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Research paper

Location-based Services as Marketing Promotional Tools to Provide Value-added in E-tourism

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Abstract

Background: E-tourism is the most cost-effective way to communicate with the target market and to publish information. It is also an easy way for customers to buy travel products. Recent advances in mobile communication technologies are leading the way for the next generation of travel commercial applications. Location-based services are among these facilities available on the mobile platform. These services use mobile tracking techniques to provide users with relevant information at the right time, based on their current location. Purpose: This study investigates the LBSs value in tourism and their effect on destination brand equity components and tourist behavior. Method: The sample of the study totaled 210 visitors from Isfahan as one of the popular tourist cities in the world. The research hypotheses were analyzed using Smart-PLS3 software. Findings: The research findings revealed that LBSs have positive and significant effects on destination brand image, destination brand loyalty and WOM. Conclusion: As this paper is among the first studies investigating the positive effect of LBS on destination brand equity components and tourist behavior, the findings are beneficial for DMOs and their marketing managers. Due to their potential to create a unique travel experience as well as to

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personalize and tailor tourism services based on tourists' needs and personal preferences, LBS provide them with significant added value.

Keywords: Brand Image, Brand Loyalty, E-tourism, Location-based Services, WOM, Marketing Tools.

1. Introduction

Tourism industry is a critical factor to the global economy and the choice of a country as a tourist destination can absolutely lead to getting more income, employment, and economic growth, and it eventually can make strengthened competition for tourism between different destinations (Hadianfar, 2021). International tourist arrivals in destinations around the world were 1.4 billion in 2018, showing a growth of 6.0% from 2017 (UNWTO, 2019). As Saluveer, Raun, Tiru, Altin, and Karoon (2020) have mentioned "this was the second highest annual increase since 2010 and for 2019 a 3–4% increase is expected". The tourism industry in Iran has also a high capacity for growth and development. Iran has many ancient, historical and natural attractions that annually attract tourists from all over the world. Isfahan is one of the most popular cities in Iran. This city is one of the valuable archaeological centers. With many tourist attractions, Isfahan has always been one of the most attractive destinations for domestic and international tourists. However, Iran, despite her many potential capacities and wonderful tourist attractions, has a small share of the world tourism. One of the reasons for this lack of success according to the authors is this fact that, tourist destinations' managers have not paid enough attention to some new trends in tourism industry yet. One of these growing trends is the emergence of new technologies.

Gajdosik (2020) considered the revolution of technologies as one of the factors that has extremely changed the behavior in the tourism industry and as a result, has led to providing new perspectives for academic research. According to Buhalis (2020) for tourism organizations and destinations, technology can be a determinant of strategy and competitiveness. To benefit from this technological paradigm-shift, tourism organizations must change their marketing programs and strategic management. Since 1960 and with the development of the first computer reservation system, Saber, ICT has

been strongly associated with tourism industry. In the 1990s the tourism sector was affected by the further development of global distribution systems and the Internet revolution ((Pedrana, 2014). In E-tourism people can connect via various networks in different ways and behavior of tourists has been changed due to the emergence of Internet (Kumar Deb, 2020). As Abbaspoor, Mohammad Ali Pour, and Bagheri (2021) have also mentioned, today, customers get the information for tourism products via Information and Communication Technology (ICT). This progress has led to an increase in the strategic employment of ICT in tourism.

Advances in information technology (ICT) have also had a major impact on tourism experiences. ICT can help marketers search for information, engage in conversations with users and co-create tailored experiences with them. Some new technologies related to smart mobility, like location devices and technologies and device positioning can provide real-time information of transportation (Tuang, 2019). Location-based services (LBS) are services tailored on consumers' location. These services are based on the diffusion of mobile technology and they are linked to a specific location, related to a specific customer (Pedrana, 2014).

LBSs have a lot of potentials that the tourism industry can benefit from. These technologies can enhance tourist's experience and increase competitive advantage of tourist destinations (Tuang, 2019). These technologies, allow the use of content related to the user's current location and can be used in a variety of areas such as travel and navigation services, emergency services, games and entertainment, location-based advertising and location-based marketing (Uphaus, Ehlers, & Rau 2019). Mobile location-based services and applications, which we investigate as LBSs in this study, facilitate users' access to information and location services, tailored to their needs and current situation. In fact, they provide users with desired information at anytime and anywhere.

