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Integration of ICT and tourism for improved promotion of tourist attractions in Ethiopia

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Abstract

Information and communication technology (ICT) is revolutionizing the lives of people and operations of organizations. ICT has become a major driver of touristic sectors to effectively promote tourist attractions and services. As a result, many countries have succeeded in using ICTs and more precisely the internet to develop their tourism industries. However, the use of ICT in promoting tourist attractions in Ethiopia is still low. Hence, this survey research empirically studied the factors affecting the integration of ICT and tourism. The findings show that social influence, perceived usefulness, perceived ease of use, cost effectiveness, competitive advantage, and facilitating conditions such as experience, ICT resources and skill significantly affect behavioral intention to use ICT in the tourism sector of Ethiopia.

Keywords: ICT and tourism integration, UTAUT, ICT and tourism, TAM

Background

Information and communication technology (ICT) is revolutionizing the lives of people and operations of business organizations. Business organizations use ICT to process, store, disseminate, and promote their products and services globally. Beginning from the introduction of the internet, people have been accessing any information at anytime from anywhere. Hence, it is becoming inevitable to live without the aid of ICT.

Being the world's largest economic endeavor, tourism is enhancing economies of countries. It accounts for 10% of the global gross domestic product (GDP) and 8.7% of the world's jobs (Meriague 2014). Furthermore, due to globalization, strong tourism sector is considered to be a sign of a country's social development, evolution, and progression (Meriague 2014).

Since tourism is one of the major sectors in today's world, many countries are competing to attract tourists through all means of communication, and such communication has become a major driver of touristic sectors all over the world. The role of communication is to inform prospective tourists and influence their choices regarding touristic destinations and the type of touristic products they purchase.

Many countries have succeeded in using ICTs and more precisely the internet to develop their tourism industries. For example, Malaysia and Australia have been very successful in attracting many tourists through these means (Mohsin 2005). On the other

hand, countries such as Iran have not been able to increase their number of international visitors, largely due to a lack of ICTs and internet development (Salavati and Hashim 2015).

Although Ethiopia possesses numerous natural, religious, historical, and cultural tourist attractions, utilization of tourism as a sector of the country's economy goes five decades back. Considering the economic contribution of tourism to Ethiopia, the first tourism office was established in 1962 during the imperial regime (Ali 2017). During the military regime, the sector's contribution reduced drastically but beginning from the 1990s, the number of tourists increased. Among Ethiopia's fascinating tourist attractions, nine of them are UNESCO world heritage sites (Ali 2017). However, the tourism sector's economic contribution and its potential are incomparable. According to research findings, unless a country promotes its tourist attractions to the rest of the world, it is impossible to increase the number of visitors. Hence, the integration of well-crafted ICT solutions is needed, and since we are living in a digitized world, it is necessary for the tourism industry to rely on ICTs and especially the internet as tool of international communication.

Problem statement

Since tourism is one of the major sectors in today's world, many countries are competing to attract tourists through all means of communication and such communication has become a major driver of touristic sectors all over the world. The role of communication is to inform prospective tourists and influence their choices regarding touristic destinations and the type of touristic products they purchase.

To attract prospective tourists in this digitized world, modern ICT strategies are needed, and it is necessary for the tourism industry to rely on ICTs and especially the internet as tools of international communication.

Ethiopia has been attracting a huge number of foreign tourists visiting a variety of magnificent natural, cultural, historical, and religious heritages found in the country. However, the potential of those tourist attractions and number of visitors are incomparable. Moreover, provision of sufficient information to tourists and promotion using modern ICT services is very low. As a result of this, the sector's contribution to the nation's GDP is insignificant. The sector's contribution to the nation's GDP was 4.1% in 2015 (WTTC 2016).

Hence, this research has the objective of investigating the integration of ICT in the tourism sector for improved promotion of the Ethiopian tourist attractions so as to enhance the sector's contribution to the country's GDP. To empirically measure the factors affecting the integration of ICT and tourism, this research work adopted the Unified Technology Acceptance Theory (UTAUT) developed by Venkatesh et al. in 2003 and two additional constructs were included from related literature.

