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Extension of the DeLone and McLean's information success model with leisure constraint model toward individual intention to visit tourist destination

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Abstract

Purpose – This study strives to investigate individual behavior toward tourist destination with two well-known models namely the leisure constraint model and DeLone and McLean's information success model. In addition to that this study has conceptualized moderating effect of destination image between the relationship of tourist intention to visit and intention to recommend tourist destination.

Design/methodology/approach – The present study is designed under the positivist paradigm. Data were collected from tourist visiting northern areas of Pakistan. The convenience sampling approach was employed for data collection. Overall, 213 questionnaires were retrieved from tourist visiting northern areas of Pakistan. Data were analyzed using the structural equation modeling approach.

Findings – Results demonstrated that collectively website design, system quality, information quality, service quality and travel constraints explained substantial variance R^252% in tourist intention to visit northern areas of Pakistan. This research directs that adequate information quality, system quality and services quality on destination website will encourage tourist to visit and recommend northern areas of Pakistan.

Practical implications – Concerning the practical contribution the findings of this study contributes to travel and tourism literature and enhance understanding about traveling constraints including physical and technological constraints. Moreover, the current study directs that adequate system quality, service quality, information quality encourage tourist to visit northern areas of Pakistan. Similarly, this research has suggested

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that interpersonal and structural constraints are core traveling constraints and hence need policymakers' attention. Aside of managerial implications this study has also contributed to sustainable development goals SDGs 8 and SDGs 9 by emphasizing on factors use of digital technology, innovation and sustainable work which in turn contributes to economic growth.

Originality/value – This study has established an integrated model by combining two well-known theoretical models namely the Leisure constraint model and DeLone and McLean information success model. This study is also unique as it has established moderating effect of destination image on web between tourist intention to visit and intention to recommend tourist destination.

Keywords System quality, Information quality, Service quality, Structural constraints, Interpersonal constraints, SDGs 8, SDGs 9, Intention to recommend

Paper type Research article

1. Introduction

The impact of tourism is vital for any country social and economic development. It is argued that tourism sector has provided several jobs to local residents and hence significantly contributes to economy (Li, Liu, & Solangi, 2024). In services marketing literature travel and tourism research studies have focused on tourist satisfaction and loyalty (Abou-Shouk, Zouair, Abdelhakim, Roshdy, & Abdel-Jalil, 2024; Orden-Mejia & Huertas, 2022; Wang, Wang, Zhang, & Wang, 2021). Nevertheless, few studies have discussed about travel constraints and technology factors impact on tourist intention to visit and intention to recommend travel destination. Travel constraints are identified potential barriers that comes in traveler planning (Jara-Díaz & Contreras, 2024; Shin, Nicolau, Kang, Sharma, & Lee, 2022). Earlier studies have examined travel constraints in cultural and political context (Dong & Chick, 2012; Jara-Díaz & Contreras, 2024). Following leisure constraints model (LCM) this study investigates three core dimensions of travel constraints including interpersonal, intrapersonal and structural constraints. Authors like Wei, Yu, and Li (2024) have stated that prior to developing new strategies, it is important for policymakers to understand traveler needs that why they are reluctant to travel. Following that this study attempts to gain an insight into how travel constraints impact tourist intention to visit northern areas of Pakistan.

Internet plays an important role in holiday planning. For instance survey report issued by European Union has revealed that 53% of travelers have used internet for organizing their trip. Among those 53%, 40% of traveler mentioned that website was the main source in their travel planning European (Union, 2013). In the information system (IS) literature researchers have investigated features and characteristics of the websites. These websites represent hotel or accommodation, travel destination and on online travel agencies (Fu Tsang, Lai, & Law, 2010; Han & Mills, 2006; Ye, Barreda, Okumus, & Nusair, 2019). Authors like Wen (2009) has investigated the significant impact of website design characteristics on tourist attitude and satisfaction. Therefore, the present study incorporates technological factors including website design, and factors underpinned DeLone and McLean model. The DeLone and McLean's information success model was introduced by DeLone and McLean (1992). The initial DeLone and McLean model includes only two dimension of information system including information quality and system quality. However, with the passage of time literature highlights that DeLone and McLean model does not include service quality dimension in information system model. Consequently, Delone and McLean (2003) have reviewed the old model and extended it with service quality dimension.