Some previous studies have investigated various aspects related to LBS, but to the best of the authors' knowledge, none of them has investigated the effect of these services on destination brand equity components and tourist behavior simultaneously. So, this paper attempts to fill this gap in LBS literature. Another interesting point is

that, this paper is also among the first empirical studies investigated LBS in Iran tourism. This study discusses first of all what e-tourism and LBS are; then tries to state the issues and applications concerning LBS in tourism. Second, we will see how LBS, with emphasis on location-based tourism applications, may affect tourism, destination brands in particular, as well as tourist behavior. Indeed, we aim to investigate if using location-based tourism applications positively affect destination brand image, destination brand loyalty and word of mouth through presenting the research model. Consequently, in current study, we will try to answer these questions;

- Does using LBS have a positive effect on destination brand image?
- Does using LBS have a positive effect on destination brand loyalty?
- Does using LBS have a positive effect on visitors' word of mouth?

Finally, the results from testing the theoretical model and some implications and suggestions to managers are presented.

2. Literature Review

2.1. E- Tourism

Historically, the evolution of the tourism industry has been closely linked to the development of new technologies. Initially it was the establishment of the Computer Reservation Systems in the 1970s and Global Distribution Systems in the late 1980s that dramatically transformed the practices and strategies of the industry (Garın-Munoz, Pereze-Aramal, & Lopez 2019). According to Saluveer et al. (2020) in recent decades, the nature of tourism and travel behaviors have changed a lot due to the rapid development of information and communication technology (ICT) and the impact of ICT as one of the biggest tourism developments has completely transformed not only the way the whole industry and the destination work, but also the tourism experience itself (Femenia-Serra, 2019).Technology in smart tourism is infrastructure combining software, hardware and network technologies to provide real-time data and information that help all stakeholders to make more intelligent decisions (Dorcic, 2019). Technology determines the strategy and competitiveness of tourism organizations and destinations. As predicted, many organizations had to transform their strategic management and marketing and to

redesign best operational practices to benefit from the technological paradigm-shifts experienced (Buhalis & Sinarta, 2019).

E-tourism is the usage of information and communication technologies for buying and selling tourism services and products (Taghavi Fard & Assadian Ardakani, 2016). Kumar Deb (2020) described E-tourism as "digitization of tourism, transportation, hospitality and catering industry of every part of processes besides value chains, improving the productivity and performance of organizations". Indeed, E-tourism is a process of digitalization of all business functions, services and stages of the value chain of the tourism system in order to increase effectiveness in the interactions between tourism companies, consumers and public sector thus achieving competitive sustainability (Kazandzhieva & Santana, 2019). E-tourism as Yun, Han, Lee, and Chi (2013) said is the most cost-effective way to communicate with consumers and diffusion of information and it is also an easy way for customers to buy travel products and services. So, it can provide customers with improved services and promote personal tastes of them. For the purpose of this study, we consider E-tourism as essentially the digitalization of the whole touristic industry and infrastructure, in accordance with Pitoska (2013).

2.2. Location-Based Services (LBS)

Development of positioning technologies, in addition to unprecedented customer access to the service network on the move, has led to localization of services. The commercial applications that are sensitive to location and use geographical positioning information to provide value-added services to customers are called location-based services (LBS). These services offer potentially significant value to users by providing personalized information, transactions and entertainment related to a specific location (Yun et al. 2013). As Huang, Gartner, Krisp, Raubal, and De Weghe (2018) said the first kind of LBS emerged in the early 1990s. Then in the early of 2000s, it became a research subject. Some defined LBS as follows: "Information services accessible with mobile devices through the mobile network and utilizing the ability to make use of the location of the mobile device" (Ahmad Dar & Alam Khan, 2013). As Steiniger, Neun, and Edwardes (2012) have stated LBS are information services

accessible with mobile devices via the mobile network. These definitions describe LBS as an intersection of three technologies (see Figure1). It is created from new Information and Communication Technologies such as the mobile telecommunication system and hand held devices, from Internet and from Geographic Information Systems (GIS) with spatial databases.

