Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

Investigating the impact of Information Technology on the status of Health Tourism in Mashhad, Iran

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ABSTRACT

The impact of information and communication technology (ICT) and tourism industry on economic growth is on obvious fact. This study investigated the relationship between information technology (IT) and the status of health tourism in Mashhad.

This applied study was conducted during 2016-2017. The first population included all the hospital heads, managers and experts in five regions (north, south, east, west and center) of Mashhad, among which 120 individuals were selected. The second population was an infinite one; thus, Cochran's sample size formula was used and 384 individuals were selected as sample. The construct validity of the questionnaire was confirmed using confirmatory factor analysis and its reliability was confirmed with a high (> 0.7) Cronbach's alpha coefficient. The data were analyzed using confirmatory factor analysis and mathematical models in SPSS 21 and LISREL 8.50.

The factor analysis results showed that there was a relationship between IT and the status of health tourism in Mashhad

Proper planning in the area of IT enhancement can help expand health tourism sector of Mashhad and this will in turn contribute to the development of regional economy.

Keywords: information technology, health tourism, Mashhad

Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

1. INTRODUCTION

Like other service sectors, tourism industry also witnesses increased competition and the presence of new competitors every day. Significant growth in tourism activities reveals that tourism is one of the most important economic and social phenomena of the last century. The emergence of private hotels with suitable infrastructures has further intensified the competition in recent years. All hotels are offering relatively identical services and each new service is quickly copied by competitors. In this situation, provision of special facilities and establishment of specific relationships with customers can help organizations survive and win the competition (1). Online booking by using web and Internet technology enables customers to practice their tourist activities in a virtual environment. Research conducted on online booking acceptance rate improves customer perceptions of online booking and shows how these ideas and attitudes can affect customer behavior in the use of online booking (2). Online booking provides customers with many benefits. Saving time, reducing costs, no dependence on time and place, rapid response to customer complaints and provision of innovative services to customers are among these benefits. Due to these benefits, customers have increased their online activities and their expectation of the quality of online booking services has also increased. By increasing the quality of online services, tourists have utilized Internet as a main mechanism for booking hotel rooms and coordinating other travel arrangements (Malmir et al., 2013). In today's developed markets and in the current competitive environment, various institutes and companies [e.g. hotels] have realized that they need to focus on customers. Successful customer maintenance reduces the need to look for new customers and its potential risk. In addition, establishment of long-term relationships with customers will reduce the cost of services. In a period where customers have numerous options, service providers must always try to stick in customer’s mind. Hotels use technological advances to respond such challenges. In their strategy, they try to satisfy customers by providing better products and services at lower costs. Therefore, the idea of online booking is widely used (3). The increased international growth, on the one hand, and significant growth of tourism industry on the other hand, have led to the emergence of new types of tourism, such as health tourism. Among various tourism areas, health tourism and its subcategories have received a great deal of attention due to their

Received 16/04/2018
Approved 28/05/2018

potentials and competitive advantages and have outpaced other tourism areas. It has been estimated that health tourists bring three times more foreign exchange earnings compared with regular tourists (4).

Iran is a young country in the area of online booking and it has a long way to go to reach an acceptable level. The emergence of new technologies has brought new needs in the area of processing and data exchange, proper tools and infrastructures and their implementation, as well as service delivery approaches. This justifies managers' curiosity to know what factors encourage customers to use services such as online booking (3). Mashhad attracts 30 million tourists each year and more than 2 million U.S. tourists visit the Middle Eastern countries to receive medical services each year. These statistics demonstrate the importance of planning for the implementation of tourism projects in Iran. Today, the use of ICT in the area of public health services and at its various levels is among the common topics addressed by governments and small and large institutions working in these areas (5).

