

EFFICIENCY AND EFFECT ON THE COMPETITIVE ADVANTAGE OF MANAGEMENT INFORMATION SYSTEMS (MIS) IN CLASSIFIED HOTELS IN THE CITY OF PETRA; TYPE OF MANAGEMENT AS MODERATOR

Nazem Shniekat, Al-Balqa Applied University

Omar Jawabreh, The University of Jordan-Aqaba Branch

Mousa Mohammad Abdullah Saleh, Al-Balqa Applied University

ABSTRACT

*Purpose-*The study aims to examine the efficiency and influence of management information systems (MIS) in classified hotels in the city of Petra on the competitive advantage; management category as moderator.

*Methodology/Approach-*We used the SPSS version 20 to test 22 elements of the Likert scale for the outcome in factor analysis, before conducting axial component analysis, the suitability of the data for factor analysis was evaluated. Multiple hierarchical regressions" was used to test the hypotheses.

*Findings-*There is a positive statistically significant relationship between the efficiency of management information systems and the technical dimension at the level of 0.01. As for product differentiation, it reached ($=0.16, p<.05$), meaning that the second hypothesis has been accepted as there is a positive statistically significant relationship between the efficiency of management information systems and the differentiation of products.

*Originality/Value of paper-*The originality of paper narrows the difference between the model of the Hotel Organization (H/O) and the competitive advantage efficacy (ESA) in terms of competitive advantage and efficiency. Specifically, this analysis introduces productivity and results on competitive advantage variables in classified hotels in the city of Petra that impact Management Information Systems (MIS). Second, empirically, by proposing a modern research paradigm and new research establishment at the level of productivity on the comparative advantage (ECA) in the hotel industry, this research aims to reduce the difference in scientific research. This study is supposed to be useful for policy decision-making, especially for managers who want to develop management information systems (MIS) in Hospitality industry city of Petra.

Keywords: Management Information Systems, Systems efficiency, Technical dimension, Differentiation, Strategic resources.

INTRODUCTION

The hospitality industry produces billions of dollars in annual revenue, with hotels alone accounting for over half a trillion dollars. A hotel management information system, or MIS, to provide guests with the best available experience, helps ensure that all activities run smoothly. Hotel managers are now generally under pressure to maximize profits for the same or less capital. A solution to relieving such burden is to integrate MIS thoroughly into the market environment to reduce costs and maximize efficiency. It is well known that effective MIS

applications need knowledge and professionalism from managers and operational staff, (Brynjolfsson, 1993; Management Association, 2020). MIS preparation must be enriched with applications that are integrative, creative and interactive. Re-engineering them can help to increase performance and efficiency before automating them. Also, the multiplicity of inputs and outputs for meaningful activities and processes sufficiently reduced and MIS allowed all possible opportunities for business improvement.

The convergence of modern tools and greater user participation not only means that information systems are more important to organizations than they were in the past, but also that MIS needs to be more effective and functional. The implementation of the hotel information system gives several comparative comparisons of the reports for the targeted duration. It helps to plan the company's spending, to control the staff's jobs, to document the necessary details about the operating process. The device will also create outlines for papers that, according to the laws of various countries, can be submitted to government offices. Reports to be sent on a schedule to the Migration Service, the tax authorities and it is important because as a rule, there are penalty provisions for substantial delay in reporting, (Cho & Olsen, 1998; David et al., 2020). In addition to the ability to be competitive, the successful use of management information systems has several key advantages: management may provide an analysis of their whole operation. Managers have the potential to get reviews on their performance. Companies can boost profits from their assets by seeing what is running and what is not. Administrators may correlate results with planned output through identifying achievements and failures of both the plan and outcomes. Companies can establish process improvements that result in market processes being more suited to customer needs. Many business decisions are transmitted from higher management to operational phases that are nearest to where experience and skills lie, (Hong et al., 2015; Hutahayan, 2020). Active development is currently ongoing to develop software and hardware solutions that address hotel industry issues. In the hospitality industry, digital information systems are based both on the work of a skilled user and the work of an average user of the system. An ordinary hotel client has the opportunity to obtain hotel records, to review the regulatory papers, the availability of free rooms, the facilities offered and the costs. As far as the professional user system is concerned, the hotel management function takes place here-that is, information about the customer, about free rooms, about booking rooms, about the amount obtained from the customer, etc.

According to the study and analysis of a number of the most important tourism indicators for the period between 2010 and the end of 2014, the most prominent problem the tourism sector suffers from is the low occupancy rates in the Petra region. The percentage did not exceed 20%; as the number of visitors to the Pink City decreased by a significant 49% compared to the year 2018, despite being a global archaeological and tourist city, which is a successful investment for any country (jawabreh, 2017).

The originality of this analysis can be seen in the use of contingency theory, which narrows the difference between the model of the Hotel Organization (H/O) and the Competitive Advantage Efficacy (ESA) in terms of competitive advantage and efficiency. Specifically, this analysis introduces productivity and results on competitive advantage variables in classified hotels in the city of Petra that impact Management Information Systems (MIS). Second, empirically, by proposing a modern research paradigm and new research establishment at the level of productivity on the Comparative Advantage (ECA) in the hotel industry, this research aims to reduce the difference in scientific research. This study is supposed to be useful for policy decision-making, especially for managers who want to develop management information systems (MIS, ECA) in confidential hotels in the city of Petra.

LITERATURE REVIEW

Management information systems play a significant role in improving the efficiency of communication between different administrative levels. Communication plays an important role in maintaining the flow of work within organizations. The more good communication systems there are and the more efficient managers in the field of communications are, the more efficient the work and the better the performance are. The components of this integrated infrastructure of information subsystems are connected to goals, standards and specific coordination, based on the information strategy of the organization, (Dan Kamp et al., 1980). Each information subsystem has the ability to complete the information processing operations for the job or work assigned to it, in order to support the concerned department and to meet the needs of other departments with its various levels of comprehensive quality and value-added information that the management information system must provide in a timely manner to the beneficiaries. In other words, functional information subsystems reflect a common unity based on specialized functional databases that are managed and invested to serve management and decision-making purposes through database management software systems, especially at the strategic level, (Laudon & Laudon, 2016). That is, information systems contribute to formulating the vision and strategic objectives of the organization and support its mission, achieving competitive advantage. Information systems also contribute to supporting the decision-making process throughout its stages. In the intelligence stage, the information system provides a set of "periodic reports" or "exception", or even "special reports" about the problem to be solved, and in the design stage the system supports them with mathematical models, quantitative and previous experiences to help the decision maker in studying various alternatives. The selection stage is supported by the system with sensitivity analysis and other procedures to choose the appropriate alternative. The implementation stage requires a process of communication between the various decision-makers and implementers, followed by explanations and consultations given by information systems management, (Management Association, 2020; Maier et al, 2013; McDonald et al., 2017). Control over information systems is of utmost importance-whether it is general or applied control-that is not only reflected in its direct impact on the effectiveness and efficiency of the system, but in the protection and integrity of the system with its components and resources such as the data, information and files it contains, as well as the programs that store, manage and operate them.