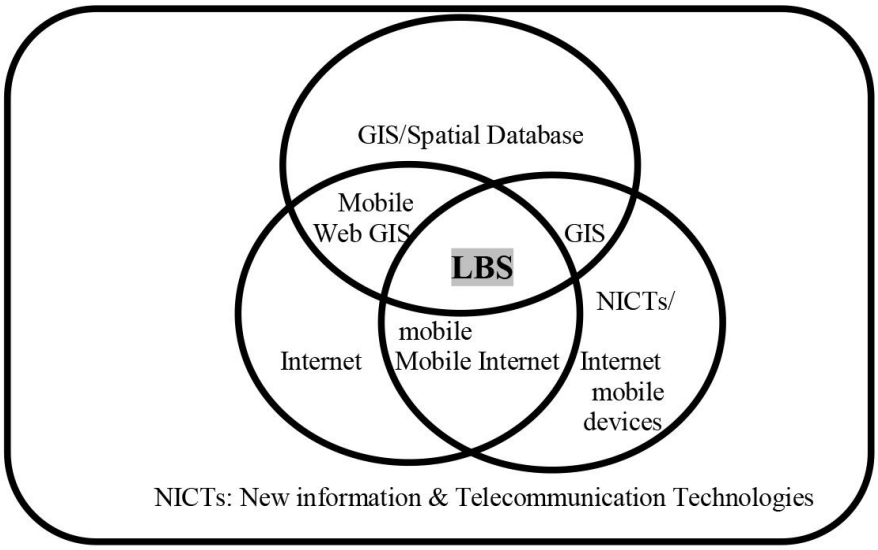

Fig1.LBS as an intersection of technologies (Steiniger et al. 2012)

Some of the LBS capabilities that make them suitable for delivery of location-based advertising based on current position of consumers are personalization, tracking possibility and Sending messages in real time (Lee, 2017). Yun et al. (2013) also referred to local- ability and personalization as two main benefits of LBS. local-ability "stems from the conflation of time-dependent value and position-dependent value" that means determining the current physical location of wireless devices and personalization, "stems from the user-dependent value" means tailoring products and services to every customer. Consumers often have trouble choosing products and services that fit their needs due to being bombarded with a variety of information and different offers. So LBS can improve their purchase experience and reduce their confusion with localization of offers based on physical position in real time (Tarabsz et al. 2017). Location-based services provide the most appropriate services and information that can be offered at the

users' current location after confirming the user's geographical position via the combined functionality of a mobile device, mobile network, and the global positioning system (Chen & Tsai, 2019).

Location based services include some offerings like maps, discount coupons, yellow pages etc. Being aware of the user's location is an effective way to deliver personalized, attractive and well-timed content (Tarabsz et al. 2017). LBS can also provide tourists with related information and services and benefit them with its unique capability of exploring contextual information (Meng, 2019). LBS have many benefits for companies such as using different promotion programs (discounts, rewards, …) while entering the stores or scanning the barcodes with phone devices, tracking the location of the nearest services, sending notification of offers in nearby locations, searching for people, making better relationship with customers and enhancing their loyalty, using viral marketing programs etc. (Palos Sanchez, Hernandez-Mogolan, & Campon-Cerro, 2017). Among the LBS localization services are GPS navigation systems, mobile navigation, check-in services of mobile social networks, location-based advertisement and so on (Palos Sanchez et al, 2017).

2.3. Location-Based Services in Tourism

In tourism context, LBS may be useful for different actors. First of all, LBS help in information search and evaluation by tourists. All LBS functions have been emphasized by the diffusion of social networks such as Facebook, Twitter and Foursquare. Thanks to the possibility of being connected with friends and linked to locations, LBS become essential in order to get information on places and destinations and be connected in social networks (Pedrana, 2014). In the tourism industry LBS could include personal position information such as "Where am I?" (Accommodation, restaurants, theatres, hospitals, banks etc.) and "Where is?" (Maps, tourist guides and weather and traffic alerts) (Hawking, 2005).

some applications of LBS in tourism include planning the trip, information about events, museums, shopping, public transportation, location-based advertising and marketing and so on (Uphaus et al. 2019). Today tourists are more sophisticated due to direct access to information and have different needs and preferences. In this context a personalized LBS by destinations, according to tourists' requests, can

be an important means of communication (Pedrana, 2014). Location-based mobile applications are applications that leverage GPS technology embedded in devices such as Smartphone to determine the user current location. Such applications provide users with information such as friends nearby and point of interests. Among these applications are applications that fall under tourism domain. Location-based tourism applications (We are investigating in this study) provide users with better travel experience since they will be able to access information anytime and anywhere (Mohammad Mahmood & Abdul Salam, 2013).