To investigate the integration of ICT in the Ethiopian tourism sector for improved promotion of the Ethiopian tourist attractions so as to enhance the sector's contribution to the country's development.

This research work empirically investigated sample tourism organizations to answer the following research questions: (1) what is the current status of the integration of ICT in the Ethiopian tourism sector? (2) What are the factors affecting the integration of ICT

and tourism in the Ethiopian context? and (3) To what extent do these factors affect the integration of ICT and tourism in Ethiopia?

Theoretical framework

The fundamental theoretical framework of this research arises from a body of research in integration of ICT and tourism. With the objective of identifying determinants that affect integration of ICT and tourism for improved promotion of tourist attractions in Ethiopia, highly related and relevant literature on the issue are reviewed.

There are many theories on technology acceptance. For instance, Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975) predicted that subjective norms and attitudes determine our behavioral intentions. Then, in 1989, Davis et al. came up with Technology Acceptance Model (TAM). As stated by this theory, intention to use a technology is determined by individual's perceived usefulness and perceived ease of use and intention to use determines actual use of a technology. Next, diffusion of innovation (DOI) was created by (Rogers 1995). This theory states that "Individuals are seen as possessing different degrees of willingness to adopt innovations and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time. Breaking this normal distribution into segments leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, and laggards" (Rogers 1995). Besides, Task Technology Fit Theory (TTF) was developed by Goodhue and Thompson in 1995. According to this theory, if information technology is capable to match with the tasks of users, IT is more likely to have positive impact on individual performance. Moreover, the Unified Technology Acceptance Theory (UTAUT) was developed by Venkatesh et al. in 2003. This theory states that users' technology acceptance and subsequent usage behavior is determined by performance expectancy, effort expectancy, social influence, and facilitating conditions. According to Venkatesh et al., this theory used gender, experience, age and voluntariness of use as moderators for intention of use and behavior.

On the basis of UTAUT, the researchers of this study included two more constructs to increase the study's scope. Hence, this research hypothesized that integration of ICT and tourism in promoting tourist attractions is affected by perceived usefulness, social influence, perceived ease of use, cost effectiveness, competitive advantage, and facilitating conditions, see Table 1.

Based on the theoretical propositions of UTAUT and related relevant literature, this study proposed 11 hypotheses with regard to the integration of ICT and tourism for improved promotion of tourist attractions.

This research work is proposed to measure the following 11 hypotheses so as address research questions and achieve the stated objective. Table 2 summarizes these hypotheses.

Study design

In this empirical study, organizations in Ethiopia working at tourism were surveyed in consideration of positivist philosophical assumptions.

Table 1 Description of constructs

Construct	Description	Source
Perceived usefulness	It refers to "the degree to which customers believe that using a particular new technology would enhance their job performance"	Venkatesh et al. (2003), Calisir and Calisir (2004)
Perceived ease of use	It denotes "the degree to which customers believe that using a particular new technology would be free of effort"	Venkatesh et al. (2003)
Competitive advantage	It refers to "the degree to which customers believe that using a particular new technology would enhance their competitive advantage in the market"	Moghavvemi et al. (2012), Wagaw (2017)
Cost effectiveness	It denotes "the degree to which customers believe that the cost of a new technology desired to be adopted is affordable and it deserves for the intended service"	Pantano and Di Pietro (2012), Moghavvemi et al. (2012)
Social influence	It refers to "the degree to which an individual perceives that important others believe that he or she should use the new system"	Venkatesh et al. (2003),
Behavioral intention	It denotes "the degree to which customers believe and plane to use a particular new technology"	Davis et al. (1989), Venkatesh (2000)
Facilitating conditions	It refers to "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system"	Venkatesh et al. (2003)