This study has incorporated the extended Delone and McLean (2003) model which includes three core dimensions of information system including system quality, information and service quality. Earlier studies have confirmed that system quality, information and service quality positively influence on individual intention (Chung, Lee, Lee, & Koo, 2015; Hew, Lee, Leong, Hew, & Ooi, 2016; Samar & Mazuri, 2019). Consistent with above studies present study integrates DeLone and McLean's information success model with website design and travel constraints to determine tourist intention to visit northern areas of Pakistan and intention to recommend these destinations among family and friends. Therefore, this study has the

following research objectives: (1) To examine the impact of website design on traveler intention to visit tourist destination. (2) To investigate the impact of DeLone and McLean's information success model on traveler intention to visit tourist destination. (3) To examine the impact of travel constraint factors on travelers intention to visit tourist destination. (3) To conceptualize destination image as a moderator between the relationship of tourist's intention and intention to recommend tourist destinations. In terms of research contribution this study has substantial theoretical contribution as it integrates two well-known theories namely; leisure constraint model and DeLone and McLean's information success model to investigate tourist intention to visit northern areas of Pakistan. Similarly, this study is in line with European Union sustainable development goals SDGs 8 and SDGs 9 and emphasized that use of digital technology in travel destination website bring innovation and promote sustainable work which in turn contributes to economic growth.

2. Literature review

Traveling constraints have been identified as critical factors which directly influence traveler decision making to visit a destination (Popp, Schmude, Passauer, Karl, & Bauer, 2024; Schiopu, Hornoiu, Padurean, & Nica, 2022). In developing countries like South Korea and China several types of traveling constraints have been identified namely structural constraints, intrapersonal and interpersonal constraints (Lai, Li, & Harrill, 2013; Schiopu *et al.*, 2022). Concerning the Pakistani travel and tourism sector, less attention has been paid on travel constraints. Aside of physical constraints, creative economies are taking help from technology using website tools (Chung *et al.*, 2015). According to Chung *et al.* (2015) websites for tourists have positioned themselves in the middle of the creative ecology and work as a distribution channel for information on the attractions and destinations. A report issued by United Nation organization on creative economy has declared that destination websites provide an overview of cultural ambiance which in turn increases tourism and significantly impact national economy (UNCTAD/UNDP, 2018 Geneva/New York). However, Pakistani tourism sector has paid comparatively less attention on the development of destination websites. For instance Tourism Corporation Khyber Pakhtunkhwa (TCKP) neither provides travel packages details nor online booking facilities. Similarly, information provided by TCKP is not sufficient for international travelers (KP, 2024). Another example of technology failure is the website of Pakistan tourism development corporation. This website also lacks booking facility and proper guidelines about destinations (PTDC, 2025). Nevertheless, present study develops an integrated model that underpinned technological factors and traveling constraints altogether to investigate tourist intention to visit northern areas of Pakistan.

2.1 Website design

According to Wang *et al.* (2024) destination website should contain appropriate graphics, layout, physical appearance and appealing color. Extending to this destination web interface and ease in using web are essential characteristics in travel website which enhance functionality, usability, efficiency and reliability of the website (De Farias, Salomao, Kovacs, & Melo, 2013; Wang *et al.*, 2024; Zins & Abbas Adamu, 2024). Travel organizations websites that represent to travel organization are considering unique tool to engage tourist toward destination. Destination websites provides useful and latest information to tourist and enhance awareness about expected traveling place (Tang, Jang, & Morrison, 2012). According to Lu, Lu, and Zhang (2002) web related technology enrich traveler information and influence on intention to visit. Authors like De Farias *et al.* (2013) have postulated that websites design including destination pictures and informative contents enhance the destination image and positively influence traveler intention to visit destination websites. Therefore, following hypothesis is outlined:

H1. Website design is positively related to tourist intention to visit destination.

2.2 DeLone and McLean's IS success model

In information system literature earlier studies have integrated website characteristics, web-contents, perceived usefulness and ease of use to investigate user intention toward acceptance of specific products or services (Anand, Arya, Suresh, & Sharma, 2023; Samar & Mazuri, 2019). Following that this study has employed DeLone and McLean to determine the success of destination websites in the context of tourist intention to visit holiday destination (Delone & McLean, 2003). This study has used the extended DeLone and McLean's information success model which include three core dimension of quality namely system, information and service quality (Delone & McLean, 2003). Information quality denotes to the characteristics of accuracy, timeliness and completeness being offered by information system. Therefore, service quality demonstrates to support delivered by the service providers using internet services (Delone & McLean, 2003). Therefore, system quality is the extent wherein reliability, perceived convenience and functionality are observed while using IS driven system (Delone & McLean, 2003). Past studies have established that factors underpinned positively impact individual intention to perform a certain task (Anand *et al.*, 2023; Chung *et al.*, 2015; Hew *et al.*, 2016). Therefore, following hypotheses are derived:

H2. Information quality is positively related to tourist intention to visit destination.

H3. Service quality is positively related to tourist intention to visit destination.

H4. System quality is positively related to tourist intention to visit destination.