3. Research Model and Hypotheses Development

Location-based services have been considered by many studies in previous research in general and in tourism sector in particular and different researchers have investigated this phenomenon from various perspectives. Some studies have examined factors affecting the user willingness to adoption of location-based services (Uphaus et al. 2019; Palos Sanchez et al. 2017; Chang, Hsieh, Chen, Liao, & Whang 2006). Others have focused on trust or privacy issues (Srinivasan & Naseera, 2018; Anuar & Gretzel, 2011). As Huang et al. (2018) have also mentioned there exist ethical dilemmas such as the risk of privacy breaches in LBS. On the other hand, different technical solutions, as well as regulatory considerations/actions have been proposed to tackle these ethical challenges. Although this is a challenging issue in LBS literature, in present study, it is not our agenda and the main focus of this study is simply on functions and advantages of LBS in tourism industry.

Some researches have investigated Current trends and challenges in location-based services (Huang & Gartner, 2018). In many other papers technical and business issues in location-based services have been discussed (Dao, Rizos, Wang, 2002; Mohammad Mahmood & Abdul Salam, 2013; Husain, Yih Dih, Foo Yen, & Jothi, 2012; Schmidt-Belz, 2002; Tair, 2015; Yu & Chang, 2009; Jeong & Chung, 2006). Functions and applications of location-based services in tourism industry have also been examined in some papers such as (Antikainen et al. 2006; Berger, Lehmann, & Lehneret, 2003; Ruzic, Biloš, & Kelićet, 2012).

However, research on the relationship between location-based services or applications with brand components and consumer behavior remains scare. This research can be considered as one of the first papers examining the direct and positive effect of location-based services on brand dimensions and tourist behavior, simultaneously.

3.1. LBS and Destination Brand Image

Promoting techniques through LBS can create awareness and also facilitate interactions between consumers. This process leads to the interaction and personalization of tourism activities (Mohammad Mahmood & Abdul Salam, 2013). Emergence of social media platforms and e-commerce websites has made WOM[1] an important source of information (Chen & Yuan, 2020) and this source of information can enhance brand through reminding customers of a specific brand, leading to enhancement of the brand image.

While traveling, tourists usually link every tourism experience to the place they have visited. Using tourists' location, LBS tourism applications can provide more customized and personalized experience for visitors. In addition, tourists can get relevant tourism information and use a navigation service to help in finding their routs with personalization on tourists' preference and locations (Pedrana, 2014). Applying these applications, visitors can easily find good places to eat or shop or find some unique tourism attractions nearby, too. All these facilities ultimately lead to create a rich tourism experience and the authors believe that this unique experience has the potential to improve destination brand image that is a valuable achievement for destinations; because one of the principles of a tourist destination promotion programs is to create and adjust image (Gartner & Ruzzier, 2011). This is a vital concept in marketing which represents that how consumers think about a brand and what feelings the brand brings to their minds when they think about it (Ansari & Nik Hashim, 2017). So, the following hypothesis is presented;

1. Word of Mouth

Hypothesis1:
Location-based services have positive and significant effect on destination brand image.

