise, 2004).

The use of ratios is imperative to measure the performance of hotels. Nevertheless, there are some principles that have to be assumed: ratios have to be carefully chosen; managers have to understand what kind of number originated the ratios; they have to allow corrective actions; they have to be periodically analysed (Schmidgall & DeFranco, 2004).

At this moment, the Uniform System of Accounts for the Lodging Industry (USALI) has reached the 11th edition. In its Part III it provides several financial ratios and operating metrics. It is not a complete list, but even so it is the most widespread. The objective of USALI is to provide a uniform list and a definition of ratios and metrics (HANYC, 2014). Moreover, according to HANYC (2014), ratios and metrics are a way to simplify the huge statement and schedule's data.

There is a huge number of ratios useful in analysis (Schmidgall, 2011; HANYC, 2014). Schmidgall (1989) cited by Schmidgall (2011) conducted a research with the objective of getting ratios to be more useful for hotel general managers.

As this paper is the first step to a wider research, and as there are not many studies in this area, particularly about small independent hotels, it was necessary to identify all the operating ratios and indicators that are being referred to in the literature review. The operating ratios considered as the most useful were divided into three categories: rooms, F&B and all operating departments.

Firstly, table 1 presents the operating ratios of rooms. It indicates the description of the ratio, the formula and the studies where this ratio is referred to.

Table 1 Summary of operating ratios and indicators – rooms

Description	Formula	Studies
Room occupancy percentage/Occupancy rate	$\frac{\text{rooms sold}}{\text{rooms available}} \times 100$ $\frac{\text{rooms occupied}}{\text{rooms available}} \times 100$ $\frac{\text{Number of rooms let in hotel}}{\text{Total rooms in hotel}}$	Chin & Barney (1995); Phillips (1996); Harris (2013); Anderson et al. (1999); Amat & Campa (2011); Lamelas & Filipe (2012); Jones et al. (2012); Tuta & Micu (2013); O'Neill & Carlback (2011); Hua et al. (2015); Planas (2004); Pine & Phillips (2005); AECA (2005); Larry & Gu (2007); Jagels & Coltman (2004); Dodu & Patrichi (2014); HANYC (2014); Guilding (2014); Melia & Robinson (2010); Sainaghi et al. (2013); Bhamornsathit & Katawandee (2016); Santos et al. (2016);
Paid occupancy %	$\frac{\text{Number of rooms sold}}{\text{Total rooms in hotel}}$	Guilding (2014)

Average daily rate (ADR) or Average room rate (ARR)	$\frac{\text{Room revenue}}{\text{Rooms sold}}$ $\frac{\text{Daily rooms sales revenue}}{\text{Daily rooms occupied}}$ $\frac{\text{Day's revenue from room letting}}{\text{Number of rooms let in the day}}$	Chin & Barney (1995); Phillips (1996) Harris (2013); Amat & Campa (2011); Jones et al. (2012); Schmidgall (2011); Anderson et al. (1999); Tuta & Micu (2013); O'Neill & Carlback (2011); Lamelas & Filipe (2012); Hua et al. (2015); Jagels & Coltman (2004); Planas (2004); AECA (2005); Melia & Robinson (2010); Larry & Gu (2007); Dodu & Patrichi (2014); HANYC (2014); Guilding (2014); Sainaghi et al. (2013); Bhamornsathit & Katawandee (2016); Santos et al. (2016)
Average room rate per revenue segment	$\frac{\text{Gross room rev. for rev. segment}}{\text{segment rooms sold}}$	HANYC (2014)
Revenue per available room (RevPAR)	$\frac{\text{Rooms revenue}}{\text{Available rooms}}$ $\frac{\text{Total daily room letting revenue}}{\text{Total hotel rooms}}$	Chin & Barney (1995); Phillips (1996) Harris (2013); Jones et al. (2012); Schmidgall (2011); Tuta & Micu (2013); O'Neill & Carlback (2011); Hua et al. (2015); Planas (2004); Pine & Phillips (2005); AECA (2005); Larry & Gu (2007); Jagels & Coltman (2004); Lamelas & Filipe (2012); Dodu & Patrichi (2014); HANYC (2014); Sainaghi et al. (2013); Guilding (2014); Bhamornsathit & Katawandee (2016); Santos et al. (2016)
Revenue per available room (RevPAR)	$\frac{\text{Hotel revenue}}{\text{Number of rooms available}}$	Amat & Campa (2011)
Average occupancy per room	$\frac{\text{number of customers}}{\text{number of rooms sold}}$ $\frac{\text{number of customers}}{\text{number of rooms occupied}}$	AECA (2005); Amat & Campa (2011); Santos et al. (2016)
Total revenue per available room (TRevPAR)	$\frac{\text{Total revenue}}{\text{Rooms available}}$	Jones et al. (2012); HANYC (2014) Sainaghi et al. (2013); Santos et al. (2016)
Revenue per available customer (RevPAC)	$\frac{\text{Total revenue from hotel guests}}{\text{Total number of guests}}$	Schmidgall (2011); Santos et al (2016)
Cost per occupied room (CPOR)	$\frac{\text{rooms cost}}{\text{rooms sold}}$ $\frac{\text{Total daily room servicing costs}}{\text{Number of rooms serviced in a day}}$	Santos et al. (2016); Guilding (2014)
Gross operating profit per available room (GOPPAR)	$\frac{\text{Gross operating profit}}{\text{Number of available rooms}}$	Harris (2013); Sainaghi et al. (2013) Amat & Campa (2011); Jones et al. (2012) Schmidgall (2011); Planas (2004); Santos et al. (2016)
Gross operating profit per occupied room (GOPPOR)	$\frac{\text{Gross operating profit}}{\text{Number of rooms occupied}}$	Amat & Campa (2011)