2.3 Travel constraints

The term travel constraints have been identified as social and psychological barriers that come in tourist planning. Nevertheless, prior studies have overlooked constraints that highlight individual needs and experiences (Abou-Shouk *et al.*, 2024; Chen, Dai, Xu, & Abliz, 2021). To fill this research gap current research has adopted LCM. The LCM model has been used in several travel related studies (Jiang, Zhang, Zheng, Zhang, & Zhang, 2020; Orakani, Smith, & Weaver, 2021). In services marketing traveling constraints like structural constraints, intrapersonal constraints and interpersonal constraints have been studied to investigate tourist intention to visit destination (Anciaes & Metcalfe, 2023; Qiao, Huang, & Vorobjovas-Pinta, 2024). Intrapersonal kinds of travel constraints are basically linked to traveler psychological position, self-interest, religion, anxiety and depression. Prior studies have confirmed that intrapersonal constraint significantly impact tourist intention (Chen *et al.*, 2021; Wong & Kuo, 2021). Therefore, interpersonal constraints denote to social interaction and explain that tourist may feel discomfort when they travel without companion, loved one and travel partners. Concerning the structural constraint, these constraints indicate that individual preferences are seen before traveling to a destination. Structural constraints may include attributes of time, financial resource and lack of information (Jiang *et al.*, 2020). Therefore, the present study hypothesized travel constraints as follows:

H5. Intrapersonal constraint is negatively related to tourist intentions to visit destination.

H6. Interpersonal constraint is negatively related to tourist intentions to visit destination.

H7. Structural constraint is negatively related to tourist intentions to visit destination.

2.4 Tourist intention to visit and intention to recommend

Tourists with positive intention have shown more incline towards travel destination (Javed & Awan, 2023). Traveling experience also reflects individual attitudinal and behavioral intentions. It is argued that loyalty or behavioral intention encourage tourist to revisit travel destination (Chen & Chen, 2010; Javed & Awan, 2023). In literature intention to visit is identified as attitudinal loyalty of individual therefore intention to recommend is found as

behavioral loyalty of the tourist (Alcañiz, García, & Blas, 2009; Horng, Liu, Chou, & Tsai, 2012; Hung & Petrick, 2012). Both attitudinal loyalty and behavioral loyalty have shown substantial impact on predicting individual intention and intention to recommend destination among family and friends (Alcañiz *et al.*, 2009). Prior study conducted by Lau and McKercher (2004) has claimed that traveler intention to visit and intention to recommend must be investigated for useful outcome. Similarly, other studies have argued that intention to recommend and positive intention both have a positive impact on tourist intention and boost theory confidence to revisit destination (Cham, Cheah, Ting, & Memon, 2021; Javed & Awan, 2023; Xu, Yan, & Mak, 2022). Therefore, intention to visit is hypothesized as follows:

H8. Tourist intention is positively related to tourist intention to recommend destination.

2.5 Destination image on website

The impact of technology is enormous on individual lives. Due to technological advancement, individual are now capable of browsing information through internet that enhance the importance of destination website (Sio, Fraser, & Fredline, 2024). The term destination is identified as any recreation place, city or town. Therefore, destination image is explained as individual perception about destination (Pan, Rasouli, & Timmermans, 2021). Travel website plays a vital role in tourism services and augments tourist perception about destination. At the beginning stage of travel planning destination website is the first source to get information. Literature has clearly demonstrated that travel websites highlights intangible tourism, present intangible tourism products, accurate source of information and attractive information about destination (Pan *et al.*, 2021; Sio *et al.*, 2024). It is argued that destination websites provide virtual image to tourist ultimately resulting positive influence tourist intention to visit that destination (Doolin, Burgess, & Cooper, 2002). Similarly, destination website exhibit virtual tour that reduces risk and help tourist to choose right destination (Pan *et al.*, 2021; Sio *et al.*, 2024). Consistent with above arguments current study has conceptualized that positive destination image on website strengthen the relationship between tourist intention and intention to recommend northern areas. Therefore, destination image on website is hypothesized as follows:

H9. Destination image moderates the relationship between intention to visit and intention to recommend.

After conducting detail literature review theoretical framework is developed that combines factors underpinned leisure constraint model and DeLone and McLean information success model and investigate tourist intention to visit northern areas of Pakistan. The research framework is further extended with destination image in such a way that destination image moderates the relation between tourist intention to visit and intention to recommend northern areas. The research model is exhibited in Figure 1.

3. Methodology

3.1 Survey design, sampling and data collection

Positivist research paradigm and quantitative research approach is used to verify the theoretical framework (Grinnell *et al.*, 2010; Rahi, 2017). The quantitative kind of research focuses on fresh data collection from large population. Therefore, for this research data were collected through survey questionnaires. The research questionnaire comprises scale items adopted from previous studies. For instance scale items for construct website design were adopted from Ramkissoon, Uysal, and Brown (2011). Scale for the factors information quality, system quality and service quality were adapted from Rahi and Abd.Ghani (2019) and (Chung *et al.*, 2015). Similarly, scale items for interpersonal, intrapersonal and structural constraints were adopted from Lai *et al.* (2013). Scale item for intention to visit were adopted from Hung and Petrick (2012) and (Oloveze, Okonkwo, Nwachukwu, Ogbonna, & Chukwuoyims, 2022).