Hotel establishments are mindful of the presence and desires of digital organizations and are interested in learning how business organizations should leverage information technology and within a long-term approach to achieve improved performance of their operations and greater competitiveness by increasing technical and digital delivery of activities (Jawabreh et al., 2020).

Information systems rely on providing management with internal and external information at all levels of the organization, and this significantly helps to make effective and temporary decisions based on information that improves the efficiency of the management of the company to achieve its objectives, (Iqbal et al., 2018). This has helped save managers time by limiting the personnel and workers needed. The specialization of management information systems is to understand the number of employees and workers and to choose the best in terms of efficiency and capability, which further enhances the institution's operation and improves the quality of development, (Dennis et al., 1980; Gamble, 1990). The manual activities and successes that take place in the company waste time and money, and these processes can be strengthened by management information systems to meet job goals while saving resources, such as costs, commitment and lack of regularity in tracking the attendance dates of workers manually becoming a challenge for the organization. When the administrative information system uses the fingerprint to research this activity and pass it to the scanner system, it makes it easier to measure

the monthly salary, the amount of hours of attendance, and even the regularity of work from the time of attendance to the time of departure. It is easy to share information and data between workers, in addition to connecting all branches and divisions of the institution by computerized systems. All of this is achieved by MIS experts monitoring and reviewing the system and giving managers time to complete critical strategic tasks by reducing the time lost on tasks such as data entry, (Maier et. al, 2013).

The ultimate beneficiaries are the ones who will depend on the new computerized system to carry out their work and procedures that used to be done manually, perhaps for long periods of time. As for the users, they are the ones who will provide the data and information to the authors, designers and implementers of the new computerized system. The lack of satisfaction of these users with the system may result in its failure, as they may not provide the information needed on time, (Melville et al., 2010). They may help in complicating or hindering the implementation process and transfer negative opinions, ideas and impressions to higher management, which negatively affects the implementation process. The organizations' plans must contain special programs to win their employees as they will assist in designing and implementing these computerized systems, in addition to training them and removing the factors of fear of losing work after implementing the new technological developments in the hotel.

Quality refers to the administrative component of the best way to do business (doing the job well through the optimum utilization of the capital available to produce the best returns at the lowest expense and at the lowest amount of waste. In this respect, we suggest that the utilization of the services available to the company enterprise should be within the limits that guarantee both the loyalty of customers in order to achieve their compliance with that operation and the internal balancing of the resources of the organization. Which means that the business retains its consumers' satisfaction by providing their service demands easily and with the required standard for them? Accordingly, the system provides the professional user with the speed of entry, sharing and information security needed. Coordination of the actions of the different elements is one of the key tasks in the management of the hotel industry, (Schultze & Leidner, 2002). New management systems and innovations, the use of digital computing technology and the use of automatic control systems need to be implemented to meet the goals of solving this problem. A variety of such services include hotel booking management, monitoring of guest registration and room allocation, accounting for inventory.

Information systems are the basis for doing business in today's business climate. Survival can be very complicated in many sectors, such as the tourism industry, without the effective use of information technology. In order to strategically help businesses work in a competitive environment, information systems have become important, (Seong-ho & Youngmin, 2019). By converting themselves into digital businesses where almost all main business processes and relationships with consumers, suppliers and workers are digitally powered; different industries are gradually becoming more innovative and effective. These innovations are used by the tourism industry for its financial, administrative, communications and customer relationship management. Within the entire strategic planning and management supervision of sectors such as the tourism industry, the management of these information systems has appeared emphatically. Moreover, the latest developments in information technology processing and increasing reliance on Internet-based software indicate further opportunities for enterprises. One research developing a model exploring how drawing capital from an organization contributes to online knowledge capability and thereby increased organizational and financial efficiency (Barua et al., 2004).

It illustrates how knowledge capabilities are developed by improving the capability of an organization for resource planning, contributing to more organizational and financial changes. Examples are various in terms of current practice ecosystems. Sharing economies and peer-to-peer enterprises are harnessing Internet-enabled capabilities for more efficient distribution of

information assets based on crowd sourcing. Therefore, key stakeholders, particularly workers, should be centered in advance on the functionality and usability options of any new management information system when designing a management information system for improved organizational and financial efficiency. Management systems are becoming increasingly central to numerous corporate practices and priorities in order to wind up. Despite opposition, information technologies display potential benefits in order to make implementation a must. One crucial factor in designing and integrating a management information system is customer recognition.

Usability orientations and growth are then expected by daily users for real usage and improved usability patterns, (Simon, 1990; Taohidul & Chik, 2011). In addition, management information systems in numerous fields, including the supply chain, the atmosphere and hospitality, are commonly used. Improved online information capabilities, more reliable operating practices and improved financial performance are the perceived advantages of implementing management information systems. Modern operations department has focused on those concepts by adopting all ways and means that would provide the required services in the least time and cost, which would benefit both the organization with profit and the consumer by bringing a state of saturation.