Yield percentage/room yield	$\frac{\text{Room revenue}}{\text{Maximum potential room revenue}}$	Harris (2013); Jones et al. (2012); Guilding (2014)
Cost per available room (CostPAR)	$\frac{\text{Room expenses}}{\text{Number of rooms available}}$	Harris (2013)
Number of rooms serviced per employee	$\frac{\text{Number of rooms serviced}}{\text{Number of employees}}$	Harris (2013)
GOP per employee	$\frac{\text{GOP}}{\text{Number of employees}}$	Planas (2004)
Revenue per occupied room (RevPOR)	$\frac{\text{Hotel revenue}}{\text{Number of rooms occupied}}$	AECA (2005); Amat & Campa (2011); Schmidgall (2011)*
Complimentary occupancy	$\frac{\text{Complimentary rooms occupied}}{\text{Rooms available}}$	Schmidgall (2011); Guilding (2014); HANYC (2014)
Multiple occupancy/Double occupancy	$\frac{\text{Rooms occ. by two or more people}}{\text{Rooms occ. by guests}}$	Schmidgall (2011); Jagels & Coltman (2004); AECA (2005); Harris (2013); Jones et al. (2012); Santos et al. (2016)
Employees per available room	$\frac{\text{Number of employees}}{\text{Rooms available}}$	Planas (2004); AECA (2005)
Average length of stay	$\frac{\text{Rooms occupied}}{\text{Arrivals}}$	AECA (2005); HANYC (2014)

Source: prepared by authors

Table 1 allows us to see that there are several ways to calculate ratios. If the aim is to standardize, the same calculation will be necessary among hoteliers. Sometimes different variables are used to calculate the same ratio. For example, regarding occupation ratio, some authors use occupied rooms while others use rooms sold. Occupied rooms are different from rooms sold, because a room can be occupied but not be sold, like complimentary rooms. According to Bhamornsathit & Katawadee (2016), ADR is typically different, because it depends on the room type, market segment and seasonality. Nonetheless, it is considered as a critical indicator of operations. Even if the country does not have a database in relation to hotel operating ratios, there are advantages to compare the ratios over a period of time for the same hotel.

Secondly, table 2 refers to the operating ratios of F&B.

Table 2 Operating ratios and indicators – F&B

Description	Formula	Studies
Food inventory turnover	$\frac{\text{cost of food sold}}{\text{average inventory during the period average}}$	Jagels & Coltman (2004) Schmidgall & DeFranco (2004); Santos et al. (2016)
Beverage inventory turnover	$\frac{\text{cost of beverage sold}}{\text{average inventory during the period}}$	Schmidgall & DeFranco (2004); Santos et al. (2016)

Food cost percentage	$\frac{\text{cost of food sold}}{\text{food revenue}} \times 100$	Harris (2013); Miller <i>et al.</i> (2002); Dittmer (2003); Schmidgall (2011); Cote (2012); Schmidgall & DeFranco (2004); Jagels & Coltman (2004); Bhamornsathit & Katawadee (2016); Melia & Robinson (2010); HANYC (2014); Santos <i>et al.</i> (2016)
Beverage percentage cost	$\frac{\text{cost of beverage sold}}{\text{beverage revenue}} \times 100$	Harris (2013); Schmidgall (2011); Cote (2012); Jagels & Coltman (2004); Schmidgall & DeFranco (2004); Dittmer (2003); Bhamornsathit & Katawadee (2016); HANYC (2014); Melia & Robinson (2010); Miller <i>et al.</i> (2002); Santos <i>et al.</i> (2016)
Covers per employee hour worked	$\frac{\text{Number of covers served in period}}{\text{Employee hours worked in a period}}$	Guilding (2014)
Number of guests per employee	$\frac{\text{Guest served}}{\text{no. of employees}}$	Harris (2013); Jagels & Coltman (2004); Santos <i>et al.</i> (2016)
Revenue employee per	$\frac{\text{Food and beverage revenue}}{\text{Number of employees}}$	Harris (2013); Santos <i>et al.</i> (2016)
Revenue employee per hour worked	$\frac{\text{Restaurant revenue}}{\text{Number of employee hours worked}}$	Chin & Barney (1995); Guilding (2014)
Seat turnover ratio	$\frac{\frac{\text{number of guests}}{\text{seats available}}}{\frac{\text{Number of covers served per day}}{\text{Number of restaurant seats}} \times \frac{\text{Covers served in a period}}{\text{number of seats} \times \text{number of days open}}}$	Harris (2013); Santos <i>et al.</i> (2016); Guilding (2014); Cote (2012); Schmidgall (2011); Chin & Barney (1995)
Revenue per available seat (RevPAS)/average food sale per seat	$\frac{\text{total F\&B revenue}}{\text{no. of available seats}}$	Cote (2012); Jagels & Coltman (2004); Melia & Robinson (2010); HANYC (2014); Lukianoff (2005); Santos <i>et al.</i> (2016)
Revenue per available seat hour (RevPASH)	$\frac{\text{daily F\&B revenue}}{\text{no. of available seats} \times \text{no. of working hour}}$	Kimes, Barrash & Alexander (1999); Kimes (1999); Lukianoff (2005); Santos <i>et al.</i> (2016);
Revenue yield per seat	$\frac{\text{Total restaurant revenue}}{\text{Number of restaurant seats}}$	Guilding (2014)
Percentage of Beverage Revenue to Food Revenue/Beverage/fo	$\frac{\text{beverage revenue}}{\text{food revenue}}$	Cote (2012); Jagels & Coltman (2004); Santos <i>et al.</i> (2016)