3.2. LBS and Destination Brand Loyalty

Tourism destinations use LBS to provide tourists with needed information before and during their travel and they have economic value for society and individuals. These services are a means of communication and can also enhance tourism experience. Experience in turn, can lead to repeat visit to destination and also be a referral for other prospective tourists (Mohammad Mahmood & Abdul Salam, 2013). As Attahiru and Khoo Lattimore (2015) declared, because the tourism industry now needs integrated technology-based value-added services that are highly dynamic and can offer interactivity and entertainment, LBS can provide this technological driven added value. The tourists' leisure experience can be enhanced increasingly by LBS (Uphaus, et al. 2019). As the result, Visitors who have had more enhanced experience and have received more added-value will show higher levels of loyalty to the destination brand. Generally speaking, brand loyalty means preference for a given brand in comparison with other brands (Ogunnaike, Kehinde, Omoyayi, Popoola, & Amoruwa, 2017) that shows the attachment between customers and brand. The main purpose of each brand is attracting and retention of customers (Razavi Satvati, Rabei, & Rasoli, 2016). The elements representing loyalty in destination context are repeat visits, recommend the destination to others and intention to return to the destination in the future (Kim, Choe, & Petrick, 2018). Tussyadiah (2012) has declared in his study that location-based social network marketing leads to actual behavior that manifests in variety behavior (i.e., patronage to new places) and loyalty behavior (i.e., increased frequency of patronage to familiar places). Tiru (2010) elaborated a methodology to determine repeat visits of tourists to a destination that used the number, duration, frequency and geography of visits in order to identify repeat visitors in a particular area. He claimed that, using a database containing information about foreign tourists the algorithm permitted detection of repeat visits. So, we state the second hypothesis as below;

Hypothesis2:
Location-based services have positive and significant effect on destination brand loyalty.

3.3. LBS and WOM

Today tourists due to the emergence of information technologies are more eager to gather detailed information about tourism destinations before visit. They are also willing to share their obtained information and experiences about destination with others through social media channels (Carvalho, Paulo Morais, Cunha, & Carlos, 2019). The integration of LBS into social networks and mobile technologies help mobile users to communicate with others and share different information related to their physical position (Palos Sanchez et al. 2018). Users can publish different forms of media content such as photos, videos and texts along with their own location throughout location-based technologies and thus turn social networks into geo-social or location-based social networks. Instagram, Facebook, Twitter, Foursquare, Google+ and Flick are among the location-based social networks (Vassakis, 2019) that provide the opportunity to create word of mouth advertisement by the users. Lucas and Carlson (2012) also in a paper, trying to understand e-WOM Influence using social location-based Services, explained perceptions and motivations by consumers receiving electronic word of mouth communication via social location based services on the Facebook platform. As Carvalho et al. (2019) mentioned especially generation Y feel more responsible to publish their obtained information and also are more willing to consider comments and reviews shared on the internet before making decisions. Chong and Ngai (2013) have stated that when travelers rely on the search results from location-based social media applications, the consumer-generated reviews that accompany the results, can significantly influence their decisions. So, according to the above mentioned background, we supposed that;

Hypothesis3:
Location-based services have positive and significant effect on WOM.
According to the research theoretical background, literature review and research hypotheses, the conceptual model is presented as below.

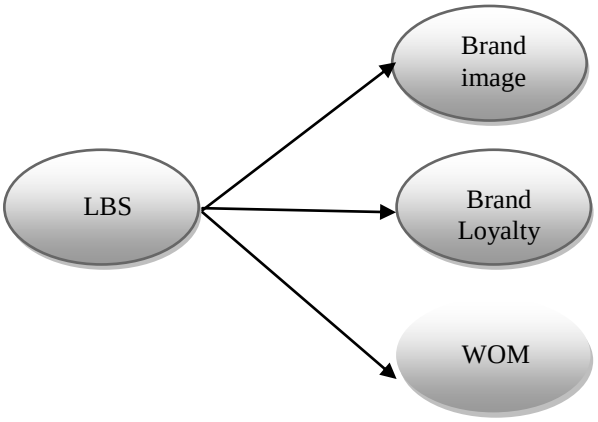

Fig2. Research model

4. Research Method

This research is an applied and descriptive survey. The statistical population of the study consists of Iranian tourists who have visited Isfahan in the last five years. Data collection was carried out using online questionnaire by convenience sampling method. The questionnaire was distributed through social networks during November 2018 to September 2019. Finally, a total of 210 correct questionnaires were gathered. Participants were mobile users who had had a high level of use of mobile location-based applications during their last travel to Isfahan. It should be mentioned that Isfahan was chosen because it is a well-known tourist city both for Iranians and foreign tourists.

To ensure that there was no uncertainty, a pilot study was conducted with 40 university students and according to the results, there was no ambiguity. Anonymity of the participants' information and the confidentiality of the data have also been assured to them in a cover page.

