Factors Affecting e-Tourism Readiness in Ethiopia: Evidence from Federal Tourism Institutions

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Abstract

Governments around the globe are striving for providing a wider and flexible range of public services tailored for all types of customers in a most efficient manner in terms of cost, time, and convenience. Based on the survey of 137 experts, Ordinal logistic regression model was estimated to identify factors that affect e-tourism readiness in Ethiopia. Experts subjective assessment was used to measure the status of readiness to implement e-government initiatives. While organizational commitment, technical capacity, and employees' readiness found to have significant effect on the rank of e-tourism readiness, managerial competence appears to have no association at all. Results indicate that interventions aiming at promoting organizational commitment, enhancing technical capacity, and advancing employees' capacity attitude and initiation will immensely contribute to implement e-government projects. In general, the results of the study provide the implication that improving institutions readiness to implement e-government initiatives in the tourism sector in Ethiopia calls for adoption of diverse strategies and policies.

Keywords: e-government, e-tourism, e-readiness, Ethiopia

1. Introduction

Access to information is one of the rights a democratic society aspires to have. More recently, technological advancement made access to information easier and faster. The surprising growth of information and communication technology (ICT) is changing various aspects of our life. Likewise, governments around the globe are striving for providing a wider and flexible range of public services tailored for all types of customers in a most efficient manner in terms of cost, time, and convenience. The advancement of ICT totally changed the way public services are provided. More specifically, the introduction of the internet and World Wide Web (WWW) in the 1990s has improved governments service provision ability. Government activities have been supported by technological developments in different ways.

In more advanced democratic nations, citizens can get public services; complain about services; sign petitions; and pay taxes online. These days, many countries in the developing

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world are showing progress. As Degryse-Blateau (2012) put it, however, "governments must be more strategic in mobilizing limited resources to effectively respond to citizens' needs, keep them informed and build sustainable bridges between public institutions and citizens."

Usually, reforms inspired by the New Public Management (NPM) tend to focus on improving the performance of public servants and managers (Andrews, Downe, Guarneros-Meza, Jilke & Van de Walle, 2013). Public sector reforms are expected to craft a system of serving the customers in an efficient manner (Cameron, 2010) by removing bad practices of the old public administration such as red tape and inflexibility. It is argued that information and communication technology plays significant role for the effective and efficient service delivery. Many governments used information and communication technologies (ICTs) to inform their citizens about public polices and to provide public services. The tourism sector is no exception. Such technology-driven administration in the tourism sector is known as e-tourism. These efforts can be considered as the reform efforts with the aim of providing tailored goods or services as opposed to the traditional "one size fits all" approach (Chadwick and May, 2003).

According to Buhalis and Deimezi, (2004) "e-tourism reflects the digitalization of all processes and value chains in the tourism, travel, hospitality and catering industries". It includes business and service delivery aspects to enhance the efficiency of the tourism organization. e-tourism is a multidisciplinary concept. Specifically, disciplines such as business management, management information systems and tourism are intellectual domains of e-tourism (Buhalis, 2003; Buhalis & Jun, 2011).

For the success of the tourism sector, the quick flow of accurate information between the tourist/customer and tourism service providers is vital. Given that tourism is information intensive industry ICT has become increasingly important at every stage in the provision of tourism services. Information technologies "provide innovative strategic tools for tourism organisations and destinations to improve both their operations and positioning" (Buhalis & Jun, 2011). Of course, there are factors that significantly affect the success of e-tourism initiatives. For example, in an investigation into the Korean small and medium-sized tourism enterprises, Kim (2004) found that system security, Web interface, managerial support, IT infrastructure, and customer acceptance as important success factors.

However, many e-government projects in developing countries are "failing either totally or partially" (Heeks, 2002). This is mainly due to the huge gap between project design and reality (Heeks, 2003). In addition, Guida and Crow (2008) listed other factors that contribute to such failures. Some of the factors include, lack of public participation and transparency; change resistance nature of the bureaucracy; lack of skilled personnel, and corruption and poor governance.

Recently, Ethiopia has made significant progress in introducing ICT in the public sector (including the tourism sector). The country attempts to accrue the benefits of ICT use to transform traditional public administration landscape to a modern, transparent, and citizen-centered one that ensures cost-effective and cost-efficient delivery of public services. Yet, e-government projects in Ethiopia, like many others in developing countries, are not delivering the intended results. For instance, Lessa, Negash and Belachew (2012) analyzed the land management information system in Ethiopia and concluded that the system is failing partially. They identified "large gaps between design and reality" as the main reason for the failure. The more serious gaps are linked to (1) failure to craft organizational structure as intended; (2) levels of competency fell short of expectation, and (3) lack of commitment to the objectives and values of the system among all stakeholders. This study provides important insight that e-government

projects are failing because implementing agencies are not ready enough to implement e-government.

