Analysis of the Benefits of Management Hotel Software in the City of Machala

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Abstract—*This paper highlights the utilization of management software in the hotel area of the canton Machala and the benefits that generates the implementation of this software on the different hotels of the city.*

At present one has seen clearly that the benefits of management software are very wide for the reduction of the time or process automation, based on this problem, was found the need to investigate the advantages of the software application in hotel companies, and to acquire new forms for to improve the economy area. For this there has been established a study that will allow to analyze the profitability reflected by the RevPar of the hotel by means of the fulfillment of regulations to verify that beneficial aspects exist in the hotel companies, as well as also the quality of the services of the hotel and the capture of decisions that they carry out in the already mentioned companies.

Hereby, with the implementation of this technology in the hotels, we estimate an increase in the profitability in the activities realized by the companies regarding the reduction of costs, capture of decisions. For the reduction of costs is outlined the aptitude to be able to replace the human workforce for automated processes; in the capture of decisions there is analyzed the capacity that the manager of the company will possess to act by means of the information that provides the software to him. The results that will be obtained in the analysis for Machala's city, will confirm to themselves total or partially and will be described at the end of this work.

Keywords—Technology, benefits, profitability, quality, decision making

I. INTRODUCTION

The continuous adaptation of enterprises to technological changes and fierce competition they face, are leading some of them to consider improving their competitiveness and identifying new strategies to increase process performance. One way is to invest in new technologies that contribute to the streamlining of functions developed by the company. It is considered necessary to know the strategic approach that attributes economic development and its possible links with the performance provided by automated processes. In the case of hotel companies, it is essential that the information of the company along with technologies enable the effective and efficient administration in order to promote the comprehensive development of the company.

Investment in SIGH (hotel management software), benefits the hotel by allowing the personnel to work efficiently to address all situations that arise with the information given by the software. Therefore, this new efficient way for hotel management companies involved to reduce time and costs associated with the processes are replaced with automated functions.

Profitability is another aspect of hotel companies, improving the implementation of this technology, it allows a correct and efficient management which allows reducing costs to keep track and control of financial shares in the company, then it raises the following question:

Are hotel management software produce benefits companies in the hotel sector increased profitability, cost reduction and ease in decision-making?

Therefore, the following objective arises:

Analyze the different hotels located in the city of Machala, by applying techniques of data collection and hypothesis testing, for testing the benefits they have hotel management software.

With this goal in mind it is structured work, establishing the theoretical foundations that serve as reference in the analysis of SIGH, profitability, cost reduction and decision-making, contributing to the performance of the organization; the results are presented and analyzed the data in order to test the null hypothesis: "The software does not generate benefits for profitability, cost reduction and decision making." Finally, the main conclusions of this work was written.

II. THEORETICAL FOUNDATIONS

2.1 Computer Systems Hotel Management

In hotels, as in any business organization, have been implemented information systems widely, according to the article "Workflow technology applied to computer systems hotel management" hotels use a software or computer management system, is more, today: "It is necessary to use an information system to meet the high competitiveness on the market today and offer quality levels demanded by the customer." [1].

In addition to hotel management, is very important and necessary to have a software or computer system, these technologies can reduce the complexity of the work, which man faces, because you can control and manage a number of processes greater agility.

In different entities or organizations there are several types of information systems, although these systems seek a common goal which is to provide real data and discarding any information that does not contribute to the decision making, Information Systems Hotel Management are:

"Software or software that facilitate the daily management of tourist accommodation (hotels, apartments, etc.). The purpose of a PMS is the automation of certain processes developed for the provision of hotel services, which can be divided into two types: (1) Management "back -office" customer reservations, contracts with intermediary agencies, business management, HR, financial, accounting, etc..; (2) Management "front-office": reception, telephone connections, billing, night supervision, housekeeping, etc. "[2]

Based on what has been mentioned it can deduce the preliminary hypothesis:

Hi = The hotel management software generates benefits in the hotels in the city of Machala.

2.2 Profitability of Hotel Sector

Management systems from the outset in the hotel industry have influenced many aspects, such as streamlining and easy process, even more important we note the appearance of Revenue Management which "is the process of influencing customer behavior in order to get the greatest possible benefit. " [3].

