



Designing of smart tourism organization (STO) for tourism management: A case study of tourism organizations of South Khorasan province, Iran

Amir Ghorbani^{*}, Abolfazl Danaei, Seyed Mohammad Zargar, Hadi Hematian

Department of Management, Semnan Branch, Islamic Azad University, Semnan, Iran

ARTICLE INFO

Keywords:

Tourism
Tourism management
Smart tourism organization (STO)
Delphi method
South Khorasan province

ABSTRACT

The present study uses a review of the literature and the views of tourism and management professors and experts in order to the identification of organizational intelligence elements in tourism management (STO) for the first time. The census method was used to determine the research sample and the Delphi technique was used to design the questionnaire. Construct divergence was then used to determine the validity and reliability of the questionnaire. The final results indicated that providing e-services for tourists had the greatest impact on the development of STO (loading factor: 0.677). Moreover, New Tourism Marketing Methods (NTMM) had the least effect on the development of STO (loading factor: 0.431). Overall, the most important achievement of the present research is introducing the concept of STO in tourism management.

1. Introduction

Tourism organizations are facing radical changes at the beginning of the new millennium (Al-Kasasbeh et al., 2016:106). Modern technologies used for the organization of industries such as the tourism industry have eliminated a number of occupations and specializations and have instead created some new occupations and specializations (Rangriz, 2016:14). On the other hand, tourism is the organization's industry and the organization of tourism is a complex process with several units. Organizations in tourism can be classified by ownership, function or type of activity and their consumer class (Goeldner and Ritchie, 2007:87). Small business units such as travel agencies and Royal hotels are examples of tourism organizations (Ghorbani and Iran, 2013:77). Also, tourism is one of the pioneer industries in the application of new age technologies (Buhalis and Law, 2008). Thus the structure of tourism organizations such as travel companies, hotels, and airlines will be changed by new technologies in the near future (Koo et al., 2015:1). For example, the EU has described a robotic contraption whose attempt is to help and notify tourists in airports (Triebel et al., 2016:607). So tourism organizations are not safe from these changes. Up-to-date information is highly valuable in tourism; therefore, IT is becoming a crucial factor in the tourism industry (Koo et al., 2013:6). Intelligence has emerged in tourism from these developments. In these circumstances, organizing tourism organizations based on intelligence is a way to increase profits, adapt to the external environment of organizations and the various needs of tourists

and create a powerful structure to compete with powerful rivals (Ghorbani, 2018:88). Tourists cannot present a tourism product prior to purchase due to its intangibility. Therefore, Virtual Tourism [VT] is a powerful tool to have tour experience through Virtual Reality [VR] (Ankomah and Larson, 2018:4113). In addition to smart tourism, Smart Tourism Destination (STD) and smart tourism cities were also introduced. In STD, tourism service providers can benefit from a centralized information platform to make better business decisions (Buhalis and Amaranggana, 2015:378). According to the above in developing countries such as Iran, tourism organizations have an old structure and many managers and staff members of these organizations have no familiarity with modern tourism technologies. Also, they are not familiar with foreign languages and these organizations do not have Tourism Recruitment System [TRS]. The staff is closely supervised by the tourism managers and the tourism management is completely classical and despotic and organizational structure is not up to date. Iran tourism literature is devoid of a concept by the name of the Smart Tourism Organization (STO). Given the lack of research into this concept, some questions arise around it. For instance, given the advances in tourism in the new millennium, what has changed in the structure of tourism service organizations in Iran? Considering the competitive nature of the tourism industry and the technology advancement, can the traditional structure of Iran tourism organizations satisfies the tourists, managers, stakeholders, and employees? The present study was conducted with a comprehensive approach to organizations in the postmodern era (Hatch,

^{*} Corresponding author.

E-mail address: amir1.tourism@gmail.com (A. Ghorbani).

<https://doi.org/10.1016/j.heliyon.2019.e01850>

Received 27 November 2018; Received in revised form 17 May 2019; Accepted 25 May 2019

2405-8440/© 2019 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

2018) and seeks a new type of organization in the subject of STO. This new type of organization recognizes the different dimensions of intelligence in the external environment of organizations and seeks to train them. The primary purpose of this study is to select the dimensions of intelligence in tourism organizations and the effect of these dimensions on the development of a Smart Tourism Organization and finally designing of Smart Tourism Organization (STO) for Tourism Management for tourism organization of South Khorasan province. The main criterion for determining the factors is the Delphi methodology of the experts.

2. Theory

The idea of a smart organization has a profound impact on how they think about the life of these organizations (Al Shobaki et al., 2018:49). In the 1990s, since the development of ICT was growing, this subject gained popularity which changed the economic surroundings as well as the growth in market competition. A smart organization is an organization having the capacity for creating, acquiring, classifying and sharing knowledge as well as applying in order to increase the global market effectiveness and competition (Adamczewski, 2016:199). Various definitions are provided about the smart organization. In a comprehensive definition, smart organizations can be said to be one example of business networking that ranks among the most important abilities that businesses will demand in this age of information. Nonetheless, there is a total lack of information on how to establish smart organizations (Maedche and Weiß, 2002:201). An intelligent organization mandates the existence of different types of intelligence (Najari et al., 2015:5). There are various dimensions to this intelligence that are mostly compatible with the classical organization. Considering the properties of smart tourism and with the assistance of the Delphi expert panel, this study identifies different types of intelligence and the internal dimension of the smart tourism organization. The following section describes the different types of intelligence in tourism organizations and their employees.

2.1. Structural intelligence

Structural intelligence is very important in tourism management. The number of holidays per tourist has been increasing, according to the current tourism trends (Santana and Gil, 2018:315). The importance of increasing competition between tourist destinations is also growing. The kind of intelligence is one of the pillars of competition in tourism (Ghorbani et al., 2014:126). This type of intelligence includes non-human knowledge resources in the organization, which are instilled and stored in the organization's database, organizational chart, executive directives for processes, strategies, administrative plans and similar items, and is more important to the organization than its material (raw material).

2.2. Human and organizational intelligence

Many tourism products actually include people as an integral sector of the service (Baum, 2016). In other words, HRM remains at the forefront of global tourism challenges. In the modern world, tourism human resources are becoming increasingly important with the paradigm shift in the main factor of production from physical products to products of human creativity. Education has thus become increasingly crucial and employment increasingly competitive (Brata and Pemayun, 2018:187). Developmental and organizational behavioral specialists must give their attention to organizational intelligence. Organizational intelligence is also crucial to empowering dependent forces in essential activities and processes ruling the organizational life. Organizations which apply organizational intelligence a significant increasing have been observed in the efficiency of using the existing knowledge structures in line with their targets. Operational and restricted-to-use-in-the-organizational-layers for use by managers have made this knowledge empowered (Rezaei et al., 2018:222).