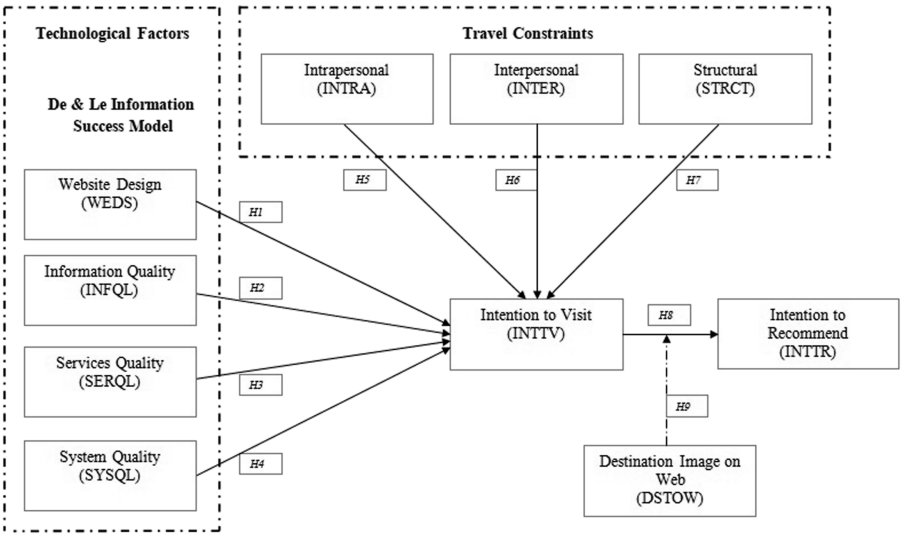

Figure 1. Research model

Therefore, scale items for intention to recommend were adopted from Rahi, Khan, and Alghizzawi (2021). Moving further scale items for destination image on websites were adopted from Ramkissoon *et al.* (2011).

Since this study is focused on tourist intention to visit northern areas of Pakistan, accordingly tourist were approached to fill the research questionnaires. Concerning the sample size, 290 questionnaires were distributed among tourist (Rahi, Ghani, & Ngah, 2018). The convenience sampling approach was incorporated for data collection consistent with prior studies (Hair *et al.*, 2016a, b; Rahi, 2022; Rahi, Alghizzawi, & Ngah, 2022). Data were collected from two renowned tourist destinations of Pakistan namely Hunza Valley and Kaghan Valley. Among 290 questionnaires 213 questionnaires were received from respondents. Data collection process was started in the first week of December 2021 and ended on 25 January 2022. To test common method bias, Harman's single factor analysis is employed (Fornell & Larcker, 1981). Results of the Harman's single revealed that variance explained by first factors was 13% and less than threshold value 40% (Fornell & Larcker, 1981). These findings indicate that common method biasness is not a potential issue in this study. Finally, constructs reliability, validity and hypotheses were tested through structural equation modeling approach.

4. Data analysis

Structural equation modeling approach is used for data estimation (Hair, 2010). Constructs reliability and validity is tested with measurement model. Nevertheless, for hypotheses testing researcher has used structural model. Aside of structural equation modeling the predictive power of the research model is tested using blindfolding analysis. Results of the factors reliability and validity are given in following Table 1.

Table 1 indicates that factors have adequate reliability and measure distinct concepts. Instrument reliability is confirmed with factor loading wherein all loading are higher than 0.6. Similarly, constructs reliability is achieved with composite reliability by following threshold value of 0.70 (Hair *et al.*, 2016a, 2016b). Next, convergent validity has been confirmed with average variance extracted following threshold value 0.50. Results revealed adequate convergent validity of the measure.

Table 1. Measurement model

Scale instrument	Loading	Cronbach alpha	Composite reliability	Average variance extracted
Destination image on web (DSTOW)				
DSTOW1:	0.825	0.757	0.861	0.673
DSTOW2:	0.843			
DSTOW3:	0.793			
Information quality (INFQL)				
INFQL1:	0.827	0.861	0.906	0.706
INFQL2	0.856			
INFQL3	0.833			
INFQL4	0.844			
Interpersonal (INTER)				
INTER1	0.773	0.751	0.840	0.568
INTER2	0.738			
INTER3	0.739			
INTER4	0.764			
Intrapersonal (INTRA)				
INTRA1	0.878	0.835	0.901	0.752
INTRA2	0.883			
INTRA3	0.840			
Intention to recommend (INTTR)				
INTTR1	0.882	0.851	0.910	0.770
INTTR2	0.889			
INTTR3	0.862			
Intention to visit (INTTV)				
INTTV1	0.844	0.876	0.915	0.729
INTTV2	0.863			
INTTV3	0.867			
INTTV4	0.841			
Services quality (SERQL)				
SERQL1	0.842	0.866	0.908	0.713
SERQL2	0.831			
SERQL3	0.873			
SERQL4	0.830			
Structural (STRCT)				
STRCT1	0.730	0.722	0.844	0.645
STRCT3	0.878			
STRCT4	0.795			
System quality (SYSQL)				
SYSQL1	0.764	0.816	0.878	0.643
SYSQL2	0.821			
SYSQL3	0.795			
SYSQL4	0.826			
Website design (WEDS)				
WEDS1	0.751	0.814	0.877	0.642
WEDS2	0.803			
WEDS3	0.833			
WEDS4	0.815			