"The Revenue Management has become an urgent need from the smallest to the largest, the lowest category hotel" [4], but to define profitability there are several ways to do quoting various authors' profitability is as a target short-term economic companies should achieve relating obtain a profit necessary for the proper development of the company "[5], meanwhile also states that" Profitability is the relationship between income and costs generated by assets the company in productive activities, profitability can be evaluated with respect to sales, assets, capital or shareholder value "[6], so we can say that the profitability of the sector is a measure for determining the profitable situation a business or company through productive activities, but in the hotel sector it is called RevPar, which can be calculated using various aspects such as "the ADR (average Daily rate) or average Daily rate is the average rate available resulting from all tariffs of an establishment "[4] "The RevPAR (revenue per available room) or RevPAR is revenue per available room is the average income of an establishment per available room "[4], by other side indicated "another way of calculating this essential value in the industry hotel industry is the percentage of occupancy multiplied by the ADR" [4].

With the study of the hotel profitability we proceed to describe the following hypothesis:

H1 = The hotel management software increases profitability in hotels in the city of Machala reflected by the RevPar.

2.3 Decision Making Through the Sigh

According to the article "Cost accounting and design of product mix," much of the hotel companies apply decisions of strategic type, tactics and routine either with the purchase of raw materials, and other less vitality and decision making most imported as is the extension of the hotel.

It also determines that the right decisions we must consider the existence of certain internal and external factors also notes that generates many expenses to produce the information, is, the production information to be expensive, but in turn has a low cost, playback does not disappear when used, are some of the reasons why the information can become a competitive advantage.

"Technology can greatly increase creativity, efficiency and business productivity. It allows companies to effectively compete in the digital economy of a global world with the ability to make decisions quickly and flexibly. "[3]

With all this we can describe the following hypothesis regarding decision making:

H2 = management software facilitates the generation of information for decision-making in the hotels in the city of Machala.

2.4 Cost Optimization in the Hotel Management

According to the article "Cost optimization in hotel management" explaining that "The cost of personnel is undoubtedly the most important of a hotel, not only by the amount (which may be between 35% and 40% of the sales and represent more than 50% of all hotel expenses) but also by the complexity of its management. The first step for proper optimization of personnel costs is to carry out an adequate management control "[7]. For this interested in knowing the number of staff, to prove that

better management given by the level of automation reduces staff and therefore costs.

With the prior study leads to the following hypothesis:

H3 = management software reduces costs reflected in the number of staff in the hotels in the city of Machala.

III. MATERIALS AND METHODS

For the development of this article were taken into account the different hotels that exist in the city of Machala.

He proceeded to make a data collection of hotels, the number and categories through information provided by the relevant authorities of the Ministry of Tourism Canton Machala. This information is then analyzed and it was found that, in the city twenty-four hotels ranging from the category "luxury" to "fourth category" are located.

Since the sample calculation, using the formula:

$$n = \frac{Z^2.p.q.N}{N.e^2 + .Z^2.p.q} \quad (1)$$

Where,

n= sample size

e= error of 5%

Z = normal distribution 95%

N = population size

p = probability for 50%

q= probability against 50%

Twenty-three hotels as a representative sample is obtained, but because the number of the sample is not far to the number of the population, considering the total number of the population for investigation.

For information plan data collection was performed which allowed; designing questionnaires, applying techniques such as interview administrators or managers responsible at the different hotels, then the indices measured is as follows:

Table.1: Indicators research

Dimensions	Variables	Research in that they have been used
Grade automation hotel	Questions to find out whether an activity is automated.	Adapted from Sanchez
Cost effectiveness	% Room occupancy, average daily rate, number of rooms are in the hotel, many rooms have been found occupied on average per day and gross earnings of rooms	Adaptedfrom M. G. V. Rosa Elena Pérez [4]
Number of employees per hotel room	The number of workers is the sum of the average of fixed and temporary workers who worked in hotels during 2016.	Peris, Monreal and Gil (1998) and Calvo et al. (2000) [8]
Ease of decision making by using information provided by the SIGH.	To managers they were asked whether in their hotels had hotel management software and rate the ease of decision-making if they generate accounting reports and financial analysis.	Adaptedfrom E. Peña. Aura Elena [3]

Source: Authors

For the analysis and interpretation of results tables Excel was used, which allowed better evidence information obtained as graphs and formulas that allowed relate the different questions based on the results was used.