In the same vein, Kifle (2016) notes poor leadership commitment and knowledge; poor IT skills; tendency to stick with traditional service delivery mechanisms; poor website design and contents; and unaligned e-service platforms as bottlenecks for successful e-government implementation in Document Authentication and Registration Agency (DARA) in Ethiopia. Overall, these studies outline the need for assessing the level of e-government readiness on the basis of well-defined set of indicators for the successful implementation of e-government initiatives.

The primary objective of the study is, therefore, to identify the factors that affect the level of readiness to implement e-government in the Tourism sector in Ethiopia.

This paper is structured as follows: at the beginning, introductory notes are briefly laid out. Second, the literature on e-government are reviewed. Subsequently, the methodological aspects of the study are laid out. Then, the results of the survey are presented. Lastly, conclusion and policy relevant recommendations are outlined.

2. The Method

2.1 The Data

Using the appropriate sampling formula (Kothari, 2004) sample size is determined.
$$n = z2 / \delta2 \ [\ p(1- p)] \qquad\qquad (1)$$
Where n = desired sample size
Z = critical standard score (Z statistic = 1.96)
P = population proportion (0.5)
$\delta2$ = level of significance (0.08)

Given these inputs, we can find the sample size n that provide the required level of significance. Hence, the desired sample size was 192. Experts working for five federal institutions in tourism sector are selected at random. Therefore, questionnaires were distributed to experts working for Ministry of Culture Tourism (MoCT), Ethiopian Tourism Organization (ETO), Catering and Tourism Training Institute (CTTI), Ethiopian Wildlife Conservation Authority (EWCA), and Authority for Conservation of Cultural Heritages (ACCH). Finally, 137 questionnaires are returned with return rate of 71.35%.

2.3 Operationalization

In this study, e-government readiness, is taken as dependent variable. e-government readiness refers to "the existence of policies, funding and capability for e-Government" (Fitsilis, Anthopoulos & Gerogiannis, 2009). To construct independent variables Exploratory Factor Analysis (EFA) is conducted. EFA is a statistical method that is ideal to reduce data into a smaller set variables. Such kind of analysis is vital to "determine if a series of dimensions or factors exist in the data and whether they are interpretable in a theoretical sense" (Hooper, 2012). Hence, to evaluate whether series of dimensions exist, 17 items were analyzed on the basis of principal axis factoring method of extraction. Kaiser Normalization rotation method was employed as this method is ideal in cases where factors are expected to be interrelated with each other (Costello & Osborne, 2005; Hooper, 2012).

The Kaiser-Meyer-Olkin (KMO=0.886) value produced is higher than the adequate value 0.7 and the Bartlett's Test of Sphericity is statistically significant. Both the scree test criteria and the Eigenvalue criteria confirmed the extraction of the above mentioned factors. Furthermore, based on cumulative variance criterion the four factors extracted captures 64.768% of the variance which meets the 60% threshold. Moreover, the Pattern Matrix, indicates that the items are grouped into four dimensions.

Table 2.1 Pattern Matrix for Coefficients

No.	Item	Factor			
		1	2	3	4
1	Commitment to implement e-tourism projects	**0.998**	-0.099	-0.139	0.077
2	Commitment to spread projects across admin. units	**0.955**	-0.205	-0.021	0.116
3	Commitment to act upon e-tourism plan	**0.752**	0.038	0.079	-0.015
4	Support for the maintenance of e-tourism system	**0.642**	0.235	0.165	-0.164
5	Support for new e-tourism initiatives	**0.639**	0.291	0.078	-0.119
6	Reliable infrastructure to sustain e-tourism projects	**0.460**	0.285	0.256	-0.104
7	Systematic assessment of quality standards of e-tourism	-0.056	**0.939**	-0.015	-0.007
8	Coordination of local, state and national e-tourism initiatives	-0.085	**0.747**	0.010	-0.015
9	Quick and timely decision making	0.128	**0.702**	0.104	0.089
10	Quality management system	0.009	**0.648**	-0.272	0.317
11	Use of application software	0.109	-0.014	**0.799**	0.051
12	Integration of online and offline applications	-0.074	0.083	**0.711**	0.069
13	Availability of sufficient hardware equipments	0.196	-0.348	**0.639**	0.133
14	Provision of remote access of services	-0.110	0.274	**0.601**	0.041
15	Attitude of employees towards e-tourism projects	0.113	-0.040	0.108	**0.791**
16	Computer knowledge and skill among employees	-0.184	0.133	0.230	**0.565**
17	Employees initiative to implement e-tourism projects	0.205	0.262	-0.061	**0.425**
	Variance Explained	47.23%	7.69%	5.99%	3.85%

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.