The online survey included 14 items for four constructs. The questionnaire had two main sections; in the first section some demographic information from participants such as gender, age and education were gathered. The second part was dedicated to research constructs. The constructs consist of mobile location-based services (with four items), destination brand image (with five items), destination brand loyalty (with three items) and word of mouth (with

two items). The face validity of the questionnaire was first evaluated by two management professors. To measure mobile LBS we use a made questionnaire (considering participants using mobile LBS applications for functions such as mapping and navigation, search and information and social networking during their travel). To measure destination brand image and destination brand loyalty, after translation into Persian, the questionnaire of Ghafari et al. (2017) has been applied and WOM was also measured by Baker and Crompton (2000). Respondents' opinions on the expressions in the measurement model have been measured by applying the 5-point Likert scale (5= strongly agree, 1= strongly disagree).

The research hypotheses were analyzed in the form of structural equation modeling with Smart-PLS3 software. PLS widely used in theory testing and confirmation, is an appropriate approach for examining whether relationships might or might not exist and thus is useful for suggesting propositions for later testing (Fornell & Larcker, 1981).

5. Analysis and Results

5.1. Reliability and Validity

We adopted Content validity to assess the validity of the questionnaire. Cronbach's alpha (α) and composite reliability (CR) were used to test the internal consistency of the constructs. For convergent validity, we used the average variance extracted (AVE). Table 1 shows the results of testing reliability and validity. As the results show, Cronbach‘s alpha and composite reliability in this test are higher than 0.7 and AVE should be above the cutoff point of 0.5 establishing the scales convergent validity (Fornell & Larcker 1981).
Discriminant validity was also tested by Fornell-Larcker test. As Fornell and Larcker (1981) suggest, the square root of AVE could be used for evaluating discriminant validity when the calculated value is more significant than other correlation values among the latent variables. According to the results, the values of square roots of AVE of all latent variables are larger than the correlations between the corresponding variable and any other variables (Table 2). This indicates that discriminant validity is supported. The results are represented in table 2.

As shown in Table 3, all factor loadings are significant and above 0.50 (Hair et al, 1998).

According to the results available in tables 1, 2 and 3 both the reliability and validity of the questionnaire are confirmed.

Table 1. Reliability and convergent validity

Variable	Cronbach's alpha	Composite reliability	Average variance extracted
LBS	0.72	0.82	0.55
Brand image	0.78	0.85	0.53
Loyalty	0.83	0.83	0.74
WOM	0.75	0.78	0.74

Table 2. Discriminant validity

	Image	LBS	Loyalty	WOM
Image	0.73			
LBS	0.57	0.74		
Loyalty	0.57	0.43	0.86	
WOM	0.39	0.26	0.52	0.86

Table 3. Factor Loadings

Variable	Factor loading	Number
LBS1	0.83	210
LBS2	0.75	210
LBS3	0.68	210
LBS4	0.67	210
Brand Image1	0.53	210
Brand Image2	0.70	260
Brand Image3	0.84	210
Brand Image4	0.75	210
Brand Image5	0.79	210
Brand Loyalty1	0.85	210
Brand Loyalty2	0.86	210
Brand Loyalty3	0.87	210
WOM1	0.89	210
WOM	0.82	210

5.2. Demographic Characteristics of Respondents

The population under study consisted of domestic tourists who had visited Isfahan in recent years. Demographic characteristics of respondents are presented in table 4. Based on the analysis of research

findings, the respondents were similarly distributed between males (%49.5) and females (%50.5). %16.7 had associate degree or below, %30.5 BA and %52.5 MA and higher, that revealed that most participants were highly educated. Considering the age, %56.2 were 30 or below, %28.6 were 30-40, %11.4 were 40-50 and % 3.8 were 50 and above, that means most of participants were young people.

Table 4. Demographic characteristics of respondents

Demographic variable		Valid percent
Gender	Man	49.5
	Woman	50.5
Age	30 & below	56.2
	30-40	28.6
	40-50	11.4
	50 & above	3.8
Education	Associate & below	16.7
	BA	30.5
	MA & higher	52.5

5.3. Description of Study Variables

Table 5 shows the values of mean and standard deviation for all variables.