Table 2 List of hypotheses

H1	There is positive association between behavioral intention to use ICT in the touristic sectors and perceived social influence
H2a	There would be significant positively relationship between perceived usefulness and behavioral intention to use ICT in the touristic sectors
H2b	Social influence would positively affect perceived usefulness of ICT in touristic sectors
H3	Behavioral intention to use ICT in touristic sectors increases when perceived ease of use increases
H4a	There would be strong association between cost effectiveness and behavioral intention to use ICT in touristic sectors
H4b	Cost effectiveness would positively be affected by perceived usefulness of ICT in touristic sectors
H5a	Behavioral intention to use ICT in touristic sectors improves when competitive advantage increases
H5b	Competitive advantage is positively related to cost effectiveness of ICT in touristic sectors
H5c	There would be positive association between competitive advantage and perceived usefulness of ICT in touristic sectors
H5d	Competitive advantage is positively related to social influence of ICT in touristic sectors
H6	There is positive association between facilitating conditions and behavioral intention to use ICT in touristic sectors

Positivist epistemology assumes that knowledge is measurable and it is objectively described (Heyman 2009). Thus, this survey research used quantitative approach throughout the data collection, analysis, and interpretation phases.

The primary data collection instrument was standardized questionnaire which constituted structured questions for each of the constructs using a 5-Likert scale ranging

from 1 “strongly disagree” to 5 “strongly agree”. From the distributed 453 questionnaires, 429 were filled and returned back, yielding a response rate of 94.6%.

The research participants were selected based on stratified sampling technique. This is because the tourism sector encompasses varied institutes such as national and regional tourism and culture organizations, tour operators, travel agents, and destination marketing organizations. The criteria for stratification were (1) type of tourism enterprise, (2) service type, (3) experience, and (4) location.

The research population included all tour and travel operators in the country, and federal and regional tourism and culture offices were included. From this population, a sample of 429 samples was studied. The data analysis process started immediately after measuring the validity and reliability of the collected data. Since this research work deployed quantitative research, deductive data analysis method was used. The theory-based quantitative data were analyzed using the SPSS statistical software.

The data were collected from research participants after getting informed consents from study participants using an attachment on the research questionnaire. Their privacy and the information they provide were kept confidential. Most of the study participants were male and between the age of 35 and 45 whom account 73% and 33%, respectively (see Table 3). About 68% of the study participants were selected from privately owned tourism organizations. Most of these organizations have spent between 6 and 10 years (34%) providing tour and travel services which accounted 32% (Fig. 1).

The analyzed data showed that a higher number of both computer and internet skilled workers were found in private touristic service providers than governmental providers (see Fig. 2). Most these workers have basic computer and internet skills than intermediate and advance skills in private and governmental touristic sectors. Study participants in private touristic organizations had better computer and internet skills than their counter parts.

Only 16% of the study participants working in touristic organizations reported that they had know-how of advanced computer and internet use skills. This implies that most of the employs do not know the intermediate and advanced services of their computers and the internet.

According to the respondents' responses, touristic organizations use some promotional mechanisms to promote tourist attractions and touristic services (see Fig. 3). They use magazines, newspapers, flyers, websites, social media, and television and radio. However, flyer (31%) and magazine (26%) are the dominant tools. Although websites, social media, and television/radio have higher capability to be accessed by higher number of tourists globally, the percentage of these tools being used by participants low. According to the analysis result, website users are 23%, while social media and television/radio users are 8% and 2%, respectively.

Reliability and validity of the model

Cronbach Alpha Coefficient was used for measuring the validity of the study. As per the Psychometric Theory (Nunnally and Bernstein 1978), the acceptable Cronbach Alpha value has to be greater than 0.7. The analyzed data of this study revealed that the seven constructs had above 0.7 (see Table 4). Similarly, although an acceptable composite reliability has to exceed 0.7, the result of this study showed that the seven constructs scored

Table 3 Demographic characteristics of participants

Characteristics	Frequency	Valid percent
Gender		
Male	313	73
Female	116	27
Age		
Less than 25	30	7
25–35	124	29
35–45	142	33
45–55	82	19
Above 55	51	12
Education level		
High school	47	11
College	120	28
First degree	228	53
Graduate	34	8
Type of service		
Tour operator	86	20
Travel agency	64	15
Tour and travel	138	32
Hotel and accommodation	107	25
Market	22	5
Others	12	3
Type of ownership		
Governmental	137	32
Private	292	68
Year of service		
Less than 1	30	7
1–5	120	28
6–10	146	34
11–15	77	18
Above 15	56	13