Food sales ratio		
Average food service check (AFSC)/average spend per head/sales revenue per server/F&B revenue per customer/Average food check	$\frac{\text{Total food revenue}}{\text{Number of food covers}}$ $\frac{\text{food revenue}}{\text{number of guests}}$	Chin & Barney (1995); Schmidgall (2011); Cote (2012); Harris (2013); Guilding (2014); Planas (2004); Jagels & Coltman (2004); HANYC (2014)
Average food cost per guest (AFCG)	$\frac{\text{food cost}}{\text{number of guests}}$	Jagels & Coltman (2004)
Average cost per guest (ACG)	$\frac{\text{total cost}}{\text{number of guests}}$	Jagels & Coltman (2004)
Average operating income per guest (AOIG)	$\frac{\text{operating income}}{\text{number of guests}}$	Jagels & Coltman (2004)
Average beverage spend	$\frac{\text{Beverage revenue}}{\text{Number of covers}}$	Harris (2013)
Catering/banquet per square foot	$\frac{\text{Catering and banquet revenue}}{\text{Square of function space}}$	HANYC (2014)
Profit per available seat hour (ProPASH)	$\frac{\text{Profit}}{\text{total number of available seats}}$	Heo (2017)
Profit per available square meter (ProPASM)	$\frac{\text{Profit}}{\text{available space in square meter}}$	Heo (2017)
Total F&B revenue per available room	$\frac{\text{Profit Total F\&B revenue}}{\text{rooms available}}$	HANYC (2014)
Cost per customer	$\frac{\text{total labor costs and related expenses}}{\text{number of customers}}$	HANYC (2014)

Source: prepared by authors

The problem repeats itself, in other words, there are ratios calculated differently. According to Bhamornsathit & Katawandee (2016) there is a cost target to compare food cost percentage and beverage cost percentage.

Thirdly, table 3 lists ratios and indicators related to all departments.

Table 3 Operating ratios and indicators – all operating departments

Description	Formula	Studies
Efficiency Ratio	$\frac{\text{department cost}}{\text{departament revenue}} \times 100$	Planas (2004); Santos et al. (2016)
Operating efficiency ratio	$\frac{\text{Gross operating profit}}{\text{Total revenue}}$	Schmidgall (2011)

Labour cost percentage	$\frac{\text{Department payroll and related expenses}}{\text{Department revenue}}$ $\frac{\text{total labor costs}}{\text{total revenue}}$ $\frac{\text{Payroll costs}}{\text{Total revenue}}$	Harris (2013); Schmidgall (2011); Santos et al. (2016) Jones et al. (2012); Schmidgall & DeFranco (2004); Planas (2004); Jagels & Coltman (2004); Melia & Robinson (2010); Bhamornsathit & Katawandee (2016)
Department gross operating profit per available room	$\frac{\text{Department gross operating profit}}{\text{Number of rooms available}}$	Amat & Campa (2011)
Department gross operating profit per occupied room	$\frac{\text{Department gross operating profit}}{\text{Number of rooms occupied}}$	Amat & Campa (2011)

Source: prepared by authors

Labor cost percentage is the most discussed ratio. It is clear because according to Bhamornsathit & Katawandee (2016) labor cost is the largest proportion of hotel operating cost.

These ratios are, on the one hand, commonly used by public entities (for example, the Portuguese tourism office, Turismo de Portugal, I.P.) and, on the other hand, used to make comparisons between the hospitality performance of different countries (see travel research of Hotel and Motel Management – H&MM- studies, for example: Lomanno, 2004).

In Portugal, if hotels are associated to *Associação da Hotelaria de Portugal* (AHP, in English, Portuguese Association of Hospitality) and provide some information, they can obtain information about average values of operating ratios. There is a database called hotel monitor, where the average values of hotel industry ratios are calculated. The ratios provided by the hotel monitor are ARR, RevPAR, GMTH, Mise en Faire PAR, Average length of stay, Multiple occupancy/Double occupancy, TRevPAR.

The case of small independent hotels is specific, as analysed in a study similar to this one, developed in Ireland. Its findings indicate that small and medium-size independent hotels need an adapted structure to measure their performance. It also concludes “that there is a need for these hotel operators to adopt a more structured formal approach to performance measurement” (Melia & Robinson, 2010:2). In that study, a model for this kind of hotels was proposed and, regarding operating ratios, the following indicators were suggested: wage percentage, labour cost, food cost, beverage cost, occupancy rate, RevPAR, RevPas, average room rates, budget variances and waste management measures.