The statistical test of correlation coefficient Pearson and Spearman, which are correlation methods that identify whether two variables are related in a monotonic function, is when a number increases was used for the evaluation of the hypotheses, the other also or vice versa, in this case the independent variable is the degree of automation software and profitability are dependent (RevPar), number of employees and decision-making.

The technique Spearman correlation coefficient and Pearson detailing a hypothesis test scale ranging from -1 to 1 where 0 is the null hypothesis be described as: "the two variables are unrelated." If this ratio ranges from 0.01 to 1, there is a direct positive relationship, on the contrary, if it ranges from 0.01 to -1 there is a negative inverse relationship.

In the research it is correlational since it seeks to measure the degree of relationship between two or more concepts or variables, the theoretical foundations that led to the taking of non-experimental methodology which in turn uses the correlational method were analyzed, which is not manipulates an experimental variable and is based on the

observation, however, a correlation of Pearson and Spearman for data analysis used.

IV. RESULTS

According to the application permissions requested verbally hotels manner, it was found that: a hotel is not operating, on the other hand, two hotels did not grant permission for conducting the interview, therefore, are discarded, the reducing the population us twenty hotels.

4.1 Using the Software Management in the Hotels of the city of Machala.

Table2: Hotels using hotel management software.

INDICATOR	Frequency	Percentage
YES	13	61,90%
NOT	8	38,10%
Total	21	100,00%

Source: Authors

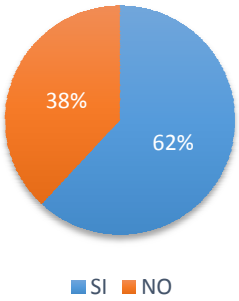

Fig.1: Hotels using hotel management software

Analysis: Of the 21 hotels, 13 of them have a hotel management software, which comprises as 61.90%, and 8 do not have these systems, is 38.10%. Then it is observed that most hotels have this kind of computer systems.

4.2 Degree of automation presenting the Hotels, applying Management Software.

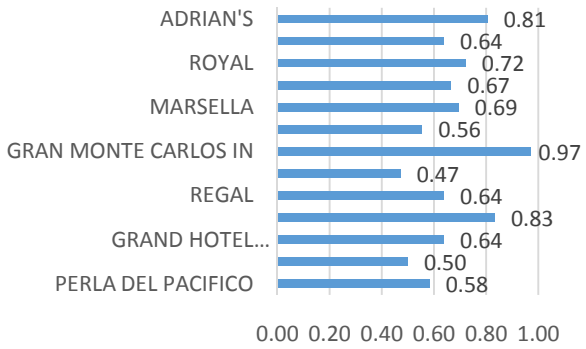

Fig.2: Degree of automation hotel.

Analysis: Using the graph shows that most of the hotels have a hotel management software that exceeds 50% degree of automation, this means that the software is involved in most functions performed by the hotel. In the Monte Carlos, who presents hotel is the highest degree of automation with 97% and the lowest grade is the Britney hotel with 47%.

4.3 Indicators for the benefits of Hotel Management Software.

We have chosen three main indicators, which have been applied to respondents hotels.

4.3.1 Profitability of Hotels

Technology has enabled the efficient development of enterprises, generating a better return by having more agile processes, the hotels have their only measure to find out this return, known as REVPAR, so interested in knowing this economic index.