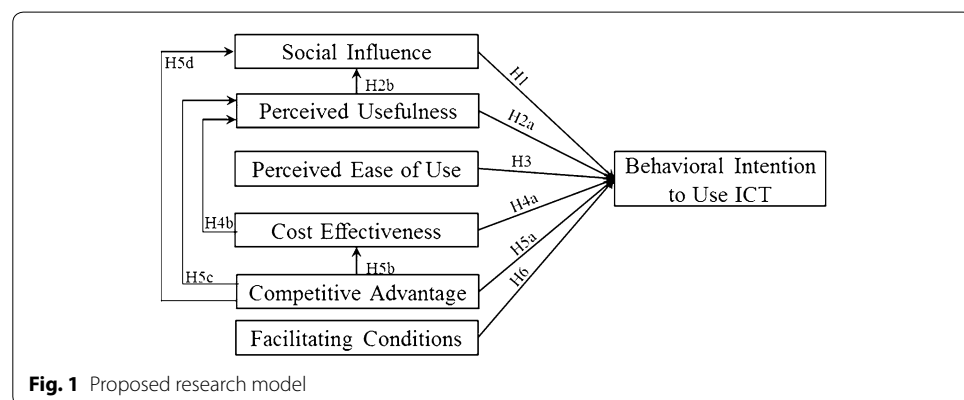


Fig. 1 Proposed research model

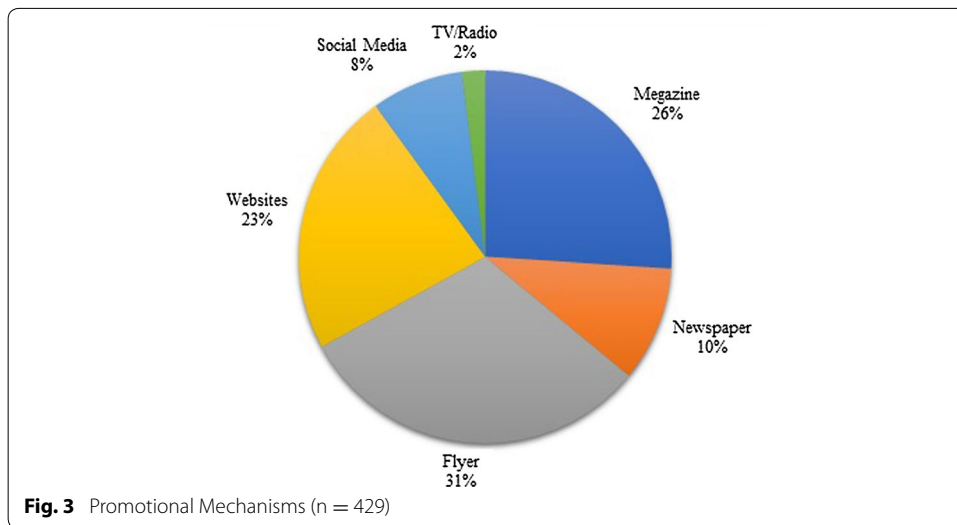
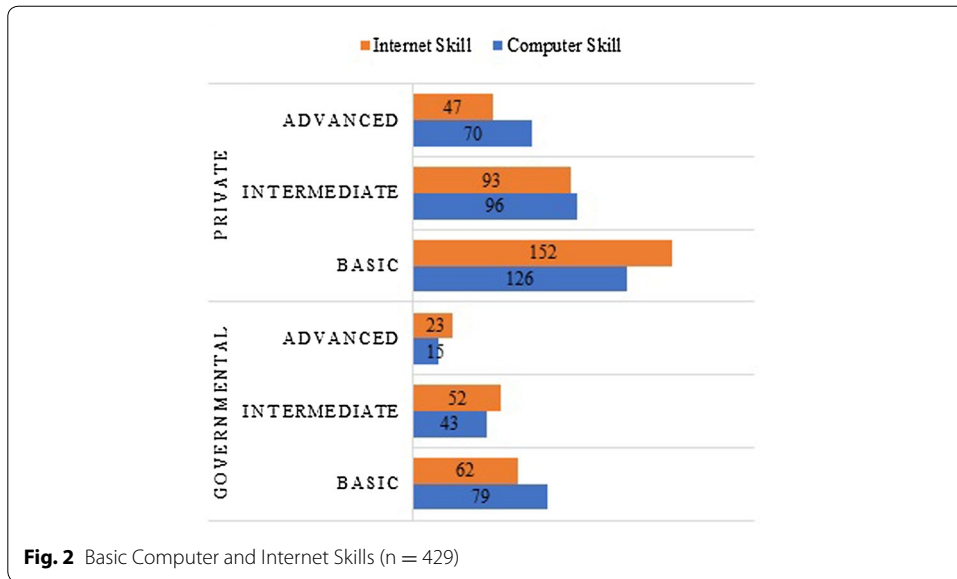