After gathering the most important indicators in the literature review with the most important for hoteliers involved in this study, and also considering the ratios included in the AHP platform (Hotel Monitor), it will then be possible to set a *tableau de bord* adapted to the small independent hotels.

The concept of *tableau de bord* has emerged in France in the thirties and represents one of the instruments for management control system and for decision making process (Bessire & Baker, 2005). A *tableau de bord* contains financial and non-financial indicators (Lebas. 1994, Epstein et Manzoni 1997, 1998, Mendoza et al., 2002, Gervais. 2000, mentioned in Cauvin & Bescos, 2005). Malo (1992), referred to in Bessire & Baker (2005, p.650) describes that the *tableau de bord consists of a one to several page document, containing between five and nine key indicators accompanied by comparisons with prior periods*. The main limitation pointed out is that this tool only considered an economic perspective without considering the other variables of the companies, such as political environment and strategy, for example (Bessire & Baker, 2005; Nunes & Machado, 2014).

3. Methodology

In order to elaborate a *tableau de bord* with operating ratios for independent hotels, the research was carried out in three steps.

The first step consisted of a literature review, where the most discussed ratios were found out.

In the second step, the ratios belonging to the AHP database were analysed.

Finally, a structured survey was developed to serve as main data for this study. The survey was

available on an online platform and was conducted between March and December 2016. The questionnaire was applied to hotels in the Leiria and West regions (95 hotels) of Portugal. The sample was defined considering a percentage of independent hotels in the order of 60% (Deloitte, 2015), making a total of 57 independent hotels. Assuming a confidence interval of 95% and a margin of error of 5%, a sample of 49 questionnaires was determined. An email was sent to the CEOs of these hotels, containing an individual link to the online survey.

CEOs were asked to provide information about the hotel unit description (management type, number of stars, employees, rooms and available F&B seats, last available year turnover, existing departments) and they were also asked to indicate the significant operating ratios that should be used by hoteliers.

A total of 49 survey responses was collected, but only 41 were from independent hotels, so 8 responses needed to be removed from the sample. These 8 hotels belong to a chain. Data were processed using SPSS. Descriptive statistics was used, in order to characterize the sample, ascertain what ratios were used and determine their importance. In this sample, there are only micro, small and medium-sized hotels, taking into account EU recommendation 2003/361.

4. Findings and discussion

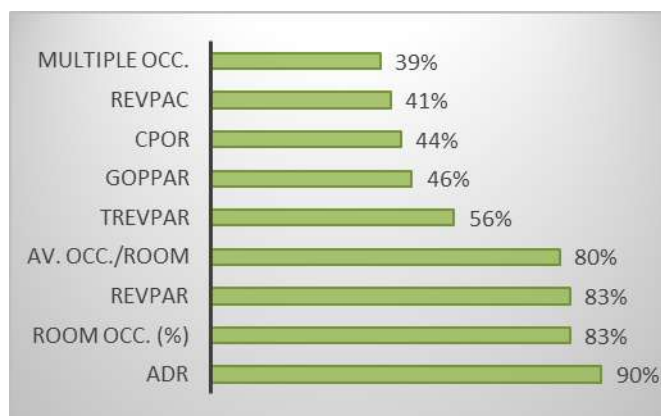
In this study, 41 hotels in Portugal were analysed and the majority of hotels falls under the 4-star classification (41.5%). Regarding the number of employees, the sample is featured with a mean of 27 employees. The turnover confirms this profile (small enterprise), with a mean of 1.8 EUR millions.

When asked about departmental management, 63% of hoteliers replied that their units were organized by departments. The two most common departments are the two traditional major operating departments: “Rooms” and “Food & Beverage” (F&B). Considering other mentioned departments, some hoteliers mentioned the following: “Maintenance”, “Housekeeping” (floors), “Conferences and Banquets”, “Swimming pool”, “Laundry”, “Marketing”, “Human resources”, “Administrative” and “Surf”.

To analyse the results about the use of the operating ratios and indicators, three groups were created: rooms and F&B ratios and indicators and another group of ratios that can be used in all operating departments. As we can see in Figure 1, five of the nine room ratios are being used by more than half of hospitality managers. This half includes ratios that were found in literature review as the most used, namely “ADR”, “occupancy room rate”, “RevPAR”, “average occupancy room” and “TrevPAR”.

On the other hand, “GOPPAR” and “multiple occupancy rate” were also described in the literature review as the most used but aren’t being used in the same proportion by the managers that participated in this study.