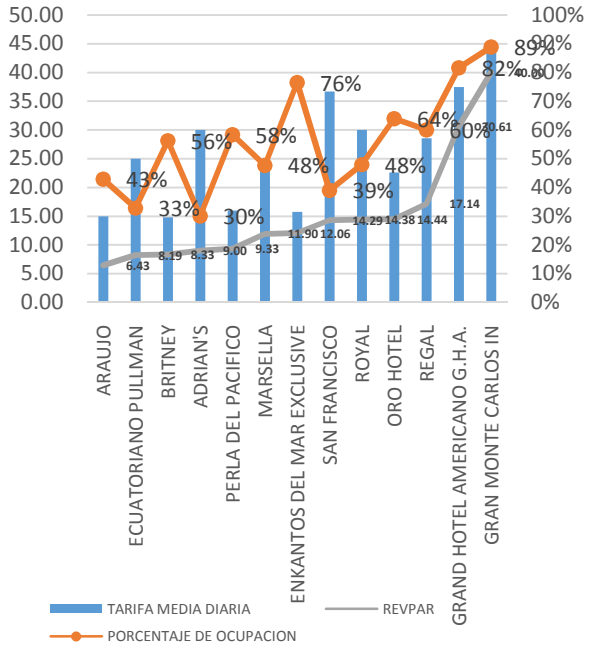

Fig.3: RevPAR, occupancy rates, average daily rate

Analysis: As shown in the graph, the RevPar is affected by the average daily rate and occupancy rate of hotel rooms, including higher these values, the greater the value of which will RevPar the hotel.

4.3.2 Home cost of Hotels

Table.3: Fixed Workers and possible 2016

Hotels	Nº permanent workers	Nº temporary workers
ARAUJO	5	1
ECUATORIANO PULLMAN	7	2
BRITNEY	7	0
ADRIAN'S	5	1
PERLA DEL PACIFICO	10	0
MARSELLA	7	0
ENKANTOS DEL	6	0

MAR EXCLUSIVE		
SAN FRANCISCO	8	0
ROYAL	8	2
ORO HOTEL	19	0
REGAL	12	2
GRAND HOTEL AMERICANO G.H.A.	12	0
GRAN MONTE CARLOS IN	10	2

Source: Authors

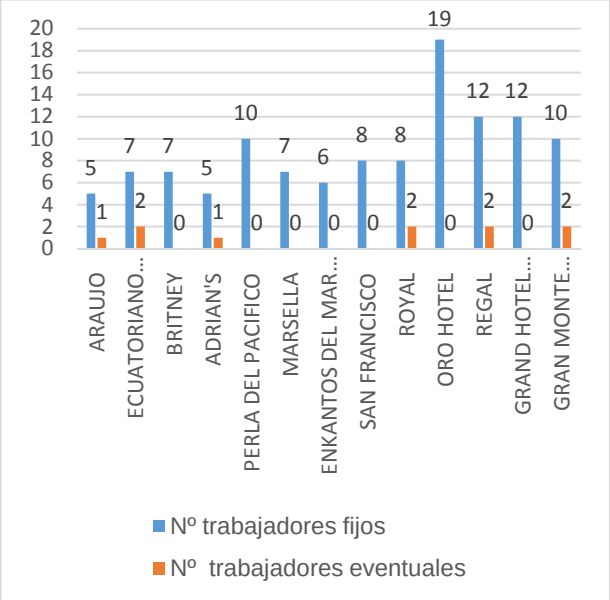

Fig.4: Fixed and Temporary staff in hotels

Analysis: It is observed that there is a very small number of temporary workers for the number of permanent workers, as is also shown that Oro Hotel has the largest number of permanent workers and Araujo Adrian's hotel and have the fewest.

4.3.3 Decision making

Item Profitability indicators: "Tools for making financial decisions in mid-range hotels located in Maracaibo" Montilva citing "the role of information is ... increase awareness of an event or object and reduce the uncertainty of who It uses. Within the organizational framework, the role of information is to serve as support element in the process of decision-making, allowing the user to gain a deeper understanding of what happened knowledge, what is happening and what may happen in the organization. "[5] then the ability of the manager or administrator to make decisions with the information given by hotel management system is analyzed.

Table.4: Frequency of hotels for the software that generates reports and accounting analysis.