4.1 Discriminant validity

The concept of discriminant validity ensures that constructs are discriminant and measure distinct concepts. To establish discriminant validity Fornell and Larcker method is used. To ensure factors are discriminant, square root of average variance extracted is evaluated following the criterion that AVE must be higher than other factors. Table 2 exhibits that average variance extracted values were higher than other factors AVE values and hence confirmed discriminant validity of the factors.

4.2 Cross loading

Another method that establishes discriminant validity of the measure is cross loading. This method recommends that loading of the indicator should be higher when comparing with other factors loadings. Table 3 depicts adequate cross loadings of the factors and confirmed that constructs are discriminant.

4.3 HTMT analysis

Aside of cross loading the heterotrait–monotrait ratio analysis is employed to ensure discriminant validity of the factors.

This method suggests that to confirm discriminant values of HTMT should not be higher than 0.85 (Kline, 2011). Nevertheless results have revealed that HTMT values are less than 0.85 and hence establishing discriminant validity of the factors. The HTMT values are shown in Table 4.

4.4 Hypotheses analysis

The measurement model assessment has established convergent and discriminant validity of the factors however causal relationship is yet to be examined. In order to test hypotheses data were bootstrapped with 5,000 as suggested by Hair *et al.* (2016a, b). Hypotheses are confirmed with path coefficient, t-statistics and path significance. Results of the hypotheses testing are shown in Table 5.

Results of the structural model revealed that relationship between website design and intention to visit is found statistically insignificant path value −0.008; *t*-statistics 0.180 and *p*-value 0.429 and hence H1 is rejected. Therefore, the relationship between information quality and tourist intention is found significant and statistically confirmed by path value 0.158; *t*-values 2.274 and significant at 0.012 and hence H2 is accepted. Similarly, service quality and system quality have shown positive impact on tourist intention and supported by path value 0.115; *t*-statistics 1.805 and p-value 0.037; path value 0.496; *t*-statistics 12.054 and *p*-value 0.000 and hence H3 and H4 are confirmed. Concerning the travel constraints the relationship between intrapersonal constraints and tourist intention is found insignificant and supported by path value 0.060; *t*-statistics 1.122 and *p*-value 0.132 and hence H5 is rejected. Therefore an interpersonal constraint has shown positive influence tourist intention and supported by path value 0.059; *t*-statistics 1.665 and *p*-value 0.049 and confirming H6. In accession to this structural constraint has shown positive impact on tourist intention to visit northern areas of Pakistan and supported by path value 0.099; *t*-statistics 1.949 and *p*-value 0.027 and confirming H7. The relationship between tourist intention to visit northern areas of Pakistan and intention to recommend is found significant and statistically supported by path value 0.668; *t*-statistics 19.568 and *p*-value 0.000 and hence H8 is confirmed. Results of the hypotheses can be seen in Appendix 1.

Although causal relationships are tested with bootstrapping procedure actual variance is yet to be examined with coefficient of determination. To reveal variance R^2 value is estimated. Results of the structural model revealed that collectively website design, system quality, information quality, service quality and travel have constraints explained R^2.520 variance in tourist intention to visit northern areas of Pakistan. Therefore, tourist intention to recommend

Table 2. Fornell and Larcker analysis

	DSTOW	INFQL	INTER	INTRA	INTTR	INTTV	SERQL	STRCT	SYSQL	WEDS
DSTOW	0.820									
INFQL	0.305	0.840								
INTER	0.515	0.261	0.754							
INTRA	0.264	0.596	0.156	0.867						
INTTR	0.398	0.505	0.273	0.373	0.878					
INTTV	0.407	0.472	0.336	0.385	0.719	0.854				
SERQL	0.248	0.692	0.215	0.536	0.459	0.437	0.844			
STRCT	0.465	0.246	0.406	0.264	0.343	0.398	0.235	0.803		
SYSQL	0.408	0.327	0.333	0.275	0.541	0.654	0.296	0.399	0.802	
WEDS	0.596	0.302	0.397	0.331	0.350	0.372	0.288	0.565	0.403	0.801