Logistics management: another term for productivity achievement; and for this, the use of this concept to attain speed in customer care, consistency of product or service. By achieving internal and external cooperation in meeting customer loyalty, etc. has the greatest impact on increasing the efficacy of operations management. Two aspects are probably the most critical features of logistics operations, among others: the first is that these activities are carried out in an organized fashion, which ensures that the principles of integration are extended to them in order to benefit from economies of scale, and the second is that they take place under the umbrella of information systems, (GAGE, 1980). Therefore, the application of logistics as a concept in the field of operations focuses on the secure and efficient management of the movement and storage of products, resources and data from the level of raw materials to the final stage of use in a way that achieves customer satisfaction and loyalty and increases product profitability, (Peffer et al., 2007). The application of vertical integration processes has affected the level of industry, horizontal, and vertical integration on the scale. In other words, it has contributed to laying the foundations for the globalization of production and trade, and even in shaping the new pattern of the international division of labor, (O'Brien et al., 2011). It is indicated in this area that it is marked by rapid growth considering the uniqueness of this branch of operations management, as it progressed from physical delivery to material management. Material Management later became advanced logistics, covering the management of supplies, known as Inbound Logistics, in-kind delivery under the name of Outbound Logistics, and internal handling. Things did not stop at this point, but logistics evolved into a supply chain which has evolved into Global Supply Chain. Furthermore, the development continued day after day, which has given rise to many modern concepts and trends in this field (Johnson et al., 2016; Jiang et al., 2002).

The fishbone diagram model achieves optimum efficiency in the management of operations. Perhaps what was presented by the Japanese scientist Ishikawa in his supposed "fishbone diagram" model, which expresses the main and sub-causes leading to an effect (display), has interpreted, in one way or another, methods that lead to achieving high efficiency in managing operations, especially when controlling the display with its effect, Cause-And-Effects. Study was conducted by (Ismail et al., 2004) entitled: "Measuring the Beneficiaries' Attitudes toward Information Systems", this study aimed to determine the beneficiaries' characteristics (individuality, functionality, and professionalism) in the industrial sector organizations in Nineveh Governorate. It also aimed to determine the nature of the beneficiaries' need for information, and to identify the nature of the correlation and influence between the characteristics of the beneficiaries and their attitudes towards information systems. This was

done by taking a study sample of decision makers, amounting to (112) participants. The most important finding of the study is the existence of a relationship between the characteristics of the beneficiaries and their attitudes towards management information systems, it, also, concluded that the level of use of information systems is influenced by the attitudes of the beneficiaries towards the adoption of computers in the applications of information systems, the need to pay attention to the different characteristics of the beneficiaries, and the management of organizations undertaking a process of continuous development of the beneficiaries' attitudes towards information systems.

The information systems built provide the necessary data to support and control the program functions of the project. Control information systems began well before computers were adopted. It emerged in account administration and other administrative fields, (Jääskeläinen et al., 2020). Using machines makes it easy to use to collect information and work with data in vast numbers. This knowledge is often available to be used by the organization as a whole to provide a general impression of the organization or agency, to carry out the liaison and planning process. To have a vast volume of customer info, to provide input that could aid the company in the completion of processes and acts, and to carry out direct marketing and promotion efforts. Management information systems provide the company with a strategic edge that helps it to efficiently and effectively complete operations with the least time, effort and expense.

The decision-making process has gained great importance in the modern era, especially after having tourism establishments that are working with many resources, huge equipment, and using huge sums of money. Decisions in the field of business administration became the real engine of the organizations' activity, and the starting point towards achieving goals and success in them, which resulted in a school in management called the “decision-making school”, whose owners believe that “decision-making is synonymous with management. (Simon Herbert) says that making decisions is the heart of management, and the concepts of management theory should be derived from logic, (Okumus, 2013). Most of the tourism establishments share their efforts to obtain and analyze data and make decisions based on their management's interpretation of the information resulting from this data. These organizations are data processing units. They collect data on the economic situation, the markets in which it deals, the demographic, geographic, political, social, and technological situation and other factors of the general external environment, on competitors and their trends, on tourists, financiers, suppliers and other factors of the external operational environment, on the operations and internal performance of the establishment in terms of marketing, productivity, financial, on other aspects of the internal environment, and about the products and services they offer to the market. The competent authorities in the organization filter and purify this data and process it to extract information suitable for the basis of administrative decision-making. The decisions are based on the management's own vision and understanding of the extracted information and on its objectives and experiences, (Chawinga & Chipeta, 2017). The administration also disseminates this information among the supervisory bodies, shareholders, employees and the general public. If the administration has three levels: high, middle and lower, the flow of information between the different administrative levels is a reality in the business world and an urgent necessity for good management. The flow of information permeates the enterprise in all aspects of its activities; production, marketing, financing, users and others, is not limited to one or some of them, but rather passes between them from one administrative level to another, with the intention of rationalizing administrative decision-making throughout the organization and in its various activities. The information differs in its characteristics. The more accurate, comprehensive, clear, appropriate, flexible, quantifiable, timely, with appropriate form, and at the lowest cost, the more appropriate it is to make good and effective management decisions.

Managers give great importance to everything related to increasing profits and reducing costs, and since the volume of information spending is hundreds, or millions of monetary units

annually, they have given full importance to this element in large organizations, especially those related to their activities in the field of technologies and communications, as the volume of information spending varies. From one institution to another, for several factors, perhaps the most important of which are: the size of the organization, its nature, the purpose of its existence, the quality of management, the methods it uses to perform its work, and the difference in accounting methods to treat the cost of producing information. Practically, and from the reality of business, the cost of generating information is usually related to one or more particular operations, such as the cost of preparing salaries, the cost of preparing customer demands, or the cost of preparing monthly schedules or others and the costs are usually categorized according to their actions for a certain period of time, (Yao& Wang, 2010; Wang et al., 2013).

It is not correct to limit management information systems to simply performing office work using computers instead of the manual method. It is also not sufficient to simply own and operate computers to provide management information systems. In addition to the above, the development of management information systems requires careful and detailed planning by those in charge, as its development includes several stages: research and study, analysis and design, and application and testing (Wettstein & Kueng, 2002). Upon completion of the systems test, the task of managing, operating, and evaluating the system begins to ensure that it performs the tasks assigned to it according to the criteria used to judge its effectiveness and efficiency. There are also several types of management information systems of varying in sophistication, which are office automation systems, decision support systems, higher management information systems, and expert systems, all of which came according to the technological and organizational development witnessed by business organizations in the last century, and the growing strategic role that information plays in the organization (Zhang et al., 2012).

