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Article — Published Version

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Journal of Tourism, Heritage & Services Marketing

Suggested Citation: Mugobi, Thereza; Mlozi, Shogo (2021) : The impact of external factors on ICT usage practices at UNESCO World Heritage Sites, Journal of Tourism, Heritage & Services Marketing, ISSN 2529-1947, International Hellenic University, Thessaloniki, Vol. 7, Iss. 1, pp. 3-12,
<https://doi.org/10.5281/zenodo.4514800> ,
https://www.jthsm.gr/?page_id=5317

This Version is available at:

<https://hdl.handle.net/10419/230400>

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The impact of external factors on ICT usage practices at UNESCO World Heritage Sites

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Abstract:

Purpose: This study aimed to assess the external factors influencing ICT usage at UNESCO World Heritage Sites (WHS), focusing on exploring practices Tanzania. The study proposed and tested two hypotheses: a) there is a significant relationship between perceived pressure from competitors and ICT usage in WHS, and b) there is a significant relationship between perceived pressure from customers/visitors and ICT usage in WHS.

Methods: Data for this study were collected from 238 UNESCO World Heritage Site decision-makers in Tanzania. These respondents were stratified into three strata, based on UNESCO's categorization of site type (nature, mixed, and culture). Systematic random sampling was used to select respondents from each stratum according to their ratio in the total population. Testing of the hypotheses involved structural equation modeling (SEM) analysis. Chi-square/Degree of freedom (CMIN/DF), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were used as criteria for estimation of goodness of fit indices.

Results: The findings indicated that perceived competitive pressure and perceived pressure from customers had a positive influence on ICT usage at WHS. This study confirms the T.O.E theory by Tornatzky and Fleischer (1990), which postulate that decision to use a new ICT system within the organization is determined by environmental factors which include features in which the firms conduct business such as competitors and its customers.

Implications: For the success of any tourism business, particularly UNESCO World Heritage Sites, ICT usage is inevitable for their site's performance. For destination management organisations, the current study is important for policy formulation, particularly in relation to ICT usage by the tourism industry at the destination to create a conducive business environment that may assist tourism growth related to World Heritage Sites.

Keywords: UNESCO World Heritage Sites, tourism policy, heritage tourism, ICT usage, Tanzania

JEL Classification: N7, L83, Z39

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1 INTRODUCTION

This paper focused on the impact of external factors on ICT usage practices at UNESCO World Heritage Sites in Tanzania. It was motivated by the fact that heritage tourism is one of the growing tourism markets, attracting both the private and public sectors. It is becoming a piece of the lucrative global tourism pie (Ioannidis et al., 2013). Ramos-Soler et al. (2019) observe that ICT usage has proved to be a key factor for the sites' sustainability. The development of vast numbers of websites and applications, for instance, enables tourists to easily access reservation systems, online travel agents and tour operators, and interactive product

review sites. The evolution of ICT also allows World Heritage Organizations to promote and distribute information about their attractions, widen access, raise awareness, increase ownership, and promote interpersonal encounters (Baggio et al., 2013). Further, it enlarges the possibility for interested people to reach rich and up-to-date info about WHSs (Permatasari et al., 2016). ICT usage helps to promote easy and fast communication between a company and its business partners by tracking all business activities even across borders, lowering the cost of communication, and broadening the market base (Moya and Engotoit, 2017; Chami & Kaminyoge, 2019).