Table 3. Cross loading analysis

	DSTOW	INFQL	INTER	INTRA	INTTR	INTTV	SERQL	STRCT	SYSQL	WEDS
DSTOW1	0.825	0.239	0.361	0.214	0.352	0.365	0.232	0.386	0.365	0.548
DSTOW2	0.843	0.276	0.391	0.242	0.311	0.306	0.210	0.335	0.302	0.456
DSTOW3	0.793	0.237	0.524	0.194	0.312	0.325	0.166	0.422	0.334	0.456
INFQL1	0.240	0.827	0.208	0.522	0.434	0.397	0.557	0.206	0.325	0.225
INFQL2	0.243	0.856	0.187	0.498	0.431	0.422	0.553	0.198	0.278	0.225
INFQL3	0.290	0.833	0.248	0.502	0.431	0.382	0.583	0.211	0.293	0.276
INFQL4	0.254	0.844	0.238	0.482	0.401	0.384	0.636	0.212	0.200	0.292
INTER1	0.514	0.241	0.773	0.172	0.262	0.314	0.249	0.381	0.288	0.369
INTER2	0.316	0.131	0.738	0.046	0.181	0.213	0.074	0.296	0.209	0.212
INTER3	0.306	0.234	0.739	0.142	0.194	0.241	0.169	0.270	0.240	0.304
INTER4	0.374	0.158	0.764	0.086	0.166	0.224	0.118	0.250	0.252	0.281
INTRA1	0.215	0.535	0.091	0.878	0.358	0.327	0.464	0.228	0.227	0.265
INTRA2	0.243	0.497	0.140	0.883	0.319	0.352	0.446	0.190	0.272	0.285
INTRA3	0.227	0.521	0.176	0.840	0.295	0.321	0.487	0.272	0.216	0.313
INTTR1	0.335	0.449	0.239	0.343	0.882	0.633	0.419	0.279	0.469	0.324
INTTR2	0.362	0.456	0.289	0.323	0.889	0.676	0.401	0.379	0.525	0.329
INTTR3	0.351	0.423	0.184	0.316	0.862	0.578	0.389	0.236	0.424	0.264
INTTV1	0.346	0.358	0.302	0.302	0.554	0.844	0.354	0.296	0.618	0.295
INTTV2	0.331	0.337	0.290	0.300	0.535	0.863	0.365	0.330	0.534	0.277
INTTV3	0.355	0.435	0.283	0.365	0.616	0.867	0.392	0.316	0.493	0.362
INTTV4	0.354	0.467	0.275	0.342	0.726	0.841	0.377	0.404	0.581	0.329
SERQL1	0.222	0.626	0.161	0.486	0.394	0.363	0.842	0.149	0.236	0.228
SERQL2	0.208	0.583	0.246	0.420	0.369	0.369	0.831	0.246	0.272	0.235
SERQL3	0.225	0.571	0.188	0.487	0.423	0.403	0.873	0.229	0.291	0.261
SERQL4	0.181	0.558	0.125	0.414	0.362	0.334	0.830	0.164	0.191	0.250
STRCT1	0.365	0.195	0.343	0.193	0.283	0.283	0.224	0.730	0.293	0.363
STRCT3	0.401	0.196	0.351	0.220	0.286	0.347	0.167	0.878	0.321	0.479
STRCT4	0.355	0.203	0.286	0.221	0.262	0.324	0.184	0.795	0.348	0.511
SYSQL1	0.313	0.262	0.266	0.183	0.390	0.443	0.233	0.310	0.764	0.371
SYSQL2	0.347	0.265	0.248	0.257	0.424	0.474	0.246	0.345	0.821	0.346
SYSQL3	0.303	0.217	0.238	0.164	0.426	0.520	0.170	0.278	0.795	0.252
SYSQL4	0.346	0.299	0.309	0.269	0.481	0.626	0.291	0.346	0.826	0.335
WEDS1	0.405	0.274	0.285	0.267	0.280	0.265	0.212	0.539	0.284	0.751
WEDS2	0.391	0.228	0.288	0.247	0.299	0.288	0.242	0.441	0.297	0.803
WEDS3	0.491	0.196	0.341	0.273	0.244	0.290	0.222	0.445	0.318	0.833
WEDS4	0.599	0.268	0.350	0.275	0.297	0.340	0.245	0.405	0.381	0.815