METHODOLOGY

We used the SPSS version 20 to test 22 elements of the Likert scale for the outcome in factor analysis, before conducting axial component analysis, the suitability of the data for factor analysis was evaluated. Multiple hierarchical regressions" was used to test the hypotheses.

Context information on the organization of respondents and hospitality. The ranking scale moved from a 7- to a 5-point scale after a pre-test with hospitality workers, so employees had difficulty discriminating and felt it easier to respond to a 5-point scale. In addition, the pre-test found that hospitality workers often had trouble adjusting to the Likert-type scales.

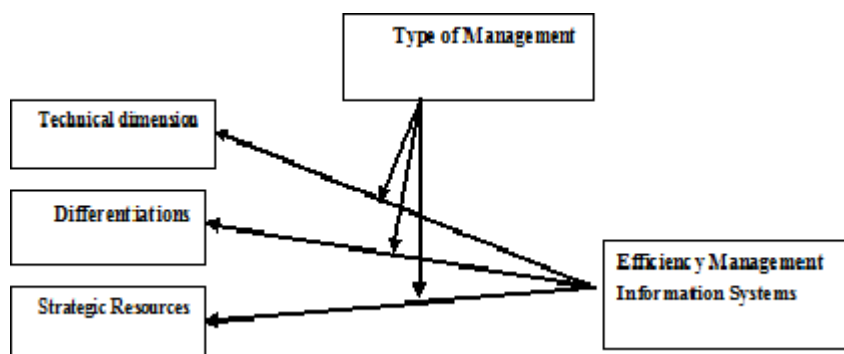


FIGURE 1
THE MODEL OF STUDY

It can be seen from Table 1 that 57.7% of the sample individuals are males. And the largest age group is from 46 to 55 years by 30.2%, while the lowest rate of 9.5% is less than 25 years old. It appears that 50.8% have a bachelor's degree and only 7.4 from high school or less. 25.4% have experiences ranging from 8 to 11 years. And 23.8% are from 12-16 years old and 21.7% are over 16 years old, and this is an indication of the ability of the sample members to answer the questions. 34.6% of the sample represented individual departments, 31.8% corporate contract departments, 23.2% international hotel chain administrations

Table 1		
SAMPLE DISTRIBUTION ACCORDING TO THE SAMPLE CHARACTERISTIC		
variable	No	%
sex		
Male	109	57.70%
Female	80	42.30%
Age		
Less than 25 years old	18	9.50%
26-35 years old	38	20.10%
36-45 years old	49	25.90%
46 - 55 years old	57	30.20%
56 and older	27	14.30%
Educational level		
Secondary and below	14	7.40%
diploma	44	23.30%
Bachelor Degree	96	50.80%
Postgraduate	35	18.50%
Experience		
3 years and less	20	10.60%
4-7 years	35	18.50%
8-11 years old	48	25.40%
12 - 16 years old	45	23.80%
Older than 16 years old	41	21.70%
Type Management		
Individual Administration	73	34.60%
Management contracts	67	31.80%
Managing international hotel chains	49	23.20%

To find out the validity of the model, Confirmatory Factor Analysis (CFA) was performed. Table No. 2 displays the factor loadings, as most of the values are greater than 0.70; meaning that they are statistically significant at the level of 0.05 (Bagozzi & Yi, 1988). The table shows composite reliability values ranging from 0.83-0.94, which indicates internal stability. This result is supported by Cronbach's alpha values in Table 3, ranging from (0.65-0.89).

Table 2		
CONFIRMATORY FACTOR ANALYSIS RESULTS (N=189)		
Item	Factor Loadings	Composite Reliability
Systems efficiency		0.92
The information systems in the hotel help reduce costs, and increase product quality	0.95	
The information systems in the hotel help to increase the efficiency of the operations of all the hotel facilities	0.91	
The information systems in the hotel help to increase the efficiency of coordination between the operations in the hotels belonging to the same chain	0.74	
There is a clear variety in the use of information systems within the hotel	0.73	
A modern and efficient communication network is available to serve the hotel's information systems and operations	0.96	
Hotel management makes special management decisions to avoid information security risks	0.69	
Technical dimension		0.94
The hotel seeks to introduce new products with the aim of gaining new market share	0.9	
The hotel seeks to develop its products based on market studies and determining customers' needs	0.9	
Hotel products are developed based on expertise and skills	0.93	
The hotel allocates sufficient funds for research and development of its products	0.94	
The hotel works on designing new processes to reduce costs and effort	0.84	
The hotel seeks to use the best technology and scientific methods to improve the service	0.64	
Differentiation		0.84

The hotel adopts advanced products that meet the needs and desires of tourists	0.67	
The hotel adopts strategies towards specializing in some of its services	0.7	
The hotel has quality control centers for the services provided to tourists	0.85	
The hotel provides qualified personnel who are able to provide the best service	0.63	
The hotel has the media and communication networks to market the hotel	0.73	
Strategic resources		0.85
The information systems in the hotel provide enough information for the decision-maker to use it in shaping the hotel's goals and future plans	0.84	
The hotel has its own human resource information systems that support decision-making processes	0.71	
The hotel provides information systems for all operations to support the decision-making process	0.65	
The hotel has information systems for competing hotels, for customers and for marketing	0.72	
The hotel pays great attention to building a database on management, operational and marketing information systems	0.73	

($\chi^2=397.2$, $p<0.01$; CFI: 0.82; GFI: 0.80; RMSEA: 0.07; SRMR: 0.04.)

Table 3 shows the values of the extracted averages of variance (AVE), which amounted to (0.70, 0.75, 0.52 and 0.51). This is higher than the acceptable average of 0.50 (Fornell and Larcker, 1981), and are smaller than the values of composite reliability, and this confirms the existence of convergent truth. As for the differential validity, it was based on the square root of the AVE value. Table 3 shows these values, which range between (0.71 and 0.84). This is higher than its correlations with other combinations, as can be seen from the same table. This indicates discriminatory validity, meaning that each construct differs statistically from another. So there is a good fit between the theoretical model and the data ($\chi^2=397.2$, $p<0.01$; CFI: 0.82; GFI: 0.80; RMSEA: 0.07; SRMR: 0.04.).