2.3. Technological intelligence (TI)

The rapid increasing of the internet and other new technologies has converted the organization of the tourism (Triebel et al., 2016:116). On the other hand, since competition in the tourism is strongly growing, it has become vital for businesses to investigate the capabilities of new technologies (Neuhofer et al., 2015:234). The main purpose of this type of intelligence in the tourism organization is to use possible opportunities to eliminate possible risks, by providing up-to-date information about technology trends in the organizational environment (Kilic et al., 2016). In the postmodern organization, scientific/technological intelligence has experienced a scarcity period followed by a period of popularization and now is moving towards the era of intelligence holography (Wu et al., 2018:2). The existence of this type of intelligence in tourism organizations is consequently very important.

2.4. Competitive Intelligence (CI)

Competitive Intelligence (CI) is a process which identifies the information required for decision-makers about their competitors. It further collects data from public sources, gives meaning to and analyzes data so as to answer the information demands and transfer the results to decision-makers (Colchado and Melgar, 2018:772). The tourism organization uses these analyses to make better strategic decisions. CI also helps tourism companies learn more about themselves and their competitors. It helps tourism organization improve their decision-making and strategy-building; essentially, it helps organizations improve their productivity and efficiency and leads them to greater profits (Mohamad et al., 2018:1022).

2.5. Environmental intelligence

Managers in search of long-term success must take account of the industry to increase their chances of staying ahead of the variations occurring in the environment of business (Jogarathnam and Law, 2006; Costa and Teare, 2000; Ginter and Duncan, 1990; Hamel and Prahalad, 1994). In the tourism industry, the external environment of organizations and entities impacts on them (Jogarathnam and Law, 2006:170). This type of intelligence in the organization involves analyzing the internal and external environment to identify its effects on organizational processes. All the pillars and factors that are outside the tourism organization and determine the organization's performance are considered a beneficiary (Ghorbani and Iran, 2013:77).

2.6. Emotional intelligence

Tourists are not all alike and are in fact enormously diverse in age, motivation, level of affluence and preferred activities. Tourist behavior analysts should avoid the fault of assuming all tourists similar and treating them similarly, because tourists' behaviors are not only important to the tourists themselves, but also to those who make decisions about tourists, such as business stakeholders and public-sector managers (Pearce, 2005:2–7). Also, in service industries, employees should be flexible and project a separate behavior for each client (Lovell and Wright, 2002:87). Emotional intelligence is one of the individual factors that have a latent safeguarding effect on stress in organizations. Stress is entirely dependent on the individual's extent of emotional intelligence (Naseem, 2018:8). Training emotional intelligence to tourism staff is essential because tourist services are characterized by extensive personal contact with tourists.

2.7. The internal dimension of the smart tourism organization

Depending on the tourism organization in question (hotel, tourism agencies or airlines), the internal dimension consists of all the elements and factors that fall within the organization's boundaries and are

supervised by the management of the organization. The present study identified the following factors as the internal dimensions of STO after the Delphi technique was applied.

2.8. E-services

The service encounter is a key point in the tourism delivery and hospitality services. It includes the time when the customers meet the firm and eventually make an assessment about the firm and their own feelings to patronize or recommend the firm to others (Sparks and Weber, 2008: 138). Due to in tourism organizations, the service encounter has a direct relationship with the tourists' dissatisfaction, the need to move towards the provision of electronic services in tourism is thus dire.

2.9. Trained and fluent-in-language staffs

Language proficiency is essential in the tourism due to its specific nature and concepts (Macy et al., 2018; Zahedpisheh and Saffari, 2017). Moreover, instead of teaching the employees in the industry to be only as a workforce, one of the vital purposes of hospitality and tourism programs is to teach students and employees to be future leaders in different departments of the industry. The internationalization and advances of technology are the major forces behind most variations occurring, together with demographic shifts such as population aging and the growing minorities. Hospitality and tourism programs are obliged to modify their curricula to satisfy the industry's HR demands in a creative fashion. Today's modern technologies, enables higher education in hospitality and tourism to penetrate every corner of the globe (Kim and Jeong, 2018:119–122).

2.10. New tourism marketing methods (NTMM)

The concept of "tourism market" is to be redefined as Information Technology (IT) may be able to bring in more demand and supply to the virtual market. Nowadays, the use of new technologies including Virtual Reality [VR] plays a vital role in tourism marketing. IT advances along with the rapid developments in network technologies has provided some opportunities for tourism enterprises. Moreover, the supply and demand mutual growth of tourism has caused more frequent use of IT in the industry (Kozak and Andreu, 2007:31). Presenting a rich environment for potential visitors enables the 3D virtual world to create opportunities for tourism organizations (Huang et al., 2016; Härting et al., 2017). Compared to traditional marketing methods, STO uses smart marketing methods based on new technology, such as VR and augmented VR.

2.11. Organizational innovation (OI)

OI has defined new approaches to the information for carrying out management functions and new processes that create variations in the organization's strategy, structure, executive procedures and systems (Damanpour and Aravind, 2011). There have been limitations in tourism innovation policies. The tourism industry is in a state of metamorphosis and is undergoing rapid and radical changes. Therefore, the Smart Tourism Organization (STO) should be an innovative organization.

2.12. Complementary activities

In tourism, complementary products and services may be added to the tourists' experience in order to expand and diversify the market of the service. Restaurants can add complementary services; for example, McDonald's and Burger King have introduced breakfast menus to their original hamburger operations. Hotels can also add complementary services such as gymnasiums or nightclubs to their routine services. Many tourism organizations such as hotels hold exhibitions and various festivals. Due to the presence of Iran's national football team in the FIFA World Cup 2018, many hotels played this tournament on TVs placed in

public rooms as complementary services. Moreover, many tourism organizations such as hotels and recreational centres have expanded their main activity and added complementary activities such as music concerts and art shows and have thus attracted many tourists –even in the low tourist season (Ghorbani, 2018:70).