Source: Field Survey, 2017

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The Cronbach's alpha (α) value, a reliability test that a assesses if items in each scale measure the same attribute, is well above the 0.7 threshold. The first dimension contains six items (α = 0.932). This measures the organizational commitment to implement e-government initiatives. This component indicates the extent to which institutions are ready to successfully implement of e-government programs. The second dimension consisted of four items (α = 0.842) which measures managerial competence indicating public managers readiness to convert public policies into administrative actions. The third factor captures the technical aspect on the basis of four items (α = 0.824). Technical capacity indicates the extent to which technical indicators such as software and hardware equipments are available, and the online and offline application are integrated. Finally, the forth factor captures employees' readiness. This factor is constructed from three items (α = 0.731). This component contains knowledge, skill, and attitude of employees on e-government as a proxy indicator on how ready the employees are to implement e-government programs.

2.4 Method of Data Analysis

This study involves sophisticated method of analysis, namely Explanatory Factor Analysis (EFA) and Ordinal Logistic regression. Explanatory Factor Analysis "allows the researcher to determine the underlying dimensions or factors that exist in a set of data" (Hooper, 2012). This method is instrumental to determine if variables are structured in a way to reproduce another a 'latent variable'(Beaumont, 2012).

   As the dependent variable is ordinal in nature, ordinal regression analysis is ideal (Agresti, 2007). Following Norušis (2012), an ordinal logistic regression can be modeled by modifying the above binary logistic regression model to fit in the ordinal nature of a dependent variable. Here, instead of considering the probability of an event, cumulative probability of events is considered. In other words, , the outcome of interest in ordinal logistic regression is the probability of observing a certain score or less. It can be expressed in following odds:

$$\ln(\theta 1) = \text{ p (score of 1) / p (score greater than 1)}$$
$$\ln(\theta 2) = \text{p (score of 1 or 2) / p (score greater than 2)}$$
$$\ln(\theta 3) = \text{p (score of 1, 2, or 3) / p (score greater than 3)}$$

The odds can be organized in the following form:

$$\ln(\theta j) \text{ } = \text{p (score} \leq \text{j) / p (score} > \text{j)} \tag{2}$$

The equation (2) can also be written as:

$$\ln(\theta j) = \text{p (score} \leq \text{j) / [(1} - \text{p (score} \leq \text{j)]} \tag{3}$$

The ordinal logistic model for multiple independent variable is then :

$$\ln(\theta j) = \alpha j - \beta 1 X 1 - \beta 2 X 2 - \dots - \beta k X k \tag{4}$$

Where αj are the threshold values and $\beta 1\text{-}k$ are coefficients (Location)

$\ln(READYj) = \alpha j - \beta 1 ORGCOM - \beta 2 MANCOM - \beta 3 TECHCAP - \beta 4 EMPREAD$ (5)

Here the negative signs are put deliberately. As Norušis (2012, p71) puts it.

   It is not a typo that there is a minus sign before the coefficients for the predictor variables, instead of the customary plus sign. That is done so that larger coefficients indicate an association with larger scores. When you see a positive coefficient for a dichotomous factor, you know that higher scores are more likely for the first category. A negative coefficient tells you that lower scores are more likely. For a continuous variable, a positive coefficient tells you that as the values of the variable increase, the likelihood of larger scores increases. An association with higher scores means smaller cumulative probabilities for lower scores, since they are less likely to occur. Subsequently, in the next chapter, an ordinal logistic regression is run on the basis of equation (7).

3. Results and Discussions

To identify major determinants of e-tourism readiness in Ethiopia an ordinal logistic regression model was used. At this juncture, there is need to verify whether the model is fit enough to the outcome by comparing the -2 log-likelihood (-2LL) of the empty model (X2=246.318) and final model (X2= 212.221). Accordingly, the model fitting information indicates that the Final model provides statically significant improvement over the intercept-only model (X2=34.098, p=0.000). The pseudo R 2 values (Nagelkerke = 0.267) indicates that the model explains 26.7% of the variation between experts assessment about e-government readiness in the tourism sector. Furthermore, the test of Parallel Lines indicates that proportional odds (PO) assumption is not

violated (X2=12.585, p=0.053) as we are failing to reject the null hypothesis which states that the slope coefficients are the same across response categories.