Today, by emergence of Internet and electronic tourism, ICT has become an essential element of tourism and has increased the efficiency of this industry. Establishment of effective relationships with customers and other tourism industry players has always been the main priority for tourism companies. Throughout the history of tourism, there have always been certain value chains in which suppliers, intermediaries and customers and their information systems have all played their own role in gathering information (6). Considering Iran's vast facilities, potentials and features in the area of tourism industry, it seems absolutely necessary to the use modern strategies of attracting and retaining current customers, and in the next step, expand their number. Today, by emergence of Internet and electronic tourism, ICT has become an essential element of tourism and has increased the efficiency of this industry. IT has transformed operational procedures of all organizations, especially those of the tourism industry (7).

Majid et al. (2017) argued that natural treatments are being considered by medical tourists as well as allopathic treatments (a conventional western approach based on surgeries and drugs) and tourism attractions. However, the existence of an allopathic system of treatment still contributes to emerging medical system where no T&CM treatment alternatives are available (8). An algorithm by Noori and Kargari (2006) ranked the most important effective factors in health tourism attractions as staff

Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

behavior, social security and communication (9). Szymanska et al. (2015) stated that innovations in tourism are responses to the growing public demand for a long, healthy and beautiful life. The goal is to create a theoretical model of the health tourism innovation system. The results of a survey of experts were also presented which was conducted in two rounds, using Delphi method. The result was presenting three different models of health tourism innovation (Antón Chávez, 2017). Farhadi Gheshlaghi et al. (2013) stated that the use of modern technologies in the tourism sector can contribute to the identification, promotion and marketing of tourist attractions and, finally, it can result in the development of tourism, employment and national economy (11). Atafar et al. (2012) stated that attitude and perceived usefulness are the main factors affecting customer intentions in the area of online booking and the variables of trust, reputation and compatibility affect booking intentions through the mediator variable of attitude (3).

Unfortunately, relevant authorities and monitoring bodies have so far failed to take proper steps to organize health information technology databases; therefore, this research was conducted to investigate the impact of IT on the status of health tourism in Mashhad.

2. RESEARCH METHOD

This descriptive-analytical applied survey used field study method. Data were collected during 2016-2017. The research literature was reviewed; relevant models were identified and the opinions of hospital experts were utilized to develop an appropriate model through using structural equation modeling.

The first part of the study population (factor analysis) included hospital chiefs, managers and experts who were mainly physicians, faculty members of health services management, senior experts in health services management, senior experts and experts in medical disciplines in five regions (north, south, east, west and center) of Mashhad. Kaiser-Meyer-Olkin (KMO) test was conducted to prove the adequacy of data for conducting factor analysis. If the p-value was less than 0.05, then the sample size was sufficient. In this technique, to determine the sample size, the number of variables was multiplied by a number between 10 and 20 (12). The whole county was divided into five regions and using multi-stage cluster sampling, 120 individuals were selected in hospitals as research samples (24 individuals in each region). The data were also

Received 16/04/2018
Approved 28/05/2018

compared with the six WHO regions and two countries were selected from each of the six regions (Africa, America, Eastern Mediterranean, Europe, Southeast Asia and Western Pacific) (for the first study population).

The second part of the study population (health tourism) was an infinite population; therefore, Cochran's sample size formula was used and 384 individuals were selected as samples. Finally, 77 individuals were selected in each of the five regions (for the second population).

A three-part questionnaire was used to collect data. The first part contained demographic information, such as: gender, age, educational qualifications and work experience. The second part included the main questions in the area of health tourism. This part was based on Cassidy's research (2014). The third part contained the main questions in the area of health tourism. This questionnaire was based on the study of Goodarzi et al. A 5-point Likert scale was used to score the items. The items included: "I completely disagree" (score 1), "I disagree" (score 2), "I have no idea" (score 3), "I agree" (score 4) and "I completely agree" (score 5). The third part of the questionnaire (health tourism) included 9 questions. To measure the reliability of the questionnaire, 30 questionnaires were distributed among the participants. The Cronbach's alpha coefficient was greater than 0.7, which is an acceptable value. One week later, the questionnaires were redistributed and Cronbach's alpha coefficient was again greater than 0.7 ($\alpha = 0.73$). In this study, descriptive and inferential statistics were used in SPSS 21 and LISREL 8.50 to analyze the data and to test the hypotheses.