Table 3. Means, Standard Deviations, Reliability and Correlation Coefficients (N=189)

Notes: **: $p<0.01$, *: $p<0.05$

Testing Hypotheses:

"Multiple hierarchical regressions" was used to test the first three hypotheses. The first step was to add variables of gender, age, level of education, and experience. In the next step, the independent variables were added separately. For the variable of the technical dimension, ($\beta=0.29$, $p<0.01$), this indicates acceptance of the first hypothesis. That is, there is a positive

statistically significant relationship between the efficiency of management information systems and the technical dimension at the level of 0.01. As for product differentiation, it reached ($\beta=0.16$, $p<0.05$), meaning that the second hypothesis has been accepted as there is a positive statistically significant relationship between the efficiency of management information systems and the differentiation of products.

As for the third hypothesis which relates to strategic information resources, then ($\beta=0.33$, $p<0.01$), that is to say it is accepted. This means that there is a positive statistically significant relationship between the efficiency of management information systems and strategic information resources.

Variables		Variables		Variables	
Step 1					
Gender	0.03	Gender	0.03	Gender	0.03
Age	0.01	Age	0.01	Age	0.01
education	0.04	job	0.04	job	0.04
Experience	0.04	education	0.04	education	0.04
R2	0.005	R2	0.005	R2	0.005
Step 2		Step		Step	
Technical dimension	0.29**	Differentiation	0.16*	Strategic resources	0.33**
$\Delta R2$	0.105**	$\Delta R2$	0.024*	$\Delta R2$	0.029*
F	21.70**	F	4.47*	F	5.50*
Total R2	0.11	Total R2	0.029	Total R2	0.034

Notes: **: $p<0.01$ *: $p<0.05$

The fifth hypothesis: the difference in the type of management positively modifies the relationship between the efficiency of management information systems and product differentiation.

The sixth hypothesis: the difference in the type of management positively modifies the relationship between the efficiency of management information systems and the strategic information resources.

Multiple hierarchical regression was used to test the fourth, fifth and sixth hypotheses. The first step was to add the variables of sex, age, level of education, and experience. In the second step, the independent variable and the management type variable were added, and in the third the intersection of the independent variable with the management type variable was added.

Regarding the fourth hypothesis, it is noticed from Table 5 that the intersection of the technical dimension with the type of management (individual, corporate contracts) obtained ($\beta=2.09$, $p<0.01$), and this intersection added a positive change to the variance by 0.06 ($\Delta R2=0.06$, $p<0.01$). Figure No. 2 shows that the effect of individual management was negative, while the effect of corporate contracts management was positive. The negative impact of individual management is greater at the low level of the technical dimension. The positive effect of corporate contract management is also greater at the lower level of the technical dimension. The intersection of the technical dimension with the type of management (individual,

international hotel chains) was obtained ($\beta=4.58$, $p<0.01$), and this intersection added a positive change to the variance by 0.062 ($\Delta R^2=0.062$, $p<0.01$).

Figure 4 shows that the effect of individual management was negative, while the effect of corporate contracts management was positive. The negative impact of individual management is greater at the high level of the technical dimension. And corporate contract management had a greater positive impact on the high level of the technical dimension. As for the intersection of the technical dimension with the type of management (corporate contracts, international hotel chains), it was not statistically significant. Regarding the intersection of the technical dimension with the type of management as a whole, (individual, corporate contracts, international hotel chains), the rate of change was 0.15, which is statistically significant at $p<0.01$. So the fourth hypothesis is accepted, meaning that the difference in the type of management positively modifies the relationship between the efficiency of management information systems and the technical dimension.

Regarding the fifth hypothesis, Table 5 shows that the intersection after differentiation with the type of management (individual, corporate contracts) obtained ($\beta=1.23$, $p<0.05$), and this intersection added a positive change to the variance by 0.04 ($\Delta R^2=0.04$, $p<0.05$). Figure 5 shows that the effect of individual management was negative, while the effect of corporate contract management was positive. The negative individual management effect is greater at the low level of the differentiation dimension, whereas, the management of corporate contracts had a greater positive impact at the low level of the differentiation dimension. The intersection after differentiation, with both the type of management (individual, international hotel chains) and the type of management (corporate contracts, international hotel chains), were not statistically significant. As for the intersection of the differentiation with the type of management as a whole (individual, corporate contracts, international hotel chains), the rate of change was 0.005, which is not statistically significant, as $p=0.34$. So the fifth hypothesis is rejected, that is, the difference in the type of management does not positively modify the relationship between the efficiency of management information systems and the differentiation of products' dimension.

Regarding the sixth hypothesis, Table 5 shows that the intersection of the strategic information resources dimension with the type of management (individual, corporate contracts) obtained ($\beta=1.40$, $p<0.05$) and this intersection added a change in the variance by 0.025 ($\Delta R^2=0.025$, $p<0.05$). Figure 5 shows that the effect of individual administration is not statistically significant. Moreover, corporate contracts management is positive, and its impact increases at the high level of this dimension more than the low level. As for the intersection of the strategic information resources dimension with the type of management (individual, international hotel chains), it was not statistically significant. The intersection of this dimension with the type of management (corporate contracts, international hotel chains) obtained ($\beta=-1.93$, $p<0.01$), and this intersection added a variance change of 0.063 ($\Delta R^2=0.063$, $p<0.01$). Figure 5 shows that the management of international hotel chains has a negative impact, while managing corporate contracts has a positive one, and that the negative impact of managing international hotel chains is almost similar in between the high and the low levels, while the positive impact of managing corporate contracts is greater at the high level. As for the intersection of the technical dimension with the type of management as a whole (individual, corporate contracts, international hotel chains), the rate of change was 0.01, which is not statistically significant, as $p=0.19$. So the sixth hypothesis is rejected, meaning that the difference in the type of management does not positively modify the relationship between the efficiency of management information systems and the dimension of strategic information resources.