INDICATOR	Frequency	Percentage
Totally agree	5	38,46%
Agree	5	38,46%
Neither agree nor disagree	1	7,69%
In disagreement	2	15,38%
Totally disagree	0	0,00%
Total	13	100,00%

Source: Authors

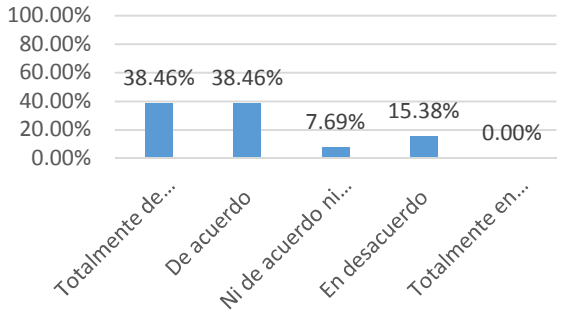

Fig.5: Percentage of Hotels for the Software that generates reports and accounting analysis.

Analysis: It is observed that 38.46% of the hotels agree and fully agree that the software meets to determine the financial position of the company.

V. DISCUSSION

To check compliance with our hypothesis, we will see to what extent the variable degree of automation variables relate to HR, decision-making and profitability. The degree of automation and profitability are scalar variables and to determine their relationship, will use the Pearson correlation coefficients and Spearman rho; the results are presented in the following tables:

Table.5: Method Pearson correlation

Hotels	Level of automatio	RevPar	Personal	Decision making
BRITNEY	0,47	8,33	3,5	25,00
SAN FRANCISCO	0,5	14,29	4,0	100,00
ENKANTOS DEL MAR EXCLUSIVE	0,56	12,06	3,0	25,00
PERLA DEL PACIFICO	0,58	9,33	5,0	75,00
GRAND HOTEL AMERICANO G.H. A	0,64	30,61	6,0	100,00
REGAL	0,64	17,14	7,0	50,00
ARAUJO	0,64	6,43	3,0	100,00
ECUATORIANO PULLMAN	0,67	6,43	4,5	75,00

MARSELLA	0,69	11,9	3,5	75,00
ROYAL	0,72	14,38	5,0	100,00
ADRIAN'S	0,81	9	3,0	75,00
ORO HOTEL	0,83	14,44	9,5	75,00
GRAN MONTE CARLOS IN	0,97	40	6,0	100,00
Correlation coefficient		0,52	0,43	0,43

Source: Authors

Analysis 1: Given the Pearson correlation of 0.52, which is greater than 0, it is concluded that the use of the software produces the benefit of increased profitability and that the higher the degree of automation will be the greater of Revenue hotel.

Analysis 2: Given the Pearson correlation of 0.43, which is greater than 0, it is concluded that use of the software has an inverse relationship, which produces the increase of staff between higher the degree of automation, so therefore, not the benefit of reducing human resources costs occurs.

Analysis 3: Given the Pearson correlation of 0.43; which is greater than 0, it is concluded that the use of software improves decision-making and the higher the degree of automation, the greater the ease of working with the information provided by the software.

Table.6: Spearman correlation method for RevPar

Hotels	Level of automation	RevPar	Ranking of Automations	RevPar ranking
BRITNEY	0,47	8,33	1	3
SAN FRANCISCO	0,50	14,29	2	8
ENKANTOS DEL MAR EXCLUSIVE	0,56	12,06	3	7
PERLA DEL PACIFICO	0,58	9,33	4	5
GRAND HOTEL AMERICANO G.H. A	0,64	30,61	6	12
REGAL	0,64	17,14	6	11
ARAUJO	0,64	6,43	6	1,5
ECUATORIANO PULLMAN	0,67	6,43	8	1,5
MARSELLA	0,69	11,9	9	6
ROYAL	0,72	14,38	10	9
ADRIAN'S	0,81	9	11	4
ORO HOTEL	0,83	14,44	12	10
GRAN MONTE CARLOS IN	0,97	40	13	13
Correlation coefficient				0,33

Source: Authors

Analysis: Given the Spearman correlation of 0.33 which is greater than 0, it is concluded that the use of the software produces the benefit of profitability and that the better is the management software takes a moderate increase in the Revenue of the hotel.