Figure 1 - Usage rate of operating ratios - rooms

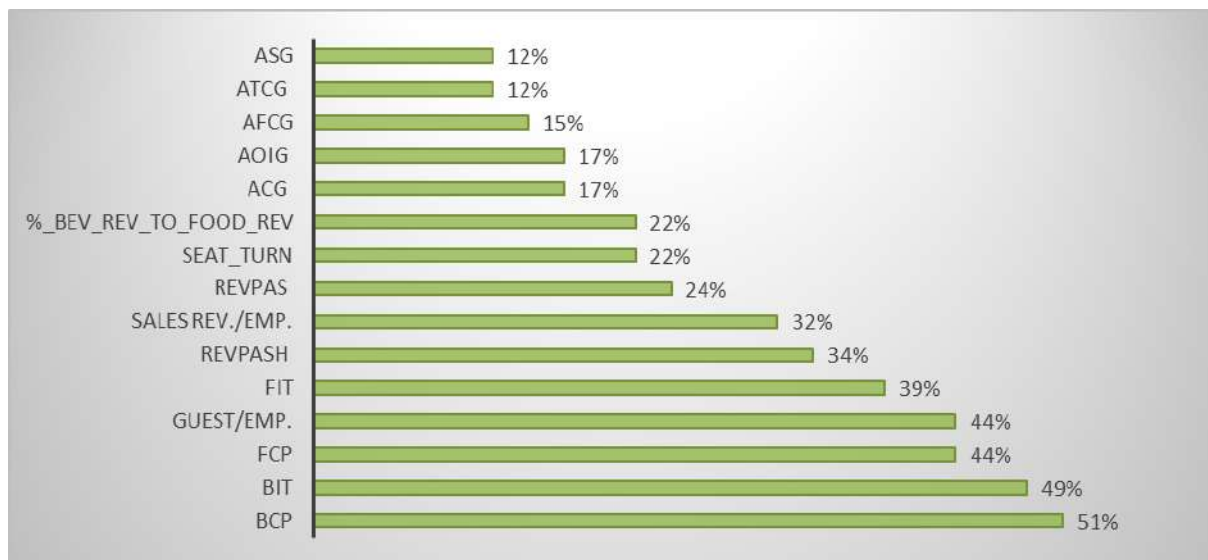


Source: prepared by authors

As we can observe in Figure 2 and regarding the F&B ratios and indicators, only one is being used by more than half of hospitality managers, namely the “beverage cost percentage”. The results of this study confirmed what was found in the literature review, but only for “beverage cost percentage”. Indeed, “food cost”, is considered as one of the most used in literature, but in this study, it is only used

by 44%. Other ratios like “beverage inventory turnover”, “food inventory turnover”, “number guest per employee”, “revpash” and “sales revenues per employee” are under 50% in this study, but still represent a relevant percentage, higher than 30%.

Figure 2 - Usage rate of operating ratios – F&B

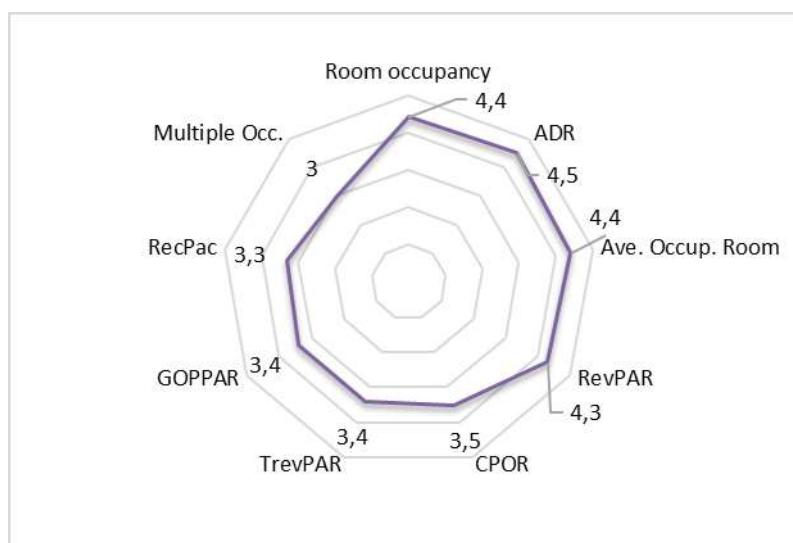


Source: prepared by authors

Consistent with the findings in the literature review, “revpas” is used only by 24% of the CEOs of the participating hotels and seat turnover only by 22%. This means that, for example, these two ratios are also being underused.

The second part of the survey, concerning the operating ratios, measured the importance rate of all ratios for the decision making process, independently of the use. All the ratios and indicators that reached a mean equal to or higher than 3 were presented in Figures 3 and 4. These two figures correspond to the groups that were created to represent the results. Similarly to the previous analysis, rooms and F&B ratios and indicators were separated.

Figure 3 - Importance of the operating ratios – rooms



Source: prepared by authors

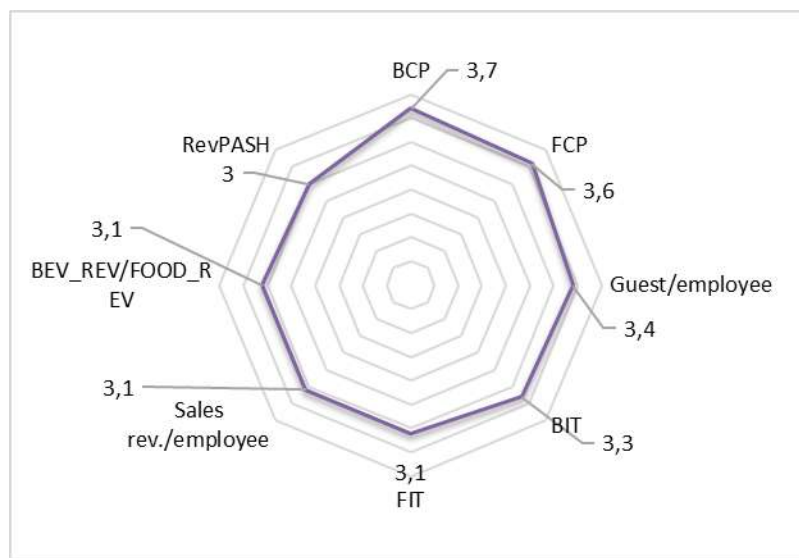
Comparing room ratios and F&B ratios, as observed in Figures 3 and 4, the first group reached higher means. That is also consistent with the literature review and with the characteristics of this activity, where the rooms department is traditionally the department that generates more revenue.