Table 5. Descriptive statistics

Variable	Mean	Standard Deviation	Number
LBS	4.11	0.49	210
Brand Image	4.23	0.53	210
Brand Loyalty	4.11	0.59	210
WOM	3.94	0.54	210

As table 5 shows the means for variables are from (3.62) to (4.23). The highest mean belongs to Brand Image with (4.23) and standard deviation (0.53) and WOM has the lowest mean with (3.94) and standard deviation (0.54).

5.4. Normality

In this study to analyze the normality of research data, Kolmogrov-Smirnov test was applied. As the results in table 6 demonstrate, with regard to (sig<0.05), our research data is not normally distributed.

Table 6. Normality test

Variable	K.S Coefficient	Sig
LBS	0.16	0.000
DBI	0.16	0.000
DBQ	0.17	0.000
WOM	0.13	0.000

5.5. Correlation between Variables

In order to investigate the relationship of constructs in more details, a correlation analysis was done. The results presented in table 7 demonstrate a highly positive and significant relationship among all constructs at the 0.01 level (1-tailed).

Table 7. Correlation between variables

	LBS	BI	BL	WOM
LBS		0.54**	0.43**	0.25**
BI	0.54**		0.55**	0.37**
BL	0.43**	0.55**		0.53**
WOM	0.25**	0.37**	0.53**	

5.6 Analysis the Fitness of the Research Model

To assess the quality of research model, indices; R^2 (R square), CVR (construct cross validated redundancy), CVC (construct cross validated communality) were adopted. The high R^2 value indicates that reasonably large portion of variation in brand image, brand loyalty and WOM (more than 40%) can be explained by LBS change. For assessment of the overall model fit, goodness-of-fit index (GFI) was applied for which the three values of 0.01, 0.25, and 0.36 correspond to weak, moderate, and strong fit, respectively (Wetzels, Odekerken-Schröder & Van Oppe, 2009). The resulting GFI value in the table 7 (0.37) indicates that the structural model was reasonably fit for the data and quality and fitness of the research model is well confirmed.

Table 6. Model Fitness Indices

Variable	CVC	CVR	R^2	GOF
LBS	0.37	-	-	0.37
Brand image	0.36	0.25	0.49	
Loyalty	0.34	0.23	0.43	
WOM	0.33	0.24	0.41	

5.7. Hypotheses Testing

Figure 3 represents the results of path analysis. Regarding the figure, research hypotheses are tested and the results are discussed.

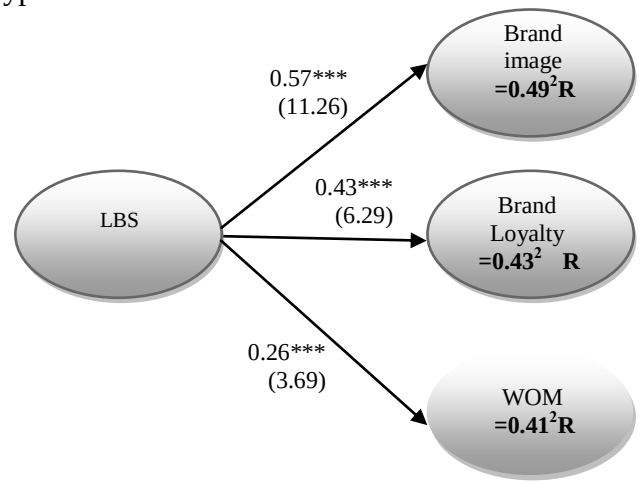

Fig 3. Results of path analysis

Note: *p < 0.05; ***p<0.001. The figures in parentheses are T-values. As the figure shows, with regard to the path coefficient (0.57) and t-statistic (11.26), at the significant level of 99%, there is a positive and significant relationship between LBS and brand image. So, the first hypothesis is confirmed. That means, using LBS properly, can strengthen the destination brand image.

With regard to the path coefficient (0.43) and t-statistic (6.29), at the significant level of 99%, there is a positive and significant relationship between LBS and loyalty. So, the second hypothesis is confirmed. It can be said that using LBS to provide personalized services to tourists, can make them more loyal to destination brand.

Finally, with regard to the path coefficient (0.26) and t-statistic (3.69), at the significant level of 99%, there is a positive and significant relationship between LBS and WOM. So, the third hypothesis is also confirmed. It shows that getting personalized and customized services through LBS, tourists talk about destination brand more positively.