2.13. Offering a smart experience

Travel is defined cannot be constrained to the physical; rather, should also encompass the movements of the mind. Today's advanced technologies makes Virtual Reality (VR) boom in tourism and keep it progressing. Virtual reality plans are applied to prepare for flights by plane, whether the flight simulating or the possibility investigation of destinations chosen in tourism. It can enables passengers to experience a destination visually prior to buying the trip. Rapid growing of online society-based websites, including YouTube makes the expectations of visual content and their expansion rise. With the help of VR and other high-quality pictures, passengers are capable of, trying out the travel experience by dynamic visualization. The use and implementation of VR in tourism are expected to show growth in the future, primarily concerning airlines and hotels (Magál and Slivka, 2017:59). Therefore endogenous and exogenous variables of the proposed model presented in Table 1.

3. Methodology

The present study uses reviews of literature and the opinions of professors and experts in the field of management and tourism and seeks to provide a new framework for these organizations. This framework is adapted to tourism in the postmodern era and is extendable and functional. The Delphi method of the panel of experts was used to reach a consensus about the dimensions of smart tourism organization and to design the questionnaire. The Fist, the literature on the subject was fully reviewed. The variables related to the topic were then extracted, and the Delphi method was used to confirm these variables and their relevant questions. A total of 24 management faculty members (Ph.D.) and senior tourism officers were selected as members of the Delphi panel. Twelve people with specialist organizations and 12 people with tourism expertise were also selected for the panel. After four Delphi rounds, the consensus was reached on the questionnaire and its variables. In the next stage, the questionnaire validity and reliability were measured, and their data are presented in the quantitative analysis section. The research population consisted of all the experts working at tourism organizations in South Khorasan Province, including Iran, tourism agencies, hotels, and experts of cultural heritage, handicrafts and tourism in this province. The questionnaires were distributed among 37 tourism organizations and 356 experts (See Table 2). In the last step, for the quantitative analysis of the data, Smart PLS and SPSS software were used.

3.1. Presenting the initial model and setting the research hypothesis

In this level the research model was designed on the basis expert opinions, and then the hypothesis were set according to the model.

As specified in the model, each of the exogenous variables can be effective in the development of STO. Therefore, each of them is

Table 1
Endogenous and exogenous variables of the proposed model.

Row	Endogenous variables	Exogenous variables
1	Structural intelligence	E-services
2	Human and organizational intelligence	NTMM
3	Technological Intelligence (TI)	Organizational Innovation (OI)
4	Competitive Intelligence (CI)	Trained and fluent-in-language staffs
5	Environmental Intelligence	Complementary activities
6	Emotional Intelligence	Offering a smart experience

Table 2

The statistical Society of the research.

Type of organization	Name of organization	Total number of experts	Sample (Census)
Governmental	Department of Cultural Heritage, Handicrafts, and Tourism in South Khorasan Province, Iran	165	165
Private	Tourism agencies of South Khorasan	96	96
Private	Three-star hotels of South Khorasan	95	95
All organizations under study in South Khorasan		36	
Total sample		356	

considered as a hypothesis. Endogenous variables (intelligence in STO) as an integral part of the PLS model at the level of R^2 calculated. So, according to the model the research hypotheses expressed as follows: (see Fig. 1)

1. Offering complementary services has a positive and significant influence on the STO creation.
2. Offering e-services have a positive and a notable influence on the STO creation.
3. Trained staffs who are fluent in languages have a positive and significant influence on the STO creation.

4. Offering a smart experience has a positive and significant influence on the STO creation.
5. Organizational Innovation (OI) has a positive and significant influence on the STO creation.
6. New Tourism Marketing Methods (NTMM) have a positive and significant influence on the STO creation.

3.2. Data analysis with SPSS (descriptive analysis and normality tests)

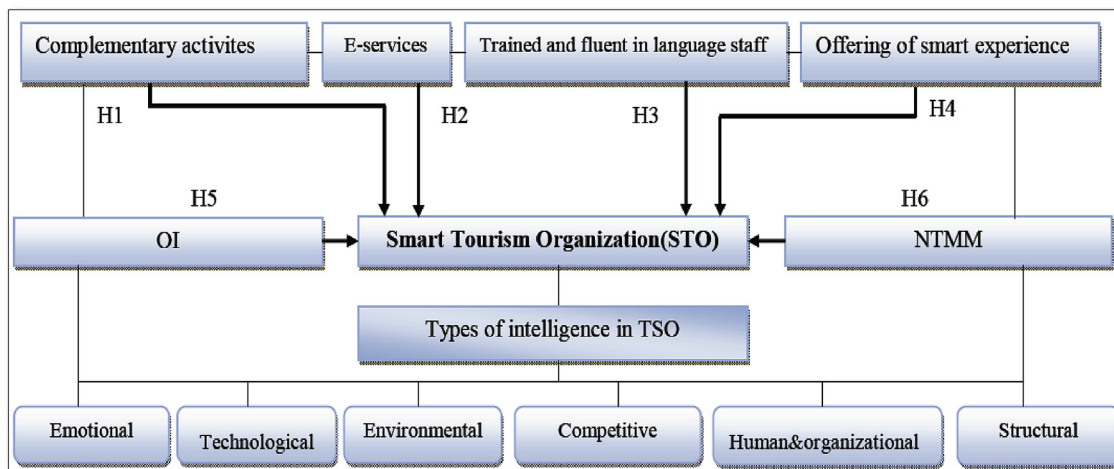
3.2.1. Descriptive analysis of the variables.

In order to compare samples from one study with another study sample, descriptive statistics can be applied. Descriptive statistics are also used to help researchers detect sample properties which may affect their results (Thompson, 2009:59) (Table 3).

3.2.2. Normality tests for statistical analysis

Normality tests are supplemental to the graphical evaluation of normality. The Kolmogorov-Smirnov (K-S) test is the primary test for the normality evaluation (Ghasemi and Zahediasl, 2012:486). If the data distribution is not normal the structural equations of PLS were therefore used. The hypotheses for this test are.

H0. The data distribution is normal.

**Fig. 1.** Conceptual framework.**Table 3**

The descriptive analysis of the variables.