ICT usages strengthen customer relationships by connecting more customers to the site network. It allows integration of customer database to provide the latest client-related information, which better equips managers and employees for responding to customers' inquiries and makes business processes and knowledge accumulation more efficient (Vargas et al., 2016). ICT usage enables businesses to receive immediate customer feedback; it allows WHSs decision-makers to react fast to changing customer demand and even recognising a new niche in the market (Bystrowska et al., 2017). The internet and other related technologies create 'powerful customers' who have a wealth of accurate, updated, and unbiased information (Moya and Engotoit, 2017). Pai and Hiang (2011) found that ICT enables customers to make informed decisions found tangibility, reliability, responsiveness, assurance, and empathy. It allows them to compare the actual and ideal performance. Therefore, ICT has proved to be a key factor for an organization to reach superior competitive advantages through improved work systems (Vargas et al., 2016; Chatzigeorgiou & Christou, 2020). As a result, there has been an increase in the adoption and application of ICT technology in the travel and tourism industry worldwide (Bystrowska et al., 2017; Fotiadis and Vassiliadis, 2017).

In reference to the present study, Tanzania is home to seven UNESCO World Heritage Sites. However, the country had been relatively slow in ICT usage, which would have helped transform the service delivery system in its tourist attraction sites. Factors cited as barriers to ICT adoption and usage in the Tanzania tourism industry were inadequate institutional arrangements, inadequate communications, poor infrastructure, shortage of ICTs facilities, and limited data management capacity (Monko, et al., 2017). Further, it was said that the sites are located in remote areas where ICT service is still a challenge despite all the efforts and measures taken by the government toward promoting ICT services in remote areas (Ministry of Works, Transport and Communication, 2016). A gap which this study set out to address was the scantiness of research on the effect of the environmental context on ICT adoption in World Heritage Sites in Tanzania. This is because the available studies have mostly focused on the external factors influencing ICT usage at WHSs, and students and teachers' ICT adoption (Olise et al., 2014; Vodopivec et al., 2014; Zhang and Liu, 2016). As a result, the environmental factor considered key for the adoption of ICT by scholars, such as Tornatsky and Fleisher's (1990) in their TOE Model-identification, had been ignored. It is in this backdrop that the present study set out to explore the role of perceived competitive and customer pressures in influencing ICT usage at WHSs in developing economies, particularly Africa. Specifically, the study set out to seek answers to two research questions, as follows:

- a) Is there a significant relationship between perceived pressure from competitors and ICT usage in World Heritage Sites in Tanzania?
- b) Is there a significant relationship between perceived pressure from customers and ICT usage in World Heritage Sites in Tanzania?

Answers to these questions shed light on how to militate against these factors that deprive Tanzania's heritage sites of the technology's strategic benefits in the travel and tourism sector.

2 LITERATURE REVIEW

ICT can be described as Information Communication and Technology (ICT). Sapprasert (2007) defines ICT as technologies used to collect information, store information, edit, and pass on information in various forms. Hasnaoui and Freeman (2010) characterize ICT as collecting, collating, and conveying information via technology. Nonetheless, this study adapted Hasnaoui and Freeman's (2010) definition of ICT as the combination of different informatics technology, especially communication technology, to process and communicate information of a particular organization. Therefore, Informatics Communication Technology usage for this study will represent email and web-based applications.

External factors for ICT adoption and usage include the environmental factors under the Technological, Organizational, and Environmental (TOE) theory. These are features in which firms conduct business and are influenced by the industry itself, its competitors, customers and the firm's ability to access resources supplied by others, and the firm's interactions with the government. Fuchs et al. (2010) indicate that these features determine a firm's decision to use ICT to keep its competitors on check and meet customer pressure. With the intention of identifying environmental factors that influence ICT usage at WHS, this study borrowed two environmental factors elements from a study of Chairael and Riski (2018); Fuchs et al. (2010); and Ismail and Ali (2013). These are perceived competitive pressure (PCP) and perceived pressure from customers (PPC).