Some of the ethical considerations of this research include: obtaining the consent of the staff of Educational Hospitals affiliated with the Iranian Ministry of Health and Medical Education, respecting all the participants and observing their rights, inserting the names of authors and scholars whose studies have been used, assuring the participants about the confidentiality of their information, presenting the true research findings and avoiding any prejudice and providing the final results to the respondents upon their requests.

The participants included hospital chiefs, managers and experts who were mainly physicians, faculty members of health services management, senior experts in health services management, senior experts and experts in medical disciplines; however, the administrative staff and clients were excluded from the study. The acceptable error rate of this research was 0.05.

Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

3. FINDINGS

Among all the participants, 52% of the hospital employees were female and 72% of the tourists were male. 35% of the employees and 59% of the tourists aged 31-40 years. 38% of the employees and 53% of the tourists held bachelor's degrees. Finally, 52% of the employees had 11-15 years of work experience (Table 1).

Table 1: The frequency distribution, frequency percentage and cumulative percentage of demographic variables of the respondents (employees and tourists)

Variables	Frequency	Observed frequency	Observed percentage	Cumulative percentage
Gender (employees)	**Female**	62	52	48
Age (employees)	**31-40 years**	42	35	67
Educational qualifications (employees)	**Bachelor's degree**	46	38	89
Work experience (employees)	**11-15 years**	46	52	65
Gender (tourists)	**Male**	276	72	72
Age (tourists)	**31-40 years**	228	59	97
Educational qualifications (tourists)	**Bachelor's degree**	204	53	66

The Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett's test of sphericity showed that the data were suitable for conducting factor analysis. According to these two tests, a set of data will be suitable for factor analysis, if the KMO index is greater than 0.6 and close to 1 and the significance level of the Bartlett's test is less than 0.05. When this statistic is greater than 0.7, then the correlations will

Received 16/04/2018
Approved 28/05/2018

be very suitable for conducting factor analysis. Greater attention will be needed, when it is between 0.5 and 0.69 and finally, when it is less than 0.5, the correlations will not be suitable for factor conducting analysis (Table 2).> 0.7

Table 2: The KMO index and the result of the Bartlett's test of sphericity

Index	Suitable value	Obtained value
KMO	> 0.7	0.86
Bartlett's sig.	< 0.05	0.000
Result		Suitable

The LISREL outputs showed that the adequacy indicators were suitable and all the values and factor loadings were greater than 0.3 and thus, they were acceptable and suitable (diagram 1).