Figure 3 shows that “room occupancy”, “ADR”, “average occupancy room” and “RevPAR” are the four ratios with the higher means of importance (higher than 4), although in a different order, compared to the result obtained in the usage analysis. There is a correspondence, since these ratios have also obtained the highest percentage. That means they are used and considered important too.

We can highlight the case of “CPOR” which isn’t in the group of the most used ratios (44%) but obtained an interesting result regarding the importance given by hoteliers, as it appears immediately after the most important room ratios.

The other ratios “TrevPar”, “GOPPAR”, “revpac” and “multiple occupancy” stand in the last positions, only in a different order.

Figure 4 - Importance of the operating ratios - F&B



Source: prepared by authors

The results of F&B indicators importance can be observed separately in Figure 4. In this group, the higher mean is 3.7, and the most important ratios are “beverage cost percentage” and “food cost percentage”. In this case, the results confirmed what was found in the literature review and the “food cost percentage”, that despite the low result in the usage percentage, it reaches the second position in terms of importance. The case of “beverage inventory turnover” doesn’t reach a high position in the importance scale, but it was considered in the three most used ratios.

However, while in the analysis about usage percentage only one ratio obtained high scores (higher than 50%), in the analysis of importance, eight ratios obtained means equal to or higher than three. Two situations can be highlighted in this analysis; on the one hand, it presents the ratios and indicators that reached high results in both analysis (usage, considering a result high than 30%, and importance), namely “food cost percentage”, “beverage cost percentage”, “beverage inventory turnover”, “food inventory turnover”, “number of guest per employee”, “sales revenue per employee” and “revpash”. On the other hand, it presents the ratios and indicators that didn’t reach a high usage percentage nor obtained high means in the importance analysis: “ASG”, “AFCG”, “seat turnover”, “ATCG”, “RevPas”, “efficiency ratio” and “ACG”.

There is only one ratio that doesn’t fit in one of these two situations, namely “beverage revenue to food revenue percentage”. In fact, this ratio doesn’t reach a high position in usage but is considered important.

Table 4 - Importance of the operating ratios – all departments

Ratios/indicators	Usage rate	Importance
Labour Cost (%)	68%	3.9
Wage cost (%)	37%	3.4
Efficiency ratio	19%	3.2

Source: prepared by authors

The “labour cost percentage”, “wage cost percentage” and the “efficiency ratio” can be used in the two departments and, for this reason, they were separated. As we can see in Table 1, all of the three reached high levels of importance, but only “labour cost percentage” was indicated as one of the most used ratios.

Findings of this research show that small independent hoteliers use the best known operating indicators and ratios, in particular in the case of rooms department, but demonstrate also that they consider as important other indicators and ratios that they are not using. The fact that some ratios are neither used nor considered important could be explained by the fact that hoteliers do not know that they exist and what is their interest for hotel management. This gap can represent an opportunity to the research in this field. It is similarly urgent to also standardize ratios.

Based on all these data, it was possible to prepare three *tableaux de bord* (table 4, 5 and 6) that gather the ratios that were most referred to in the literature review, the ones that are most used and considered important by the inquired hotel managers and those provided by Hotel Monitor. Each indicator must be present at least in two of the three, in order to be included in the *tableau de bord*.

Table 5 – Tableau de bord for rooms department

Description	Authors	Hotel Monitor	Study
Room occupancy percentage/Occupancy rate	x	x	x
Average daily rate (ADR) or Average room rate (ARR)	x	x	x
Revenue per available room (RevPAR)	x	x	x
Total revenue per available room (TRevPAR)	x	x	x
Gross operating profit per available room (GOPPAR)	x		x
Yield percentage/room yield	x	<i>Mise en faire</i>	
Complimentary occupancy	x	x	
Average occupancy per room	x		x
Multiple occupancy/Double occupancy	x	x	x

Source: prepared by authors

Table 6 – Tableau de bord for F&B department

Description	Authors	Study
Food inventory turnover	x	x
Food cost percentage	x	x
Beverage cost percentage	x	x
Number of guest per employee	x	x
Revenue per available seat hour (RevPASH)	x	x
Percentage of Beverage Revenue to Food Revenue	x	x

Source: prepared by authors

Table 7 – Tableau de bord for all operating departments

Description	Authors	Study
Labour cost percentage	x	x

Source: prepared by authors

5. Conclusions

Considering all the ratios and indicators in the literature, it is realistic to state that ratios can be calculated in several ways, which represents hard work among hoteliers towards standardization. This problem was identified in all the categories: rooms, F&B and all operating departments. After gathering the ratios and indicators in the literature review with the most important for hoteliers involved in this study, and also considering the ratios included in hotel monitor, a *tableau de bord*, adapted to small independent hotels, was created.