Table 4 Psychometric properties of the survey scale

Construct	Items	Composite reliability	AVE	Alpha	Mean	Std. dev
SI	5	0.79	0.80	0.87	3.92	0.91
PU	5	0.89	0.83	0.82	3.87	1.02
PEU	5	0.91	0.74	0.92	3.86	0.93
CE	4	0.93	0.72	0.77	3.94	0.91
CA	4	0.87	0.67	0.79	3.87	1.00
FC	6	0.90	0.77	0.89	4.02	0.85
BI	3	0.88	0.87	0.85	3.91	0.94

SI social influence, PU perceived usefulness, PEU perceived ease of use, CA competitive advantage, CE cost effectiveness, FC facilitating conditions, BI behavioral intention to use ICT in tourism

above 0.7. Furthermore, Average Variance Extracted (AVE) was used to evaluate convergent validity. Assuming that 50 or more of the variance of the indicators ought to be accounted, a study's AVE result has to exceed 0.5 (Fornell and Larcker 1981). All constructs in this study resulted in AVE above 0.5.

Results

The Pearson Product-moment correlation coefficient (r) was used to test the hypotheses of this study. According to Kothari (2004), in case of measuring association between variables, Karl Pearson's coefficient of correlation is the widely used measure. In correlation analysis, if the correlation coefficient exceeds 0.5 ($r > 0.5$), it shows significant relationship between variables.

To measure factors affecting ICT integration in the Ethiopian tourism, this study empirically analyzed eleven hypotheses. Subsequently, the analysis result showed that positive relationship between the variables at a significance level of 0.05 (see Table 5).

The first hypothesis (H1) states that there would be a significant positive association between social influence (SI) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.80$ at $p < 0.05$, which shows strong positive correlation. The second hypothesis (H2a) states that there would be a significant positive association between perceived usefulness (PU) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.84$ at $p < 0.05$, which shows strong positive correlation. The third hypothesis (H2b) states that there would be a significant positive association between perceived usefulness (PU) and social influence (SI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.85$ at $p < 0.05$, which shows strong positive correlation. The fourth hypothesis (H3) states that there would be a significant positive association between perceived ease of use (PEU) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.79$ at $p < 0.05$, which shows strong positive correlation. The fifth hypothesis (H4a) states that there would be a significant positive association between cost effectiveness (CE) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.78$ at $p < 0.05$, which shows strong positive correlation. The sixth hypothesis (H4b) states that there would be a significant positive association between cost effectiveness (CE) and perceived usefulness (PU) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r = 0.83$ at $p < 0.05$, which shows strong

Table 5 Correlation matrix

	SI	PU	PEU	CE	CA	FC	BI
SI	1						
PU	0.85	1					
PEU	0.71	0.77	1				
CE	0.74	0.83	0.65	1			
CA	0.62	0.68	0.68	0.66	1		
FC	0.78	0.76	0.76	0.63	0.72	1	
BI	0.80	0.84	0.79	0.78	0.75	0.82	1