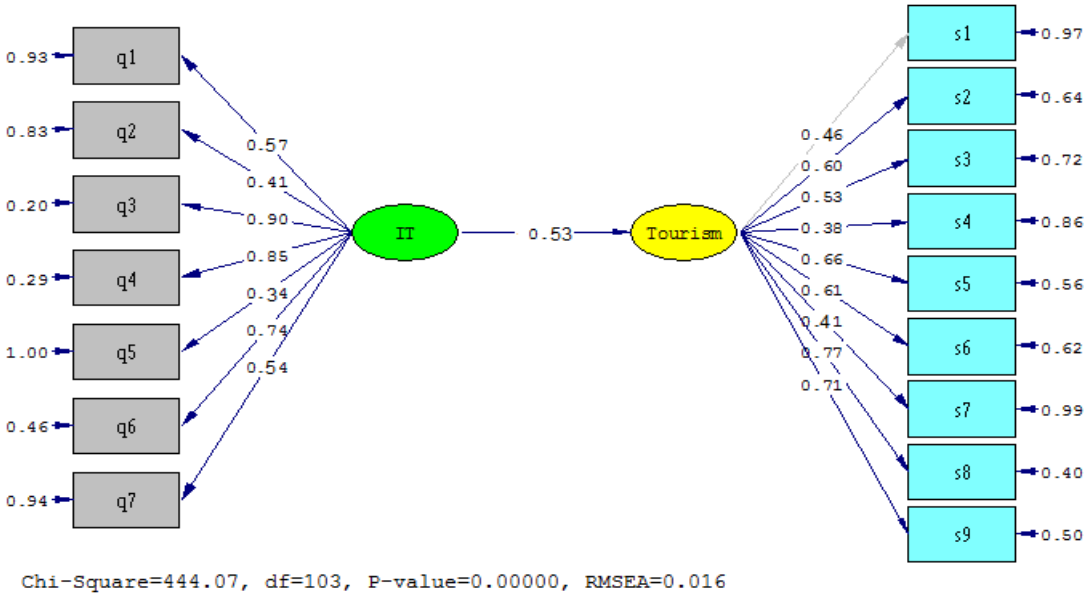


Diagram 1: Standard factor loadings

Based on the structural equation modeling, all the values and factor loadings were greater than 0.3 and thus, they were suitable (Diagram 2).

Table 3: The goodness of fit indicators

Indicators	χ^2/df	SRMR	RMSEA	GFI	AGFI	NFI	CFI	IFI

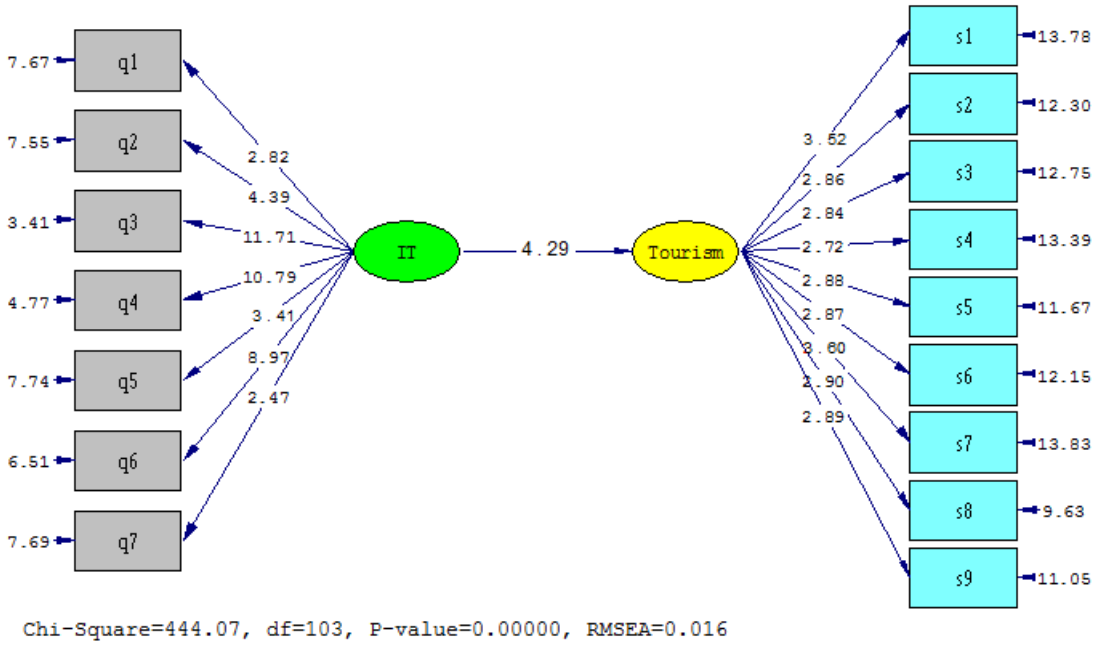
Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

Goodness of fit for the research model	4.3	0.04	0.016	0.92	0.91	0.93	0.92	0.75
Acceptable range	1-5	<0.05	<0.5	>0.9	>0.9	>0.9	>0.9	0-1

The results of the above table show that the research model is suitable in terms of goodness of fit indicators and the root mean square error of approximation (RMSEA= 0.016) is also very suitable. Therefore, considering the entire indicators and the calculated goodness of fit indicators, it can be said that the research model fits the data well (Table 3).

Based on the diagram 2, all the t-statistic values are greater than 1.96; thus, the correlations are significant (diagram 2).