Another assumption of ordinal regression is that the independent variables must not be highly correlated with each (i.e. no multi-collinearity). These assumption is tested on using the technique of variance inflation factor (VIF). It is found that all the explanatory variables have no multi-collinearity problem as VIF value does not exceed 10. After confirmed that all of the assumptions are not violated the ordinal regression is run. Subsequently, the effects of each factor on e-government readiness is presented.

Table 3.1: Summary of ordinal logistic regression analysis for variables predicting e-tourism readiness

Predictor	B	SE	e^B
Organizational commitment	0.500*	0.240	1.65
Managerial competence	-0.139	0.213	
Technical capacity	0.527*	0.229	
Employees' readiness	0.426*	0.173	
N	134		
Pseudo R^2 (Nagelkerke)	0.267		
Chi-Square (Model)	34.098***		

Note: *, **, and *** $P<0.05$, $P<0.01$, and $P<0.001$ respectively.
B= Coefficients; e^B = exponentiation of B;   SE = Standard errors
Source: Field Survey, 2017

3.1 Organizational Commitment

As indicated in table 3.1, organizational commitment is found to be one of the significant factors that affect the level of readiness e-government initiatives. If organizational commitment, as measured by experts subjective assessment, increases by one point, the ordered log-odds of being in a higher e-tourism readiness score category would increase by 0.5 while the other variables in the model are held constant. In other words, as organizational commitment increases by one unit the odds ratio for scoring higher e-government readiness point increase by 1.65 times, holding other factors constant.

3.2 Managerial Competence

One of the main roles of public managers is to convert public policies into administrative actions. To do so, they are required to have a better coordination of local, state and national e-government initiatives, systematic assessment of quality standards, and quick and timely decision making. Since the Wald test statistic (cf Table 2) for the predictor managerial competence is 0.423 (p=0.515), the null hypothesis can be rejected indicating that the regression coefficient for managerial competence has not been found to be statistically different from zero in estimating e-government readiness score given other factors held fixed.

3.3 Technical Capacity

Technical capacity is one of the remarkable factor that affects the implementation of e-government programs. In the model parameter shown in table 2, sizes of technical capacity become a significant factor to predict the likelihood of belonging among higher level of e-government readiness category. That is, as the value of technical capacity increases by one unit

the odds ratio increases by 1.69. The more technically capable the institution is the higher the level of e-government readiness.

3.4 Employees' readiness

Let alone the public servant who are the main performers of e-government "every citizen must be equipped with the skills needed to live and work in this new information society" (European Commission, 2006). The regression analysis indicates that a one unit increase experts' valuation on employees proficiency scores would result in a 0.426 unit increase in the ordered log-odds of being in a higher e-government readiness score category while the other variables in the model are held constant. This indicates that, competencies in computers and management information systems are the necessary conditions for the development and successful implementation of the e-tourism initiatives. Accordingly, public service providers need to have necessary knowledge and skills of MIS.

4. Conclusions

The main purpose of this research is to identify factors that affect e-Tourism readiness in Ethiopia. Overall, while organizational commitment, technical capacity, and employees' readiness found to have significant effect on the rank of readiness, managerial competence appears to have no association at all with e-tourism readiness.

Though there is high institutional commitment to initiate, implement e-Tourism initiatives, the level of organizational capacity seems to be average. That is to say, the decision on e-tourism plan, commitment to spread e-tourism, fund for new e-tourism, support for the maintenance of e-tourism system, and support e-Tourism initiatives found to be modest.

Regarding technical readiness of public organizations, this study reveal that remote access of services are not being provided through e-governance and the integration of online applications with back-office applications is low. Moreover, with respect to administrative readiness, it is found that there is low coordination of local, state and national e-government initiatives. Similarly, decision making to sort out issues relating to e-governance are slow and untimely and availability of systematic assessment of quality standards of e-governance services at regular intervals is rated as very poor. Concerning employees readiness, though there is the positive attitude of employees towards e-tourism initiatives is medium or high, the degree to which employees are trained in management information system is low.

Finally, results indicate that interventions aiming at promoting organizational commitment, enhancing technical capacity, and increasing employees' capacity will immensely contribute to effectively implement e-government projects. In general, the results of the study provide the implication that improving e-government readiness in the Tourism sector in Ethiopia calls for adoption of diverse strategies and policies.

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