Variable	Number	AVG	Mid-Range	Mode	SD ¹	Variance	VR ²	Min	Max
Complementary activities	356	3.586	3.333	4.000	0.803	0.645	4.000	1.000	5.000
E-services	356	3.690	4.000	4.000	0.836	0.700	4.000	1.000	5.000
Trained staff	356	3.601	3.667	4.000	0.859	0.738	4.000	1.000	5.000
Smart experience	356	3.577	3.833	4.000	0.735	0.540	3.833	1.167	5.000
OI	356	3.569	3.636	4.000	0.582	0.338	3.000	1.727	4.727
NTMM	356	3.422	3.480	3.480	0.521	0.272	2.760	2.000	4.760
STO	356	3.491	3.556	3.778	0.551	0.304	3.333	1.500	4.833

¹ Standard deviation.

² Variation range.

Table 4

Normality test for the statistical analysis.

	Complementary activities	E-services	Trained staff	Smart experience	OI	NTMM	STO
N	356	356	356	356	356	356	356
AVG	3.586	3.690	3.601	3.577	3.569	3.422	3.491
SD	0.803	0.836	0.859	0.735	0.582	0.521	0.551
K-S	2.874	4.355	4.242	3.946	1.580	1.189	2.151
SIG.	0.074	0.023	0.004	0.003	0.059	0.081	0.006

Table 5

The convergent validity and reliability of the research variables.

Variable	Cronbach's alpha	AVE	CR
Complementary activities	0.847	0.598	0.877
E-services	0.806	0.631	0.849
Trained staff	0.781	0.592	0.799
Smart experience	0.852	0.648	0.854
OI	0.744	0.573	0.782
NTMM	0.870	0.682	0.881
STO	0.841	0.694	0.870

H1. The data distribution is not normal.

Given the value of the test statistic and compared with the critical value and at the error level of 5%, the data are not normally distributed. Therefore the structural equations of PLS were therefore used.

3.2.3. Convergent validity

The Average Variance Extracted (AVE) and the composite reliability calculated to assess the convergent validity (Domingues and Gonçalves, 2018) (Table 4) (see Table 5).Where:

CR > 0.7.

CR > AVE.

AVE > 0.5.

Based on the table; the above condition is confirmed.

3.5. Data analysis with smart partial least squares (smart PLS)

3.5.1. Factor loading

In PLS method the power relationship between the agent (hidden variable) and the visible variable is represented by factor loading, which is between zero and one. If the factor loading is lower than 0.3, the relationship is considered weak and is discarded; in the 0.3–0.6 range, it is deemed acceptable, and if greater than 0.6, it is very desirable. As shown in Fig. 2, the factor loading is at an appropriate level. These figures (Factor loading, T-value and R^2) are the output of the smart PLS software.

3.5.2. The T-value statistics using the bootstrapping method

Next, the statistical significance test is performed using Bootstrapping.³ If the t-value in Bootstrapping is higher than 1.96, then the correlations observed are significant (Amani et al., 2011:41). The t-value of ± 1.96 is the size of t-value that should only occur by a random chance of 5%. As shown in Fig. 3, the T-value is at an appropriate level (see Fig. 4).

3.5.3. R-square or R^2

A measure used to connect the measurement section and the structural part of the structural equation modeling and indicates the effect that an exogenous variable has on an endogenous variable (Ghorbani, 2019: 73). The researchers sets the three values of 0.19–0.33–0.67 as weak, moderate, and robust for the R^2 value. According to Table 6, R^2 values of 0.536 are substantial for the proposed model.

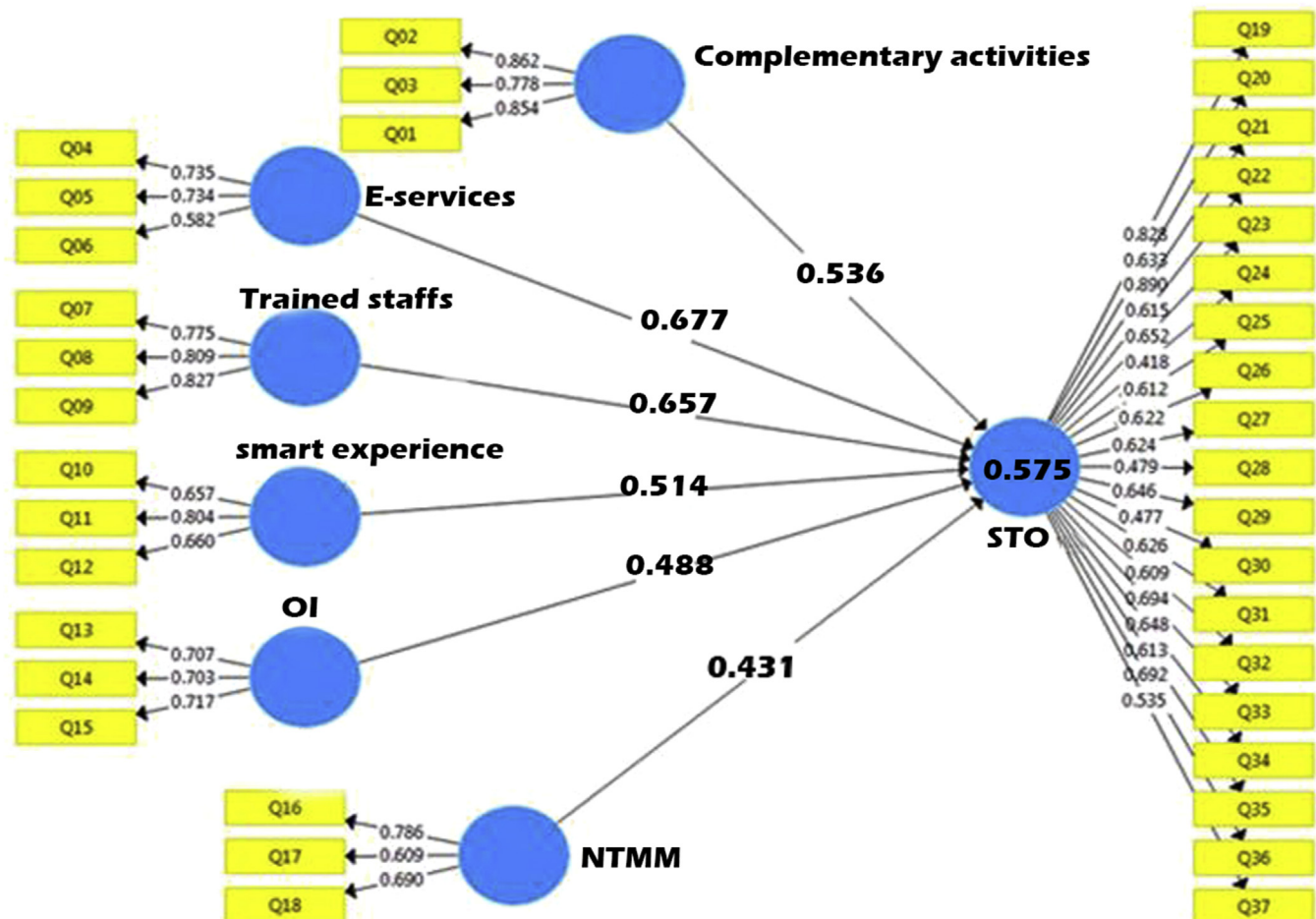


Fig. 2. Factor loading test.