2.1 Perceived Competitive Pressure (PEP)

Perceived competitive pressure is defined as the degree to which the level of competition determines ICT usage. When the level of competition is high, organizations may use ICT not on account of its relative advantage but on account of keeping the competitors who are already using it on check (Azam, 2015; Rishi, 2013). Gratzer and Winiwarter (2003) precisely observe that perceived competitive pressure from ICT usage forces a company to adopt ICT usage to compete, attract, and retain customers. A company can adopt and start using ICT to gain a competitive advantage, such as providing tailored products and services. Kilangi (2012) supports that many SMEs in developing countries use ICT as a means of communication and distribution due to the increase of pressure from competitors and suppliers. Iacovone et al. (2016) also agree that competition induces innovation and ICT usage in OECD countries. Ayadi et al. (2008) posit that competitive pressure significantly influences ICT usage among Botswana's organizations.

Mndzebele (2018) explored factors influencing ICT adoption and usage among SMEs in Swaziland through a quantitative survey of 100 SMEs owners. In his findings, pressure from competitors was the most important environmental factor of his 8 factors determining ICT adoption and usage among Swaziland SMEs. Alam and Noor (2009) confirm that ICT usage is one of the business strategies to ensure competitive advantage within the organization; it offers room to compete on a global scale with improved efficiency in dealing with customers and supplier relationships. When the level of competition is high, organizations may use ICT, not on

account of its relative advantage, but on account of matching with competitors who are already using it (Lee et al., 2015). ICT usage alters the rule of competitive pressure, restructures the industry make-ups, and unravels novelty in outperforming rivals. It also offers new competitive strategies and alters new competition (Garau, 2014; Fotiadis & Williams, 2018). ICT usage helps companies to increase the value of their competitiveness by allowing them to improve the process value. If they do not adopt and use ICT, the possibility of striving and surviving the competition is slim (Mndzebele, 2018. p58). In this light, the following hypothesis was formulated:

H1: There is a significant relationship between perceived pressure from competitors and ICT usage in World Heritage Sites in Tanzania

2.2 Perceived Pressure from Customers (PPC)

Perceived pressure from customers (PPC) refers to the pressure given by the external factors, including customers. Customers have a strong influence on organizations' decisions to use ICT. That is, an organization decides to adopt ICT to compare the actual and ideal performance of an application (Mavragani et al., 2019). In other words, business owners and managers may perceive ICT purchase as a waste of resources if there is no pressure from customers (Dieck and Jung, 2018). Hassan and Ogundipe (2017) observed that the firm tends to use e-commerce due to external pressure, including customers' demand.

Mwai (2016) conducted a study on the determinants of ICT adoption by Small and Medium Enterprises in the hospitality industry using a sample of 100 management and technical staff from the Nairobi Region in Kenya. He collected both quantitative and qualitative data using a questionnaire with both open and closed-ended questions. Data were analyzed using statistical functions such as frequencies, percentages, mean and standard deviation. SPSS (Statistical package for social sciences) model was used in data analysis. The findings indicated that pressure from customers was the most significant Environmental factor in determining ICT usage among Small and Medium Enterprises in the hospitality industry in Kenya.

Likewise, Bahrami et al. (2012) surveyed 400 tourism and hospitality companies in Iran, using modern information technology tools, to uncover a relationship that existed between ICT usage and customer relationship. Findings of the study suggested that ICT usage within an organization positively affected customer relationships among tourism and hospitality firms in Iran.

Moreover, Kim and Kim (2018) report that perceived pressure from customers significantly determines ICT usage and success in Portuguese manufacturing SMEs. According to Alam and Noor (2011), perceived pressure from the customer is one of the significant factors influencing ICT usage among SMEs in Malaysia. Polo Pena et al. (2013) also observe that customers are now the drivers and governors of the tourism value chain through their urge to try new destinations, products, foods, attractions. They add that customers are not ready to give a second chance to destinations providing inferior products or services (Polo Pena et al., *ibid*). Likewise, Dieck and Jung (2018) confirm that customers have a strong influence on an organization's decision to use ICT. This is to say, business owners and

managers are more likely to perceive ICT usage as a waste of resources in a context without customer pressure (Christou et al., 2018; Dieck and Jung, 2018).