Table 5.			
RESULTS OF MODERATION TESTING (N=189)			
Variables	Individual vs corporate contracts	Individual administration vs international hotel chains	corporate contracts vs international hotel chains
Step 1(Technical dimension)			
Gender	0.04	0.05	0.02
Age	0.05	-0.02	0.01
Education	0.08	-0.03	0.06
Experience	0.07	-0.03	0.07
R2	0.01	0.005	0.009
Step 2(Technical dimension)			
Technical dimension	0.17*	-0.22*	0.32**
Administration Type	-0.40**	0.25*	0.48
ΔR^2	0.22**	0.053**	0.45**
Step 3			
Technical dimension* Administration Type	2.09**	4.58**	3.69
ΔR^2	0.06**	0.062**	0.014
F	10.65**	8.01**	2.81
Total R2	0.29	0.12	0.47
Technical dimension* Administration Type (all)	$\Delta R^2=0.15$, $p=0.0001$		
Step 2(Differentiation)			
Differentiation	0.09	0.004	0.25**
Administration Type	-0.43**	0.13	0.58**
ΔR^2	0.20**	0.017	0.41**
Step 3			
Differentiation * Administration Type	1.23*	0.71	1.02

ΔR^2	0.04*	0.016	0.016
F	6.94*	1.85	3.07
Total R ²	0.25	0.037	0.44
Differentiation * Administration Type(all)	$\Delta R^2 = 0.005$ $p=0.34$		
Step 2(Strategic resources)			
Strategic resources	0.25**	-0.03	0.27**
Administration Type	-0.43**	0.13	0.62**
ΔR^2	0.26**	0.017	0.43**
Step 3			
Strategic resources * Administration Type	1.40*	-0.23	-1.93**
ΔR^2	0.025*	0.001	0.063**
F	4.07*	0.1	13.71**
Total R ²	0.29	0.023	0.5
Strategic resources * Administration Type(all)	$\Delta R^2 = 0.01$ $p=0.19$		

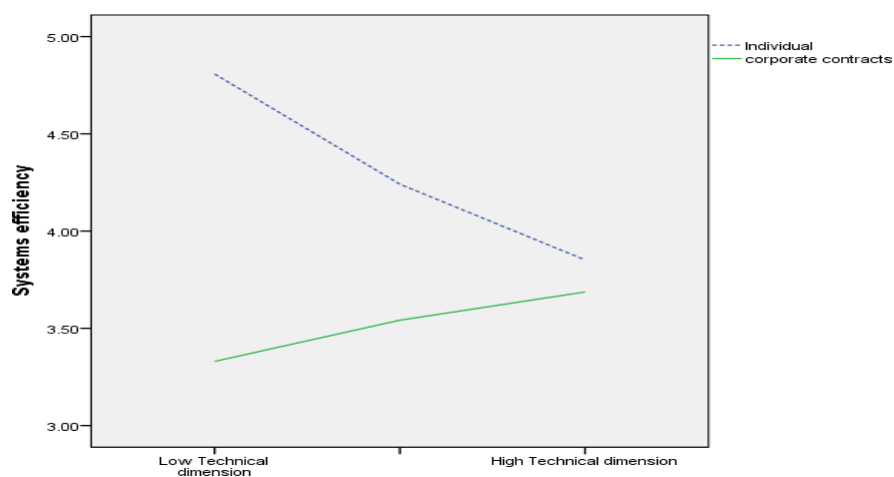


FIGURE 2
EFFECT TECHNICAL DIMENSION ON SYSTEMS EFFICIENCY (INDIVIDUAL VS. CORPORATE CONTRACTS).

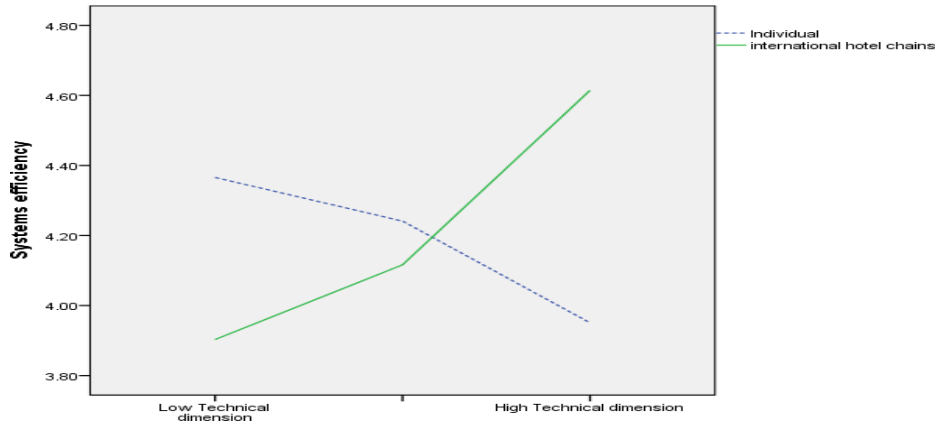


FIGURE 3
EFFECT TECHNICAL DIMENSION ON SYSTEMS EFFICIENCY (INDIVIDUAL VS INTERNATIONAL HOTEL CHAINS).

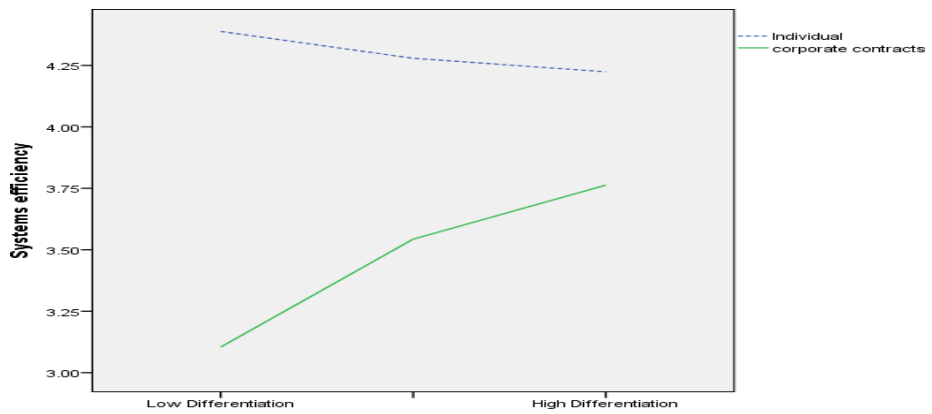


FIGURE 4
EFFECT TECHNICAL DIMENSION ON DIFFERENTIATION (INDIVIDUAL VS. CORPORATE CONTRACTS).