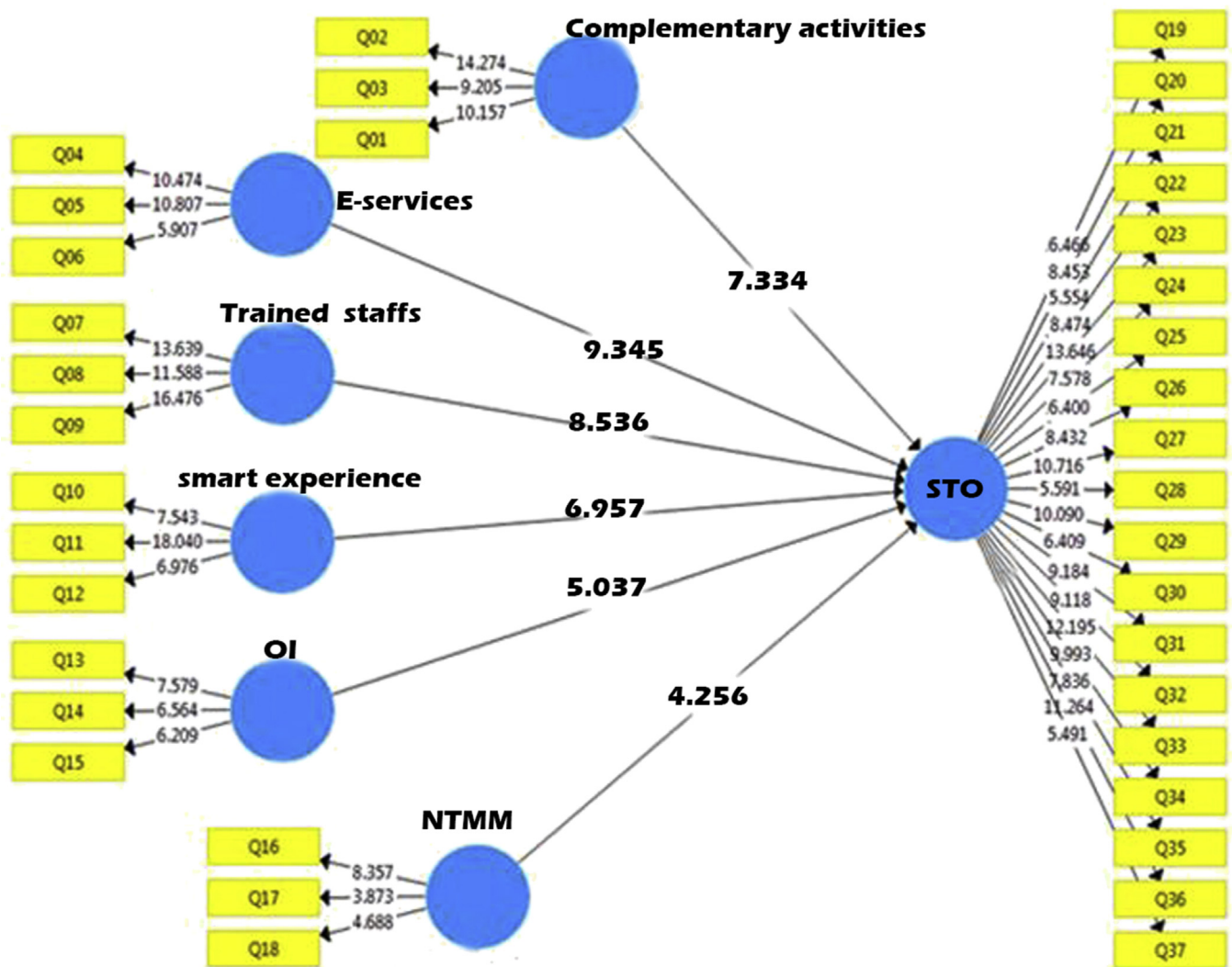


Fig. 3. The T-value statistics using bootstrapping.

3.5.4. The Goodness of Fit (GOF) test

Tenenhaus et al. (2004) suggest the Goodness of Fit (GoF) test for a PLS path model validation globally and specifically. The GOF is defined as follows:

$$GOF = \sqrt{\text{Avg}(\text{Communality}) \times R^2}$$

Therefore:

$$GOF = \sqrt{0.710 \times 0.536} = \sqrt{0.380} = 0.616$$

To determine the quality of the GOF of the overall PLS-SEM model, Witzels et al. (2009) suggest the following criteria: GoF small (0.10), GoF medium (0.25), and GoF large (0.36) (Al-Taie et al., 2018:562). Accordingly, the GOF of the model is confirmed with a value of 0.616. The model is confirmed and the hypotheses are tested in Table 7.

Proposal of the final model for STO.