Table 4. HTMT analysis

	DSTOW	INFQL	INTER	INTRA	INTTR	INTTV	SERQL	STRCT	SYSQL	WEDS
DSTOW										
INFQL	0.379									
INTER	0.665	0.316								
INTRA	0.331	0.704	0.190							
INTTR	0.494	0.589	0.329	0.443						
INTTV	0.496	0.537	0.404	0.447	0.821					
SERQL	0.304	0.803	0.248	0.630	0.533	0.498				
STRCT	0.630	0.313	0.541	0.342	0.436	0.494	0.300			
SYSQL	0.516	0.387	0.415	0.328	0.640	0.757	0.345	0.520		
WEDS	0.745	0.362	0.491	0.402	0.418	0.435	0.342	0.741	0.493	

Table 5. Hypotheses testing

Hypotheses	Relationship	Path coefficient	STDEV	*t*-statistics	*p*-value	Decision
H1	WEDS → INTTV	−0.008	0.045	0.180	0.429	Rejected
H2	INFQL → INTTV	0.158	0.069	2.274	0.012	Accepted
H3	SERQL → INTTV	0.115	0.064	1.805	0.037	Accepted
H4	SYSQL → INTTV	0.496	0.041	12.054	0.000	Accepted
H5	INTRA → INTTV	0.060	0.053	1.122	0.132	Rejected
H6	INTER → INTTV	0.059	0.036	1.665	0.049	Accepted
H7	STRCT → INTTV	0.099	0.051	1.949	0.027	Accepted
H8	INTTV → INTTR	0.668	0.034	19.568	0.000	Accepted

is determined by tourist intention to visit northern areas of Pakistan and has explained substantial variance R^2 0.548 in tourist intention to recommend. Similarly, predictive power analysis Q^2 has revealed that both tourist intention and intention to recommend have substantial predictive power and hence confirming substantial predictive power of the research model. Results of the coefficient of determination and predictive analysis are in Table 6.

4.5 Moderating analysis

The moderating effect is tested with product indicator approach. The moderating effect of destination image is outlined in such a way that the relationship between intention to visit and intention to recommend will be higher when destination image on web is higher. Data were bootstrapped to disclose path coefficient and *t*-statistics. Results indicate that destination image on web is significantly moderates the relationship between tourist intention to visit and recommend northern areas of Pakistan and statistically supported by path coefficient = 0.120 significant at $p < 0.05$ and *t*-statistics 1.813. Results of the moderating analysis are shown in Figure 2.

5. Discussion

The current research develops an integrative research model that combines technology factors and traveling constraints factors to investigate tourist intention to visit northern areas of Pakistan. Results of the structural equation modeling approach revealed that website design has a positive impact on tourist intention to visit northern areas of PK and consistent with De Farias *et al.* (2013). The relationship between information quality and tourist intention was found significant and consistent with prior research work conducted by Chung *et al.* (2015), Hew *et al.* (2016). Similarly, service quality and system quality have shown a positive impact

Table 6. Coefficient of determination R^2 and predictive power Q^2

Coefficient of determination R^2	
R^2 Intention to visit	0.520
R^2 Intention to recommend	0.548
Predictive power Q^2	
Q^2 Intention to visit	0.368
Q^2 Intention to recommend	0.411