Findings show that independent hotels management are using the most well-known operating

ratios and indicators. On the other hand, managers attach great importance to other ratios and indicators even if they are not being used, which can be explained by the hotel managers' lack of knowledge regarding ratios and indicators. This gap may represent an opportunity for research in this field. It is equally urgent to standardize ratios.

Regarding rooms department, five of the nine ratios are being used by more than half of hospitality managers, namely “ADR”, “occupancy room rate”, “RevPAR”, “average occupancy room” and “TrevPAR”. On the other hand, “GOPPAR” and “multiple occupancy rate” are not being used in the same proportion by the managers that participated in this study. Concerning F&B department, only “beverage cost percentage” is being used by more than half of hospitality managers. “Food cost” ratio is considered as one of the most used in literature, but in this study, it is only used by 44%.

In rooms department, “room occupancy”, “ADR”, “average occupancy room” and “RevPAR” are the four ratios with the highest means of importance, although in a different order, compared to the result obtained in the usage analysis. In the case of “CPOR”, it is not in the group of the most used ratios and obtained an interesting result regarding the importance given by hoteliers, as it appears immediately after the most important room ratios. In F&B department, “beverage cost percentage” and “food cost percentage” are considered the most important ratios. The results confirmed what was found in the literature review and the “food cost percentage”, despite the low result in the usage percentage, reached the second position regarding importance. Some ratios and indicators have reached high results in both analysis (usage, considering a result higher than 30%, and importance).

In all operating departments, “labour cost percentage”, “wage cost percentage” and the “efficiency ratio” have reached high levels of importance, but only “labour cost percentage” was indicated as one of the most used ratios.

Based on all these data, it was possible to propose three *tableaux de bord*, that gather the most referred to ratios in the literature review, the ones that are most used and considered important by the inquired hotel managers and those provided by Hotel Monitor. Each indicator must be present at least in two of the three in order to be included in the *tableau de bord*.

For managers of independent hotels, the findings of this research could be very helpful, because USALI and hotel monitor were adapted to their needs. Managers can use all the three *tableaux de bord* as fundamental elements to the decision making process. The three *tableaux de bord* represent a simplified task, with less ratios and indicators than USALI, which are aligned with hoteliers' opinions and judgment.

References

- AECA (2005) La contabilidad de gestión en las empresas hoteleras, documento AECA 30.
- Amat, O. & Campa, F. (2011) Contabilidad, control de gestión y finanzas de Hoteles, Profit Editorial.
- Anderson, R.I., Fish, M., Xia, Y., Michello, F. (1999) Measuring efficiency in the hotel industry: a stochastic frontier approach, *Hospitality Management* 18, pp 45-57.
- Bessire D. & Baker C.R. (2005) The French tableau de bord and the American balanced scorecard: a critical analysis. *Critical Perspectives on Accounting*, 16, 645–664.
- Bhamornsathit, S. & Katawande, P. (2016) An analysis of Thai listed hotels: financial and operational performance, *Journal of Business and Behavioral Sciences*, 28(2), 55-69.
- Cauvin E. & Bescos P.L. (2005) Les déterminants du choix des indicateurs dans les tableaux de bord des entreprises françaises : une étude empirique. *Finance Contrôle Stratégie*. 8 (1), 5-25.
- Chen, T. H. (2009) Performance measurement of an enterprise and business units with an application to a Taiwanese hotel chain. *International Journal of Hospitality Management*, 28, 415-422.
- Chin, J. & Barney, W. (1995) “Best accounting practice in hotels: A guide for other industries?” *Management Accounting: Magazine for Chartered Management Accountants*, 73 (11), 57-58.
- Chiu, Y. and Huang, C. (2011) Evaluating the optimal occupancy rate, operational efficiency, and profitability efficiency of Taiwan's international tourist hotels. *The service industries journal*. Volume 31, No. 13, pp. 2145-2162. DOI: 10.1080/02642069.2010.503889
- Cote, R. (2012). *Hotel and restaurant accounting*, 7th edition, American Hotel & Lodging Educational Institute.
- Deloitte (2015) *Atlas da Hotelaria 2015*, 10.^a ed. Consultado a 23 de abril de 2016 em:

<http://atlasdahotelaria.com/2015/>

Dittmer, P. R. (2003) Principles of food, beverage and labor cost controls, 7th edition. New York: John Wiley and Sons, Inc.

Dodu, P. & Patrichi, I. (2014) Bucharest hotel market in the European context, *The USV Annals of Economics and Public Administration*, 14,2(20), 48-57.

Guinding, C. (2014) Accounting essentials for hospitality managers, 3rd edition, Routledge.

Harris, P. (2013) Profit planning for hospitality and tourism, 3rd edition. Goodfellow Publishers.

Heo, C. (2017) New performance indicators for restaurant revenue management: ProPASH and ProPASM, *International Journal of Hospitality Management*, 61, 1-3.

Hotel Association of New York City (HANYC). (2014) Uniform System of Accounts for the Lodging Industry, 11th. New York: Revised Ed.

Hua, N., Morosan, C. and DeFranco (2015) The other side of technology adoption: examining the relationships between e-commerce expenses and hotel performance. *International Journal of Hospitality Management*, 45, 109-120.

INE – Inquérito à Permanência de Hóspedes na Hotelaria e Outros Alojamentos 2016.