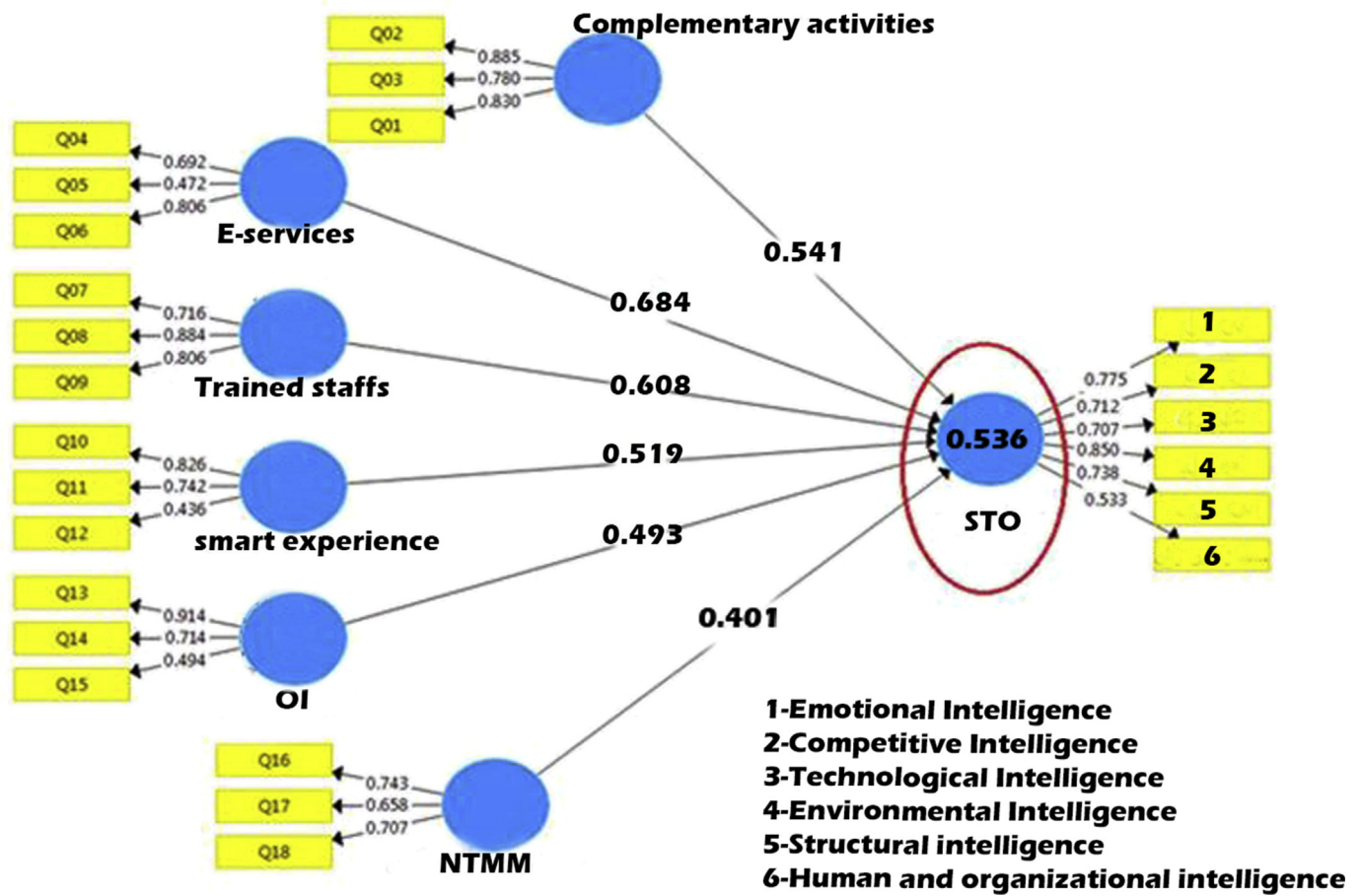
4. Results

The present study was conducted to identify the factors affecting the creation of the Smart Tourism Organization (STO), the effectiveness of each of these factors and the design of the STO model. For this purpose, six hypotheses were initially proposed and were approved at the end

after the analysis of the data. According to the table of hypothesis testing and the loading factor column, e-services for tourists has the greatest impact on the creation of STO (with a loading factor of 0.677). Chen (2009) believes that it is important to develop specific e-service strategies which can make the competitiveness of tourism improve in the global market. The trained and fluent-in-language staff comprised the second factor contributing to the creation of STO (with a loading factor of 0.657). Complementary activities were categorized as the third factor contributing to STO (with a loading factor of 0.536). Offering smart experience, organizational innovation and new tourism marketing methods took the fourth to sixth place in the list of the most contributing factors Fig. 5.

5. Discussion and conclusion

The results of this study indicate that the development of intelligence in the tourism industry is not solely by technologies and data; instead, various factors are at play. Similar to Leung's results (2018), the present study conceptualized intelligence in tourism enterprises of the future and proposed a smart tourism ecosystem that adds value to all stakeholders. In the study by Tussyadiah et al. (2018), similar to the results of the present study, virtual reality and smart travel experience are listed as features of tourism in the new era. Liberato et al. (2018) emphasized the

Fig 4. R-square or R^2 .

internet access importance at the destination, particularly in places including airports and hotels, and thus demonstrated the importance of e-services for tourism organizations. Another internal feature of STO in the present study is new tourism marketing methods such as VR to help reduce the risk of shopping tourists. Griffin et al. (2017) argued that, as a new tourism marketing method, VR positively affects the destination

Table 6

R-square or R^2 .

Variable	R^2	Variable	R^2
Emotional intelligence	0.755	Environmental intelligence	0.850
Competitive intelligence	0.712	Structural Intelligence	0.738
Technological intelligence	0.707	Human/organizational intelligence	0.533

Smart Tourism Organization (STO) R^2 :0.536

Table 7

Hypothesis testing.

Independent Variable	Dependent Variable	Loading Factor	T-Statistic	Result
Complementary activities	STO	0.536	7.334	Confirmed
E-services	STO	0.677	9.345	Confirmed
Trained staff	STO	0.657	8.536	Confirmed
Smart experience	STO	0.514	6.957	Confirmed
OI	STO	0.488	5.037	Confirmed
NTMM	STO	0.431	4.256	Confirmed

image and most items within the conative destination image and the effectiveness of the advertisement. Offering smart experience and complementary activities were the other dimensions of STO in this research. Young (2016) emphasized the importance of tourism agencies offering smart travel experience and argued that a smart experience platform such as VR, augmented VR and similar tools allow tourists to experiment tour without the need to move and reach the definition of “non-travel.” For example, Marriott is one of the pioneering providers of travel technology. In the near future, it will soon be possible for global tourists to choose from an additional 100,000 plus authentic local experiences in 800 worldwide tourism destinations by booking directly on their related apps or websites such as Marriott.com or SPG.com. In accordance with what has been said in research due to the technological advances in the tourism industry, tourists' diverse interests, the failure of traditional tourism marketing approaches, the reduced demand for tourism services and finally the tourists' desire to work during their travel using their smartphones, tourism organizations have to cultivate these dimensions in order to remain in business. The present study is thus the first step in expanding the field of smart tourism organization in tourism literature that has contributed to the design of a model and presented dimensions that can be further developed and transformed in the future by other researchers. STO can be considered an introduction to a new form of tourism business. This study is the first attempt at developing STO and identifying the diverse dimensions of this concept. The findings may help tourism organization managers and other researchers better identify and develop intelligence in tourism organizations and research, especially given the limited works of research dedicated to tourism organization and management.