positive correlation. The seventh hypothesis (H5a) states that there would be a significant positive association between competitive advantage (CA) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r=0.75$ at $p<0.05$, which shows strong positive correlation. The eight hypothesis (H5b) states that there would be a significant positive association between competitive advantage (CA) and cost effectiveness (CE) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r=0.66$ at $p<0.05$, which shows moderate positive correlation. The ninth hypothesis (H5c) states that there would be a significant positive association between competitive advantage (CA) and perceived usefulness (PU) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r=0.68$ at $p<0.05$, which shows moderate positive correlation. The tenth hypothesis (H5d) states that there would be a significant positive association between competitive advantage (CA) and social influence (SI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r=0.62$ at $p<0.05$, which shows moderate positive correlation. The ninth hypothesis (H6) states that there would be a significant positive association between facilitating conditions (FC) and behavioral intention (BI) to use ICT in the tourism sector. The correlation coefficient between these two variables is $r=0.82$ at $p<0.05$, which shows strong positive correlation.

Furthermore, using multiple regression analysis between the dependent and independent variables, the standardized weights of predictors of behavioral intention (BI) were determined (see Eq. 1):

$$Y = \alpha + \beta_1X_1 + \beta_2\beta_2 + \dots + \beta_n\beta_n + \varepsilon, \tag{1}$$

where Y =variable to be predicted or dependent variable (DV), X =variable that predicts Y , α =intercept, β =coefficient of X , ε =regression residual (error).

The regression analysis revealed that, see Table 6, standardized weights of the independent variables such as social influence (SI), perceived usefulness (PU), perceived ease of use (PEU), cost effectiveness (CE), competitive advantage (CA) and facilitating conditions (FC), and the dependent variable behavioral intention (BI):

$$BI = (-0.103) + (SI \times 0.125) + (PU \times 0.154) + (PEU \times 0.142) + (CE \times 0.176) + (CA \times 0.245) + (FC \times 0.208) + 0.089. \tag{2}$$

According to McKelvey and Zavoina (1975), the coefficient of determination (R^2) determines the proportion of variance in the dependent variable which is predictable

Table 6 Results of multiple linear regression

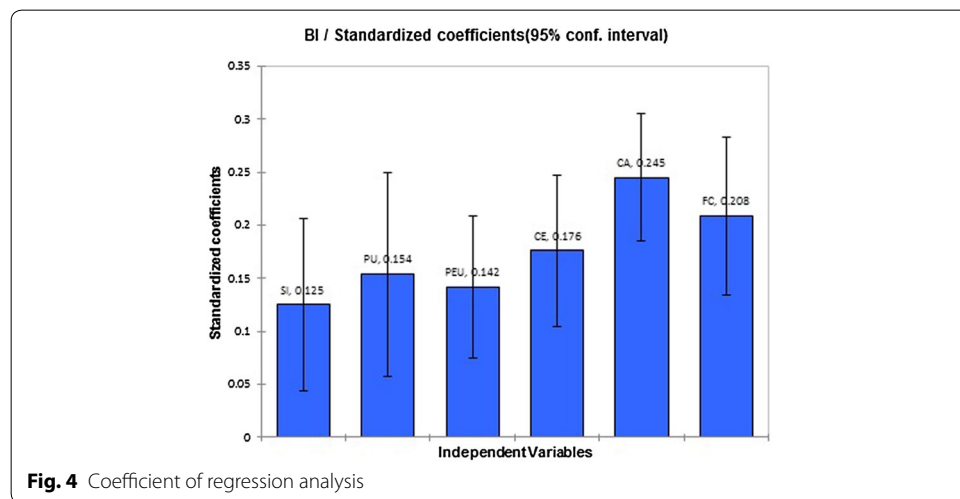
Hypothesis	Path	β	Std. error	R^2	F	t
H1	SI → BI	0.125	0.037	0.844	381.1	3.043
H2a	PU → BI	0.154	0.046			3.152
H3	PEU → BI	0.142	0.034			4.184
H4a	CE → BI	0.176	0.033			4.853
H5a	CA → BI	0.245	0.033			8.008
H6	FC → BI	0.208	0.037			5.516

SI social influence, PU perceived usefulness, PEU perceived ease of use, CA competitive advantage, CE cost effectiveness, FC facilitating conditions, BI behavioral intention to use ICT in tourism

from the independent variable. High coefficient of determination shows greater explanatory power of a regression model. Accordingly, the coefficient of determination of behavioral intention (BI) to use ICT in Ethiopian tourism is 0.844, which means that the regression model explained 84.4% of the variance in BI. Thus, this high value of R^2 depicts that the regression model is very good and the model statistically significant at $F = 381.1$, confidence interval 95%, and $p < 0.001$. Figure 4 shows the standardized coefficients or determination weights of the independent variables (SI, PU, PEU, CE, CA, and FC) on the dependent variable (BI).