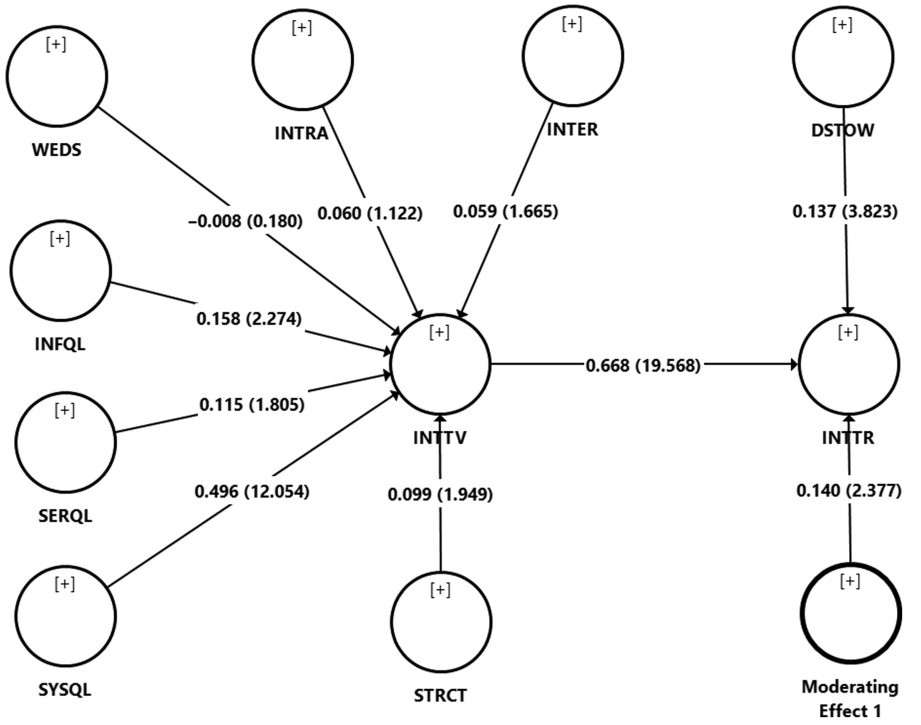

Figure 2. Moderating analysis

on tourist intention and is in line with Samar and Mazuri (2019). Concerning the travel constraints the relationship between intrapersonal constraints and tourist intention was found insignificant and negating previous study finding Dong and Chick (2012). Therefore an interpersonal constraint has shown positive influence tourist intention and endorsing prior research findings Nyaupane and Andereck (2008). Next to this structural constraint has shown a positive impact on tourist intention to visit northern areas of Pakistan and in line with Nyaupane and Andereck (2007). Finally, the relationship between tourist intention to visit northern areas of Pakistan and intention to recommend was found significant and was in line with Lai *et al.* (2013). Contrary to researchers' expectation the relationship between website design and tourist intention to visit northern areas of Pakistan was found insignificant. This indicates that for tourists the most important things are adequate information, system quality and services instead of web appearance. Similarly, intrapersonal constraints are not important while visiting northern areas of Pakistan. However, interpersonal and structural constraints are most important factors which could influence tourist intention to visit and recommend northern areas of Pakistan.

5.1 Contribution to theory, method and practice

This study has several theoretical and practical contributions. For instance it integrates two well-known theories namely; leisure constraint model and DeLone and McLean's information success model to investigate tourist intention to visit and intention to recommend travel destination. Similarly, this study has tested moderating effect of destination image on web between the relationship of tourist intention to visit and recommend travel destination. Thus, testing moderating effect of destination image on web contributes to tourism and information

system literature. In term of methodological contributions data were analyzed with structural equation modeling approach. Similarly, factors convergent and discriminant validity are tested using the measurement model and thereby strengthens empirical investigation. Concerning the practical contribution the findings of this study contributes to Pakistani travel and tourism sector and enhances the understanding about traveling constraints including physical and technological constraints. Moreover, the current study directs that adequate system quality, service quality, information quality encourage tourist to visit northern areas of Pakistan. Similarly, this research suggests that interpersonal and structural constraints are core traveling constraints. Nevertheless, coping interpersonal and structural constraints will motivate travelers to visit northern areas of Pakistan. This study has also contributed to sustainable development goals SDGs 8 and SDGs 9 by emphasizing on factors like use of digital technology, innovation and sustainable work and hence contribute to economic growth.

6. Conclusion

This study has examined the relationship between traveling constraints and tourist intention to visit destination and intention to recommend destination. The research model integrates two well-known theoretical models namely leisure constraint model and DeLone and McLean information success model and investigates tourist intention to visit northern areas of Pakistan. Data were collected through structured questionnaires. For data collection the convenience sampling approach is used. Overall, 213 questionnaires were retrieved from tourist visiting northern areas of Pakistan. Therefore data were analyzed though structural equation modeling. Results of the structural model revealed that technological factors such as information quality, system quality and services quality have a positive impact on tourist intention to visit northern areas of Pakistan. Therefore, website design has shown insignificant impact on tourist intention. Concerning the traveling constraints the negative relationship between intrapersonal constraint and tourist intention was found insignificant. However, interpersonal constraints and structural constraints have shown significant negative impact on tourist intention. Findings have disclosed that collectively website design, system quality, information quality, service quality and travel constraints explained substantial variance R^2.520 in tourist intention to visit northern areas of Pakistan. Similarly, result of the predictive analysis has shown that research model has substantial power to predict tourist intention to visit and intention to recommend northern areas of Pakistan. This research directs that adequate information quality, system quality and services quality will encourage tourist to visit and recommend northern areas of Pakistan. This study suggests that tourism department should focus on both traveling constraints and technology factors to enhance tourist intention to visit northern areas of Pakistan. Additionally, findings of this research suggest that software developer should pay attention in enhancing web service quality and system quality which in turn boosts tourist confidence and encourage visiting northern areas of Pakistan.

6.1 Limitations and future research directions

Despite several contributions this research has some limitations that impute future research directions. The research framework integrates two well-known theoretical models namely; leisure constraint model and DeLone and McLean model to investigate tourist intention to visit northern areas of Pakistan. However, this study does not claim to add all traveling constraints factors into research model. Future researchers may extend current research model with some additional traveling constraints like cultural, political and environmental constraints. Similarly, technological factors are limited to DeLone and McLean's information success model. Nevertheless, future researcher may add other IS theories like technology continuance theory, task technology fit model and diffusion of innovation theory to investigate tourist intention to visit northern areas of Pakistan. Finally, research model is tested in developing

country context and results may differ in developed region. Therefore, future researchers are suggested to test research model in other developing region.

Supplementary material
The supplementary material for this article can be found online.

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