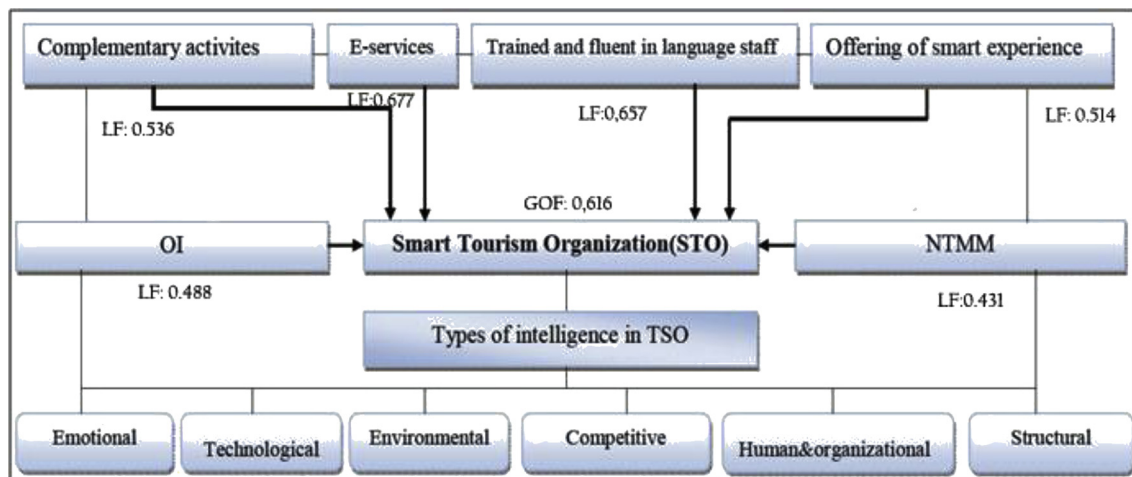


Fig. 5. Final model.

Declarations

Author contribution statement

Amir Ghorbani: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Abolfazl Danaei: Conceived and designed the experiments.

Seyed Mohammad Zargar: Analyzed and interpreted the data.

Hadi Hematian: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interest statement

The authors declare no conflict of interest.

Additional information

Supplementary content related to this article has been published online at <https://doi.org/10.1016/j.heliyon.2019.e01850>.

References

- Al Shobaki, M.J., Abu-Naser, S.S., Amuna, Y.M.A., El Talla, S.A., November–2018. The availability of smart organization dimensions in technical colleges in Palestine. *Int. J. Eng. Inf. Syst.* 2 (11), 31–49.
- Al-Taie, M., Lane, M., Cater-Steel, A., 2018. An empirical assessment of the CIO role expectations instrument using PLS path modelling. *Commun. Assoc. Inf. Syst.* 42 (1), 1–20.
- Adamczewski, P., 2016. ICT Solutions in Intelligent Organizations as Challenges in a Knowledge Economy Management, 20, 198–209.
- Al-Kasasbeh, M.M., Al-Kasasbeh, S.A.M., Al-Faouri, A.H., 2016. Smart organization characteristics and its impact on social and environmental performance: an empirical study on Jordan phosphate mines company. *Int. J. Bus. Manag.* 11 (8), 106.
- Amani, J., Khezri Azar, Hanin, Mahmodi, Hojat, 2011. Introduction of structural modelling by minimum partial scale of PLS-PM. *Mag. Psychol. Knowl.* 1 (1), 41–55.
- Ankomah, P., Larson, T., 2018. Virtual tourism and its potential for tourism development in sub-saharan africa. In: *Encyclopedia of Information Science and Technology*, fourth ed., pp. 4113–4122 IGI Global.
- Brata, I.B., Pemayun, A.G.P., 2018. Human resource competency tourism bali together with the ASEAN economic community. *Int. Res. J. Manag. IT Soc. Sci.* 5 (2), 186–194.
- Baum, T. (Ed.), 2016. *Human Resource Issues in International Tourism*. Elsevier.
- Buhalis, D., Amaranggana, A., 2015. Smart tourism destinations, enhancing the tourism experience through personalization of services. In: *Information and Communication Technologies in Tourism 2015*. Springer, Cham, pp. 377–389.