Discussion

The empirical demonstration of the proposed model enabled to identify predictors that determine intention to use ICT in tourism. Social influence has significant impact on the study participants’ behavioral intention to use ICT in tourism. As social influence to use ICT in tourism increases, the behavioral intention to use it also increases. There is also strong positive association between perceived usefulness and behavioral intention to use ICT in the tourism. This shows that users are more interested to integrate ICT in their tourism activities when they think that such technologies will be helpful. The finding also showed significant positive relationship between perceived ease of use and behavioral intention to use ICT in tourism. That means tourism organizations are motivated to use ICTs when such technologies are easy to use letting them to have more time for other activities. There was significant association between cost effectiveness and behavioral intention to use ICT in tourism. Cost-effective ICT facilities are more preferable by tourism organizations. Moreover, there is significant relationship between competitive advantage and behavioral intention to use ICT in tourism. This suggests that users’ behavioral intention to use ICT in tourism increases when they believe that the technology will improve their competitive advantages over their counter parts. Besides, the research illustrated significant association between facilitating conditions and behavioral intention to use ICT in tourism. Tourism organizations’ behavioral intention to use ICT increases when facilitating conditions such as users’ experience, resources, and background ICT skill increases.



Implications and conclusions

Using an extended Unified Technology Acceptance Theory (UTAUT), this empirical research found out factors affecting integration of ICT in tourism for promoting Ethiopian tourist attractions. Consequently, the study addressed the three research questions raised in the beginning of the research work. The first question was “What is the current status of the integration of ICT in the Ethiopian tourism sector?”. Although ICT plays significant role in promoting tourist attraction, particularly in the developed world and some developing countries, this research result shows that the integration of ICT in the tourism sector of Ethiopia is low. This shows that major improvements in the integration of ICT in promotion of tourist attractions in Ethiopia is required by the tourism stakeholders such as national and regional tourism and culture organizations, tour operators, travel agents, and destination marketing organizations. The second research questions states that “What are the factors affecting the integration of ICT and tourism in the Ethiopian context?”. The result showed that social influence, perceived usefulness, perceived ease of use, competitive advantage, cost effectiveness, and facilitating conditions were significantly associated with integration of ICT in tourism in Ethiopia. This implies that the improved model could be applicable to other developing nations that have similar settings or context with Ethiopia. The last research question was “To what extent do these factors affect the integration of ICT and tourism in Ethiopia?”. According to the analysis result, social influence, perceived usefulness, perceived ease of use, cost effectiveness, competitive advantage and facilitating conditions significant predictors of organizations perceived behavioral intention to use ICT in the tourism sector for promoting Ethiopian tourist attractions. Take a look at the correlation coefficients from Table 5.

Limitations

This empirical study was carried out using data gathered from tourism organizations in Ethiopia. However, it would be better if data from other countries were included.

Future works

This improved model is a foundation for future research works on acceptance, adoption, or assimilation of ICT in tourism organizations particularly in the settings of developing nations. Future study could also focus on the technology or ICT adoption strategies of tourism organizations. Moreover, to measure the long-term effect of ICT adoption in the tourism sector, longitudinal study could be required.

Authors' contributions

The corresponding author, MW, worked from initiation to close out of the research work. The co-author, FM, also included her valuable contribution to this research particularly in reviewing related literature, data gathering and encoding activities.

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Competing interests

We confirm that this research is an original work and there is no any individual or organization having competing interest on this study.

Availability of data and materials

The filled-out questionnaires of the study participants are available.

Consent for publication

We, authors, agree the publication of this research work.

Ethics approval and consent to participate

The participants have shown their willingness in the data collection process. In the study, ethical issues such as confidentiality of personal information of the participants are kept confidential.

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