Table.7: Spearman correlation method to evaluate cost reduction

Hotels	Level of automation	Permanent personal	Eventual Personal	Sumhalf	Ranking automation	Personal Ranking
BRITNEY	0,47	7	0	3,5	1	4,5
SAN FRANCISCO	0,50	8	0	4,0	2	6,0
ENKANTOS DEL MAR EXCLUSIVE	0,56	6	0	3,0	3	2,0
PERLA DEL PACIFICO	0,58	10	0	5,0	4	8,5
GRAND HOTEL AMERICANO G.H. A	0,64	12	0	6,0	6	10,5
REGAL	0,64	12	2	7,0	6	12,0
ARAUJO	0,64	5	1	3,0	6	2,0
ECUATORIANO PULLMAN	0,67	7	2	4,5	8	7,0
MARSELLA	0,69	7	0	3,5	9	4,5
ROYAL	0,72	8	2	5,0	10	8,5
ADRIAN'S	0,81	5	1	3,0	11	2,0
ORO HOTEL	0,83	19	0	9,5	12	13,0
GRAN	0,97	10	2	6,	13	10,5

MONTE CARLOS IN				0		
Correlation coefficient						0,34

Source: Authors

Analysis: Given the Spearman correlation of 0.34 which is greater than 0, it is concluded that the use of software has an inverse relationship, which produces the increase in personnel between better the software, therefore no benefit occurs reduction of costs for human resources.

Table.8: Spearman correlation method to evaluate decision

Hotels	Level of automation	Decision making	Ranking automation	Ranking decisions
BRITNEY	0,47	25,00	1	1,0
SAN FRANCISCO	0,50	100,00	2	11,0
ENKANTOS DEL MAR EXCLUSIVE	0,56	25,00	3	1,0
PERLA DEL PACIFICO	0,58	75,00	4	6,0
GRAND HOTEL AMERICANO G.H. A	0,64	100,00	6	11,0
REGAL	0,64	50,00	6	3,0
ARAUJO	0,64	100,00	6	11,0
ECUATORIANO PULLMAN	0,67	75,00	8	6,0
MARSELLA	0,69	75,00	9	6,0
ROYAL	0,72	100,00	10	11,0
ADRIAN'S	0,81	75,00	11	6,0
ORO HOTEL	0,83	75,00	12	6,0
GRAN MONTE CARLOS IN	0,97	100,00	13	11,0
Correlation coefficient				0,36

Source: Authors

Analysis: Given the Spearman correlation of 0.36 which is greater than 0, it is concluded that the use of the software produces the benefit of improving decision-making and better the software between greater ease of management will work for the information provided by the software.

As can be seen in the investigation it has been determined that profitability has a direct relationship, indicating that profitability increases if you have a hotel management system can facilitate labor as states' economic profitability and stands in the basic to judge the efficiency in business management indicator management systems help in this regard "[5], so our first hypothesis is accepted" the hotel management software increases the profitability of the hotels in the city of Machala reflected by RevPAR ".

On the other hand, with regard to decision making Peña's assertion in the article "The accounting information system in small and medium enterprises. An evaluation study in the metropolitan area of Merida, Venezuela, "which explains:" Technology can greatly increase creativity, efficiency and business productivity. It allows companies to effectively compete in the digital economy of a global world with the ability to make decisions quickly and flexibly "[9] with the hypothesis test was obtained that the hotel management software can influence improvement the ability of making personnel decisions of the company.

However, it is observed that having a software management in hotels not decrease costs by reducing human resources replaced by automated processes, thus reducing HR is not consistent use of management software companies hotel in the city of Machala.

VI. CONCLUSION

Based on the results obtained by the research it can be concluded that:

The use of hotel management software in companies in the hotel sector of the city of Machala, can increase the profitability of the same, the greater is the degree of automation, since the activities of these entities gain greater agility processes.

The hotel management software, improves decision making because this system provides the hotel accurate and agile information, thus achieving greater efficiency and effectiveness in the different tasks performed, obtaining better possibilities for economic development business.

On the other hand, it is concluded that the increase of staff between better the software is produced, therefore no benefit of reducing human resources costs occurs.

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