INE - Empresas (N.º) por Atividade económica (Subclasse - CAE Rev. 3) e Escalão de pessoal ao serviço; Anual - INE, Sistema de contas integradas das empresas, Quadro extraído em 23 de Outubro de 2017 (10:21:14) em <http://www.ine.pt>.

Jagels, M. G. and Coltman, M. M. (2004) Hospitality management accounting 8th edition. New York: John Wiley and Sons, Inc.

Jones, T., Atkinson, H., Lorenz, A. & Harris, P. (2012) Strategic managerial accounting, 6th edition, Goodfellow Publishers Ltd.

Kimes, S. E., Barrash D. I., & Alexander, J. E. (1999) Developing a restaurant revenue-management strategy [Electronic version]. *Cornell Hotel and Restaurant Administration Quarterly*, 40(5), 18-29, from Cornell University, School of Hospitality Administration site: <http://scholarship.sha.cornell.edu/articles/462/>

Kimes, S. E. (1999) Implementing restaurant revenue management: A five-step approach [Electronic version]. *Cornell Hospitality Quarterly*, 40(3), 16-21. Retrieved [insert date], from Cornell University, School of Hospitality Administration site: <http://scholarship.sha.cornell.edu/articles/461/>

Lamelas, J. and Filipe, J. A. (2012) Co-leadership and Hotel Management. The account systems USALI and BSC to improve effectiveness and efficiency. The Portuguese case. *International Journal of latest trends in Finance & Economic Sciences*, 2 (4), 286-297.

Lomanno, M. V. (2004) Demand, occupancy on the rise for full-service U.S. properties. *H&MM studies*, pp.18.

Louise, F. (2004) Emília e o food cost. Lisboa: Edições do Gosto.

Lukianoff M. (2005) Restaurant Revenue Management. Is It on the Menu? *Hospitality Upgrade*, www.hospitalityupgrade.com. P.36-37

Melia, D., Robinson, L. (2010) Towards performance measurement in hotels: an incremental approach. In *Contemporary Issues in Irish and Global Tourism and Hospitality* (Gorham, G., Mottiar, Z. eds). Available at: <http://arrow.dit.ie/tfschhmtbook/36/>.

Miller, J. E., Hayes, D. K. and Dopson, L. R. (2002) Food and beverage cost control, 2nd edition. New York: John Wiley and Sons, Inc.

Moser, F. (2002) Manual de gestão de alimentação e bebidas. Mem Martins: Edições Cetop.

Nunes C. & Machado M. J. (2014) Performance evaluation methods in the hotel industry. Os métodos de avaliação de desempenho na hotelaria. *Tourism & Management Studies*, 10(1), 24-30.

O'Neill, J. W. and Carlback (2011) Do brands matter? A comparison of branded and independent hotels' performance during a full economic cycle. *International Journal of Hospitality Management*, 30, 515-521.

Otto, G. (2012). Revenue Management, os segredos do controle de inventário. *HotelNews* (hoteliernews.com.br) Available at: <http://gabrielaotto.com.br/blog/revenue-management-os-segredos-do-controle-de-inventario/>

Phillips, Paul A. (1996) Strategic planning and business performance in the quoted UK hotel sector: results of an exploratory study. *International Journal of Hospitality Management*, 15 (4), pp. 347-362.

Phillips, P. (1999) Performance measurement systems and hotels: a new conceptual framework,

Hospitality Management 18, pp 171-182.

Pine, R. & Phillips, P. (2005) Performance comparisons of hotels in China, Hospitality Management, 24, 57-73.

Planas, F. (2004) La contabilidad de gestión en la industria hotelera: estudio sobre su implantación en las cadenas hoteleras en España. Tesis doctoral, Universitat Rovira i Virgili.

Sainaghi, R., Phillips, P. and Corti, V. (2013) Measuring hotel performance: using a balanced scorecard perspectives' approach. International Journal of Hospitality Management, 34, 150-159.

Schmidgall, R. (2011) Hospitality industry managerial accounting 7 th edition. USA: American Hotel & Lodging Educational Institute.

Schmidgall, R. S. and DeFranco, A. L. (2004) Ratio analysis: financial benchmarks for the club industry. Journal of Hospitality Financial Management, 12 (1), 1-14.

Santos, L., Gomes, C., Faria, A., Lunkes, R., Malheiros, C., Rosa, F. e Nunes, C. (2016) Contabilidade de Gestão Hoteleira, ATF Edições Técnicas.

Turismo de Portugal I. P. (2015) Os resultados do turismo. Lisboa: Turismo de Portugal, IP. Consultado a 23 de abril de 2016 em: <http://www.turismodeportugal.pt/Portugu%C3%AAs/ProTurismo/estat%C3%ADsticas/quadrosestatisticos/ofertahoteleira/Pages/OfertaHoteleira.aspx>

Tuță, Loredana and Micu, Cristina (2013) The evolution of the performance indicators specific to the hotel offer in Europe. Lucrări Științifice, Seria I, Vol. XVI (4), 65-70. Available at: <http://lsma.ro/index.php/lsma/article/view/509>.

Yu, L. & Huimin, G. (2007) An Analysis of Hotel Financial Management in China, The Journal of Hospitality Financial Management, 15:2, 39-48, DOI: 10.1080/10913211.2007.10653841.

World Travel and Tourism Council (WTTC), Travel and Tourism Economic Impact 2017 Portugal. Available in <https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2017/portugal2017.pdf>