Graph 2: Factor loadings of the t-statistic

4. DISCUSSION AND CONCLUSION

The results showed that the sample size was sufficient for conducting factor analysis. In addition, the significance value of Bartlett's test indicated that factor analysis was suitable for identification of the research model. The structural equation modeling and

Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

the values of the correlations between IT and health tourism were all confirmed, too. The LISREL outputs showed that the adequacy indicators were suitable and all the values and factor loadings were acceptable. Therefore, the research model fitted the data well. There was a significant relationship between IT and the status of health tourism in Mashhad. Pour Faraj et al. (2008) stated that ICT increases tourism industry's impact on economic growth. They argued that the intensity of this relationship is higher in developed countries than in developing countries (13). Atafar et al. (2012) stated that attitude and perceived usefulness are the main factors affecting customer intentions in the area of online booking and the variables of trust, reputation and compatibility affect booking intentions through the mediator variable of attitude (3). Farhadi Gheshlaghi et al. (2013) stated that the use of modern technologies in the tourism sector can contribute to the identification, promotion and marketing of tourist attractions and, finally, it can result in the development of tourism, employment and national economy (11). Jadhav and Mundhe (2011) stated that IT has a special impact on tourism. Technology increases satisfaction levels (14). All these results are consistent with the result of the present study and this relationship is confirmed.

ICT has an undeniable impact on various tourism sectors and this issue is more evident in health tourism. In developed countries, tourism industry has had a greater impact on economic growth compared with developing countries. This is due to the fact that they have had more investment in ICT and relevant technologies. Software factors have higher positive impact on ICT development and, consequently, e-readiness. Political and legal perspective is among the e-readiness indices and Iran has obtained a very low rate in this index compared with other countries. This suggests that Iran has failed to develop proper laws and regulations (soft infrastructures) in the area of e-commerce and has not adapted its laws with the requirements of today's life. On the other hand, from the sociological point of view, it can be said that people are more inclined to physical purchasing, because this provides them with some kind of utility. Therefore, the main result of the present research is that infrastructures cannot alone improve the status of health tourism in Mashhad. ICT has positively influenced tourism system through the establishment of an information environment for each tourist institution and by creating a centralized information infrastructure. In this information environment, various sectors associated with this industry can identify business opportunities in the market, develop cooperation with suppliers and

Received 16/04/2018
Approved 28/05/2018

Revista Publicando, 5 No 15. (1). 2018, 54-65. ISSN 1390-9304

intermediaries and they can also create informal institutions to develop and provide tourism services. This way most of the profit goes to shareholders; because technological changes create effective collaborations and provide tourism industry with a tool for globalization. By providing effective tools and facilities, ICT on the one hand, helps customers identify and purchase better products and on the other hand, it helps manufacturers develop, control and distribute their products at international levels. Customers may receive various products directly from manufacturers, while distributors and intermediaries advertise tourism services. The future traveler may utilize one or more tourism distribution channels in a trip. E-commerce helps them improve their business efficiency; facilitates the entry of emerging sectors into the global economy and allows businesses and companies to become more competitive. It creates more jobs and increases wealth; however, possessing a powerful tool and understanding its power does not guarantee proper usage. We need to understand how it works, how and when it should be used. We also must discover creative ways to apply these understandings, to disseminate them widely and ultimately to realize their power in expanding business. Therefore, to design and implement an ICT strategy for tourism development in Mashhad, it is recommended to consider the multi-sectoral dimensions of tourism and involve all stakeholders in developing electronic tourism policies within a national framework. Government has a central role, especially in the aea of developing tourism policies. To develop health tourism in Mashhad, the electronic tourism strategies should be integrated into a wider range of national ICT policies, in areas such as ICT accessibility, the liberalization of telecommunications structures, capacity building and adaptation of legal and regulatory frameworks with the requirements of today's life, along with issues such as trust and online payments. Unwillingness of some of the respondents to participate in the study and lack of similar studies were among the limitations of this research.

Acknowledgment

Hereby, the authors would like to express their gratitude to the authorities of Islamic Azad University, Sari Branch and esteemed authorities, experts and staff of studied hospitals.

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Approved 28/05/2018

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Received 16/04/2018
Approved 28/05/2018