The final obtained results for research hypotheses are represented in table 7. The results demonstrate that the relationships between the variables are significant. According to these results, all three

hypotheses posited in this research, were confirmed at high significance level.

Table 7. The Results of Hypotheses

Path	Hypothesis	Path coefficient	t-statistic	Result
LBS- image	**1**	**0.57**	**11.26**	**confirmed**
LBS- loyalty	**2**	**0.43**	**6.29**	**confirmed**
LBS- WOM	**3**	**0.26**	**3.69**	**confirmed**

6. Discussion, Implications and Limitations

The purpose of the current study was to investigate how effective tourism location-based services and applications are in creating WOM and also improving destination brand equity components. This research contributes to fill the gap in the literature on investigating the effects of location-based services on brand components and consumer behavior simultaneously.

6.1. Theoretical implications

From a theoretical perspective, it empirically illustrates the potential of location-based services in particular mobile applications in tourism industry. Considering the characteristics of LBS, we suggested that capabilities and potentials of these technologies not only affect destination brand components, but also positively affect WOM. To the best of the authors' knowledge, this is one of the first studies to employ theoretical framework to examine the effects of LBS on these constructs and previous empirical studies have not sufficiently researched how location-based services can affect destination brand equity and spread tourists' WOM.

The results reveal that using mobile location-based services appropriate for travel and tourism objectives have a positive and significant effect on destination brand image, brand loyalty and creating WOM among tourists. As our results show, LBSs can affect brand image in customers' minds positively. The interesting point is that, it seems no other previous research has come to this conclusion before. So, this needs to be more considered in future studies in the field, too.

These personalized services with creation a pleasant and memorable experience for tourists, can improve the quality of services, improve relationships with them and ultimately increase the level of loyalty. Some other studies (Mohammad Mahmood & Abdul

Salam, 2013; Ogunnaike et al. 2017 & Tussyadiah, 2012) also confirmed this result to some extent.

LBS can also drive WOM. This result is somehow in consistence with some previous studies (Chong & Ngai, 2013; Lucas & Carlson, 2012). Indeed, the content created by the users of these services, and sharing this content along with their travel comments and experiences on social media, can be applied as a source of information for other potential users and tourists. Potential tourists will consider this information and the experiences learned by others in their future travel plans. This is a unique opportunity for tourism service providers to attract potential tourists.

6.2. Practical Implications and Suggestions

From a practical point of view, the results of the current study offer important marketing implications for DMOs[1] and tourist destinations managers and marketers. Given the potential of these services and their recent applications to tourism, it is important for destination managers to invest more in specialized location-based applications appropriate to apply in mobile phone devices. Due to the potential of mobility, smart phone devices are increasingly used during travel. This situation makes an opportunity for destinations managers to combine different local information and services with unique capabilities of these devices to improve tourism experience.

Location can be an important factor in collecting beneficial data and information about customers' needs and preferences. Service providers with access to information of customer's location will be able to design and implement their marketing, advertising and promotion programs more purposefully. Due to creating a unique travel experience as well as personalization of tourism services and tailoring based on the needs and personal preferences of tourists, LBS will provide them with significant added value. LBS enable destination managers and marketers to deliver their marketing messages and personalized offers to visitors simply based on their current geographical position through their smartphone devices. Tourist service providers can also use the information obtained from these services to segment their customers based on their needs,

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preferences and expectations of different segments of consumers. Destination managers in particular in Iran, should place particular importance on incorporating LBS in their marketing programs.

6.3. Limitations

Although the current research provides relevant theoretical and practical contributions to the field, it has some limitations that suggest future study directions. First, to generalize the results to a wider population, a larger sample than 210 may be needed. However, we have tried to overcome this limitation using smart-PLS software, as it is more appropriate for a small sample.

The second limitation is that the research model and hypotheses were tested for domestic tourists in Iran. The results of testing the research model for foreign tourists or for other cultures may be different.

Another limitation is that in the current paper, different kinds of mobile location-based services (applications for functions such as mapping and navigation, search and information and social networking) have been investigated together and the contribution of each item in obtaining the results is not determined. Examining each of these functions separately may lead to get different results.

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