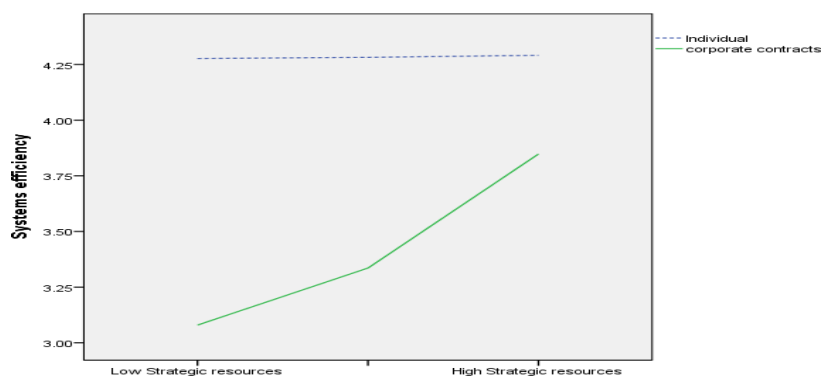


FIGURE 5
EFFECT TECHNICAL DIMENSION ON STRATEGIC RESOURCES (INDIVIDUAL VS CORPORATE CONTRACTS).

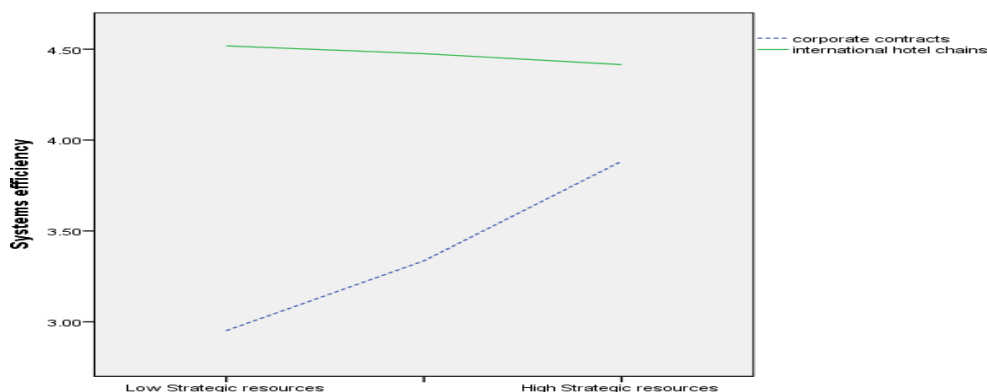


FIGURE 6
EFFECT TECHNICAL DIMENSION ON STRATEGIC RESOURCES (CORPORATE CONTRACTS VS INTERNATIONAL HOTEL CHAINS).

CONCLUSION

This is higher than its correlations with other combinations; This indicates discriminatory validity, meaning that each construct differs statistically from another. So there is a good fit between the theoretical model and the data ($\chi^2=397.2$, $p<0.01$; CFI: 0.82; GFI: 0.80; RMSEA: 0.07; SRMR: 0.04)

There is a positive statistically significant relationship between the efficiency of management information systems and the technical dimension at the level of 0.01. As for product differentiation, it reached ($=0.16$, $p<0.05$), meaning that the second hypothesis has been accepted as there is a positive statistically significant relationship between the efficiency of management information systems and the differentiation of products. Today, information systems for management are commonly adopted across sectors. This is due to supposed tactical advantages, of course, but also to financial and strategic advantages. For example, in a supply chain sense, an observational analysis carried out on a U.S. supply chain that incorporated advances in management information technology into the in-place structure of the organization has helped improve information sharing and communication practices. Employees are important to the growth of the system as a whole and to the management of a more productive technical system, providing a decisive commitment to producing more revenue. (Adeoti, 1997; Alavi and Leidner, 2001) A better infrastructure and more system integrations in operation indicate a higher return to the hotel, an improvement in sales and quality in the plan for revenue control.

Efficient databases that allow you to collect and store extensive details on the hotel's operation and its interaction with each guest are at the heart of modern hotel management systems. And if a requirement for the efficient operation of the hotel may be considered the automation of the hotel operation processes, then the productive use of the collected data is a crucial consideration for the hotel to gain a competitive edge in the industry.

The negative impact of individual management is greater at the low level of the technical dimension. The positive effect of corporate contract management is also greater at the lower level of the technical dimension. The intersection of the technical dimension with the type of management (individual, international hotel chains) was obtained ($\beta=4.58$, $p<0.01$), and this intersection added a positive change to the variance by 0.062 ($\Delta R^2=0.062$, $p<0.01$). Since tourism is increasing around the world now, the position of hotels is becoming greater than ever. Hotels have a wide market space, so the use of a manual method will lead to incorrect management. It is, however, more effective to use a computerized device. (Amoako, 2015; Bilgic, 2020). The most critical aspect of every hotel system is reservation, since it meets the

hotel's business objectives. In a hotel, there are two groups of clients; individual customers and company clients. In the high season, group clients have higher preference than individual clients because group clients are more secure. Therefore, the front office manager can take decisions on the reservations that the computerized system will accommodate. This method includes several resources that could be used by the front office manager in his decision to assign rooms and reserve categories. In a hotel, this system does not work alone because it relies mostly on reservation procedures. The system includes an accounting system and a management information system so that it can efficiently fulfill all the hotel's needs. We want to discuss the intersection after differentiation, with both the type of management (individual, international hotel chains) and the type of management (corporate contracts, international hotel chains), were not statistically significant. As for the intersection of the differentiation with the type of management as a whole (individual, corporate contracts, international hotel chains), the rate of change was 0.005, which is not statistically significant, as $p=0.34$. So the fifth hypothesis is rejected, that is, the difference in the type of management does not positively modify the relationship between the efficiency of management information systems and the differentiation of products' dimension.