- Buhalis, D., Law, R., 2008. Progress in information technology and tourism management: 20 years on and 10 years after the Internet—the state of eTourism research. *Tour. Manag.* 29 (4), 609–623.
- Chen, D., 2009 Sep. The innovation of tourism supply chain management. In: 2009 International Conference on Management of e-Commerce and e-Government. IEEE, pp. 310–313.
- Colchado, G., Melgar, A., 2018. January). Competitive intelligence using domain ontologies on facebook of telecommunications companies of Peru. In: *International Conference on Information Theoretic Security*. Springer, Cham, pp. 777–787.
- Costa, J., Teare, R., 2000. Developing an environmental scanning process in the hotel sector. *Int. J. Contemp. Hosp. Manag.* 12 (3), 156–169.
- Domingues, R.B., Gonçalves, G., 2018. Assessing environmental attitudes in Portugal using a new short version of the Environmental Attitudes Inventory. *Curr. Psychol.* 1–11.
- Damanpour, F., Aravind, D., 2011. Managerial innovation: conceptions, processes, and antecedents. *Manag. Organ. Rev.* (in press).
- Ghorbani, A., 2019. Designing of Smart Tourism Organization (STO) for tourism management, Ph.D. Thesis in public administration tourism policies and HR. Iran. IAU.Semnan.
- Ghorbani, A., 2018. The New Trend in Tourism in Iran, National Tourism Global Conference. Shiraz University of Iran, pp. 75–95.
- Ghorbani, A., Nasr Esfahani, A., Yousefi, J., 2014. Organizational Diagnosis in the hotel industry, case study: hotels of Birjand city, South Khorasan province hotels. *J. Tour. Dev.* 3 (6), 126–137. Iran, Tehran.
- Ghorbani, A., 2013. Diagnosis of Human Resource in the Hotel Industry, Case Study: South Khorasan Province Hotels. M.A Thesis. Iran. Esfahan, Sheikh Bahaee university.
- Ghasemi, A., Zahediasl, S., 2012. Normality tests for statistical analysis: a guide for non-statisticians. *Int. J. Endocrinol. Metab.* 10 (2), 486.
- Goeldner, C.R., Ritchie, J.B., 2007. *Tourism Principles, Practices, Philosophies*. John Wiley & Sons.
- Ginter, P.M., Duncan, W.J., 1990. Macroenvironmental analysis for strategic management. *Long. Range Plan.* 23 (6), 91–100.
- Griffin, T., Giberson, J., Lee, S.H.M., Guttentag, D., Kandaurova, M., Sergueeva, K., Dimanche, F., 2017. Virtual reality and implications for destination marketing. *Int. J. Tour. Res.* 18 (2), 116–128.
- Hatch, M.J., 2018. *Organization Theory: Modern, Symbolic, and Postmodern Perspectives*. Oxford university press.
- Härting, R.C., Reichstein, C., Härtle, N., Stiefl, J., 2017. June). Potentials of digitization in the tourism industry—empirical results from German experts. In: *International Conference on Business Information Systems*. Springer, Cham, pp. 165–178.
- Huang, Y.C., Backman, K.F., Backman, S.J., Chang, L.L., 2016. Exploring the implications of virtual reality technology in tourism marketing: an integrated research framework. *Int. J. Tour. Res.* 18 (2), 116–128.
- Hamel, G., Prahalad, C.K., 1994. *Competing for the Future*. Harvard Business School Press, Cambridge, MA.
- Jogararnatn, G., Law, R., 2006. Environmental scanning and information source utilization: exploring the behavior of Hong Kong hotel and tourism executives. *J. Hosp. Tour. Res.* 30 (2), 170–190.
- Kim, H.J., Jeong, M., 2018. Research in hospitality and tourism education: now and future. *Tour. Manag. Perspect.* 25, 119–122.
- Kilic, A., Cakmak, T., Hakan, E.R.E.N., Sakarya, F., 2016. Technology intelligence process in technopark firms: an empirical research in Turkey. *Int. J. Econ. Financ. Stud.* 8 (1), 74–100.
- Koo, C., Gretzel, U., Hunter, W.C., Chung, N., 2015. The role of IT in tourism. *Asia Pac. J. Inf. Sys.* 25 (1), 99–104.
- Koo, C., Shin, S., Kim, K., Kim, C., Chung, N., 2013. Smart tourism of Korea: a case study. *PACIS*, p. 138.
- Kozak, M., Andreu, L. (Eds.), 2007. *Progress in Tourism Marketing*. Routledge.
- Liberato, P., Alen, E., Liberato, D., 2018. Smart tourism destination triggers consumer experience: the case of Porto. *Eur. J. Bus. Econ. Manag.* 27 (1), 6–25.

- Lovelock, C.H., Wright, L., 2002. *Principles of Service Marketing and Management*. Prentice Hall, .
- Maci, S.M., Sala, M., Godnič Vičič, Š., 2018. The language of tourism, 12. SCRIPTA MANENT.
- Mohamad, N.H., Shabani, M., Woods, P.C., 2018. Competitive intelligence awareness in creative multimedia industry in Malaysia. *Adv. Sci. Lett.* 24 (2), 1022–1026.
- Magál, S., Slivka, M., 2017. Virtual reality in tourism. In: *Conference Proceedings, 7th Advances in Hospitality & Tourism Marketing & Management (AHTMM) Conference, Famagusta, Cyprus, 10-15 July 2017*. Eastern Mediterranean University and Washington State University, , pp. 59–72.
- Maedche, A., Weiß, P., 2002, May. Towards ontology-based smart organizations. In: *At Working Conference on Virtual Enterprises*. Springer, Boston, MA, pp. 201–208.
- Najari, R., Azar, A., Jililian, H., 2015. Smart organization model in manufacturing companies. *J. Organ. Behav.* 4 (1), 1–24.
- Naseem, K., 2018. Job stress, happiness, and life satisfaction: the moderating role of emotional intelligence empirical study in telecommunication sector Pakistan. *J. Soc. Sci.* 4 (1), 7–14.
- Neuhofer, B., Buhalis, D., Ladkin, A., 2015. Smart technologies for personalized experiences: a case study in the hospitality domain. *Electron. Mark.* 25 (3), 243–254.
- Pearce, P.L., 2005. *Tourist Behavior: Themes and Conceptual Schemes*. Channel View Publications.
- Rezaei, F., Ramazannezhad, N., Shiadeh, A., Sabz, F., 2018. Investigating the relationship between intellectual capital and organizational intelligence among nurses working in ayatollah rouhani hospital in babol in 2017. *Middle East J. Fam. Med.* 7 (10), 221.
- Rangriz, H., 2016. *Analysis of Problems of Human Resources Planning*. Mehraban Publishing, Tehran.
- Santana, A.A., Gil, S.M., 2018. Cooperation and competition among regions: the umbrella brand as a tool for tourism competitiveness. In: *Geopolitics and Strategic Management in the Global Economy*. IGI Global, pp. 315–336.
- Sparks, B., Weber, K., 2008. *The Service Encounter*. *Handbook of Hospitality Operations and IT*, pp. 109–138.
- Tenenhaus, M., Amato, S., Esposito Vinzi, V., 2004 June. A global goodness-of-fit index for PLS structural equation modeling. In: *Proceedings of the XLII SIS scientific meeting*, Vol. 1, pp. 739–742.
- Triebel, R., Arras, K., Alami, R., Beyer, L., Breuers, S., Chatila, R., et al., 2016. Spencer: a socially aware service robot for passenger guidance and help in busy airports. In: *Field and Service Robotics*. Springer, Cham, pp. 607–622.
- Thompson, C.B., 2009. Descriptive data analysis. *Air Med. J.* 28 (2), 56–59.
- Tussyadiah, I.P., Wang, D., Jung, T.H., Tom Dieck, M.C., 2018. Virtual reality, presence, and attitude change: Empirical evidence from tourism. *Tourism Manag.* 66, 140–154.
- Witzel, M., 2009. Islamic finance: principles and practice. *Corp. Finance Rev.* 14 (1), 46.
- Wu, Q., Wu, C., Liu, Y., 2018. Research on the development of scientific and technological intelligence in the big data environment. In: *ITM Web of Conferences*, 17. EDP Sciences, 03018.
- Young, J.K., 2016. Non-Travel: the role of design in the experience of contemporary travel.
- Zahedpisheh, N., Saffari, N., 2017. English for tourism and hospitality purposes (ETP). *Engl. Lang. Teach.* 10 (9), 86.