REFERENCES

- deoti dekeye, . B. (1997). The importance of management information systems. *Library Review*.
- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 25(1), 107-136.
- Amoako, G. K., Adjaisson, G. K., Kumi, D. K., & Asamoah, F. K. (2015). Using MIS for Strategic Planning and Management Control in Tourism Industries. In *New Business Opportunities in the Growing E-Tourism Industry* (pp. 20-42). IGI Global.
- Barua, A., Konana, P., Whinston, A. B., & Yin, F. (2004). An empirical investigation of net-enabled business value. *MIS quarterly*, 28(4), 585-620.
- Bilgic, E. (2020). Human Resources Information Systems: A Recent Literature Survey. *Contemporary Global Issues in Human Resource Management*.
- Kamp, B. D., Miller, G. R., & Haley, A. (1980). Applications of parks management information systems. *Leisure Sciences*, 3(1), 83-98.
- Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, 36(12), 66-77.
- Chawinga, W. D., & Chipeta, G. T. (2017). A synergy of knowledge management and competitive intelligence: A key for competitive advantage in small and medium business enterprises. *Business Information Review*, 34(1), 25-36.
- Cho, W., & Olsen, M. D. (1998). A case study approach to understanding the impact of information technology on competitive advantage in the lodging industry. *Journal of Hospitality & Tourism Research*, 22(4), 376-394.
- Jamieson, D., Wilson, R., Martin, M., Lowe, T., Kimmitt, J., Gibbon, J., & French, M. (2020). Data for outcome payments or information for care? A sociotechnical analysis of the management information system in the implementation of a social impact bond. *Public Money & Management*, 40(3), 213-224.
- Spuck, D. W., & Bozeman, W. C. (1980). A design for the evaluation of management information systems. *AEDS Journal*, 14(1), 30-44.
- Gamble, P. R. (1990). Culture shock, computers and the art of making decisions. *International Journal of Contemporary Hospitality Management*.
- Hong, W., Thong, J. Y., Wong, W. M., & Tam, K. Y. (2002). Determinants of user acceptance of digital libraries: an empirical examination of individual differences and system characteristics. *Journal of management information systems*, 18(3), 97-124.
- Hutahayan, B. (2020). The mediating role of human capital and management accounting information system in the relationship between innovation strategy and internal process performance and the impact on corporate financial performance. *Benchmarking: An International Journal*, 27(4), 1289-1318.
- Iqbal, N., Ahmad, M., Allen, M. M., & Raziq, M. M. (2018). Does e-HRM improve labour productivity? A study of commercial bank workplaces in Pakistan. *Employee Relations*, 40(2), 1-37.

- Bakan, I., Suseno, Y., Pinnington, A., & Money, A. (2004). The influence of financial participation and participation in decision-making on employee job attitudes. *The International Journal of Human Resource Management*, 15(3), 587-616.
- Jääskeläinen, A., Sillanpää, V., Helander, N., Leskelä, R. L., Haavisto, I., Laasonen, V., & Torkki, P. (2020). Designing a maturity model for analyzing information and knowledge management in the public sector. *VINE Journal of Information and Knowledge Management Systems*.
- Jawabreh, O., Jahmani, A., Khaleefah, Q., Alshatnawi, E., Abdelrazaq, H. (2020). Customer Expectation in Five Star Hotels in Aqaba Special Economic Zone Authority (ASEZA). *International Journal of Innovation, Creativity and Change*, 11(4) 417-438.
- Jawabreh, O. (2017). An exploratory study of the motives of Jordanian out bound tourism and its impact on the development of tourism in Jordan. *International Journal of Applied Business and Economic Research*, 15(19), 443-467.
- Johnson, R. D., Lukaszewski, K. M., & Stone, D. L. (2016). The evolution of the field of human resource information systems: Co-evolution of technology and HR processes. *Communications of the Association for Information Systems*, 38(1), 28.
- Jiang, J. J., Klein, G., & Carr, C. L. (2002). Measuring information system service quality: SERVQUAL from the other side. *MIS quarterly*, 26(2), 145-166.
- Jacobson, R. S., & Tjahjono, D. (2015). *Management information systems* (p. 143). Upper Saddle River: Pearson.
- Management Association, I. (2020). *Information Diffusion Management and Knowledge Sharing: Breakthroughs in Research and Practice* (2 Volumes). IGI Global.
- Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2013). Analyzing the impact of HRIS implementations on HR personnel's job satisfaction and turnover intention. *The Journal of Strategic Information Systems*, 22(3), 193-207.
- McDonald, K., Fisher, S., & Connelly, C. E. (2017). e-HR systems in support of "smart" workforce management: An exploratory case study of system success. *Electronic HRM in the smart era*, 87-108.
- Melville, N. P. (2010). Information systems innovation for environmental sustainability. *MIS quarterly*, 34(1), 1-21.
- Okumus, F. (2013). Facilitating knowledge management through information technology in hospitality organizations. *Journal of Hospitality and Tourism Technology*, 4(1), 64-80.
- O'Brien, J. P., & Arakas, G. (2011). Developing business/I solutions. *Management Information Systems*, 488489, 74-89.
- Peppers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A design science research methodology for information systems research. *Journal of management information systems*, 24(3), 45-77.
- Jeong, H., Oh, Y. (2019). New development: lessons and recommendations from South Korea's experiences with integrated financial management information systems. *Public Money & Management*, 39(8), 599-601.
- Schultze, U., & Leidner, D. E. (2002). Studying knowledge management in information systems research: discourses and theoretical assumptions. *MIS quarterly*, 26(3), 213-242.
- Peck, S. (1990). Management Information Systems. *Journal of the Operational Research Society*, 41(4), 359-360.
- Islam, S. T., & Chik, Z. (2011). Disaster in Bangladesh and management with advanced information system. *Disaster Prevention and Management: An International Journal*, 20(5), 521-530.
- Yao, J., & Wang, J. (2010). Group Support Systems as Tools for HR Decision Making. In *Strategic Information Systems: Concepts, Methodologies, Tools, and Applications* (pp. 1087-1095). IGI Global.
- Wang, Y., Meister, D. B., & Gray, P. H. (2013). Social influence and knowledge management systems use: Evidence from panel data. *MIS Quarterly*, 31(1), 299-313.
- Wang, Y., & Wang, J. (2002). Maturity model for performance measurement systems. *Transactions on Information and Communication Technologies*, 26.
- GAGE, W. (1980). Auditorium Management Information Systems. *Cybernetics And Systems*, 11(4), 369-380.
- Zhang, L., Wang, H., Cao, X., Wang, X., & Zhao, K. (2012). Knowledge management component in managing human resources for enterprises. *Information Technology and Management*, 13(4), 341-349.