Miraz and Habib (2016) corroborate that businesses usually receive customers' feedback and work on them very quickly to meet their needs and keep them. Hassan and Ogundipe (2017) observe that a firm tends to use e-commerce due to external pressure, including customers' demand. The following hypotheses were thus postulated:

H2: there is a significant relationship between perceived pressure from customers and ICT usage in World Heritage Sites in Tanzania

2.3 Proposed model of the study

This study used a specified structural equation model (SEM), as shown in Figure 1. The model contains both independent variables and the dependent variable. The independent variables are derived from the TOE Theory. SEM's choice is because it provides a useful analytical framework for determining factors influencing ICT usage (Oliveira and Martins, 2011). Unlike other quantitative statistical models, it is suitable for testing relationships among latent constructs indicated by multiple measures (Avdimiotis & Christou, 2004; Garau, 2014). Byrne further adds that SEM stands out among other multivariate procedures for providing explicit estimates of measurement errors in the parameters and measuring both unobserved and observed variables. The main assumption of the theory is that the decision to use a new ICT system within the organization is determined by three factors, namely technological, environmental, and organization (Adeola and Evans, 2019; Bahrini and Qaffas, 2018; Kante et al., 2017). Thus, this study focused on environmental factors only due to empirical studies' inadequacy on the relationship between environmental factors influences in ICT usage in WHSs. Thus, the study found it necessary to investigate further these relationships for practitioners and tourism researchers (Lee et al., 2015).

Environmental factors in the TOE theory include features that influence firms' business conduct, namely its competitors, customers, the firm's ability to access resources supplied by others, and the firm's interactions with the government (Malaysia, 2015; Ma et al., 2017; Mugobi and Mlozi, 2020). The study borrowed two environmental factors elements from the study of Chairael and Riski (2018); Ismail and Ali (2013), which are perceived competitive pressure (PCP) and perceived pressure from customers (PPC).

Perceived competitive pressure (PCP) were measured using 5 indicators; PCP1, PCP2, PCP3, PCP4, and PCP5 (i.e., our competitor applies ICT, our suppliers demand ICT, ICT application increase competitive advantage, we respond quickly to other competitors, and we are faced with very intense competition). A CFA model for Perceived Competitive Pressure (PCP) was run. There were six PCP construct indicator variables: PCP1, PCP2, PCP3, PCP4, and PCP5. (Only One item, PCP6, was dropped during the Exploratory Factors Analysis procedure. This implies that five factors were retained and contained, and they had at least loading factors Eigenvalues greater than 1 explaining a cumulative variance of 74.517 (Mugobi and Mlozi, 2020).

Perceived pressure from customers (PPC) was measured using 5 indicators; PPC1, PPC2, PPC4, PPC7, and PPC8 (i.e., our competitors can easily offer our service and products, our

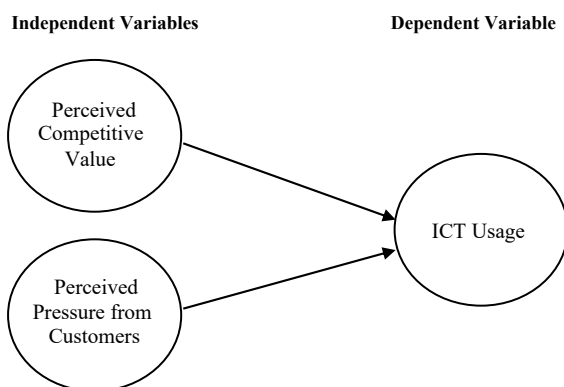
customers demand ICT application service, our customers demand an online interaction, our customers demand to become loyal to our org, our customers demand customized service). A CFA model for perceived pressure from customers (PPC) was run. The PPC construct had the following indicator variables; PPC1, PPC2, PPC3, PPC4, PPC5, PPC6, PPC7, and PPC8 (three indicators variables PPC 3, PPC4, PPC 5 were dropped during the EFA procedure) as the factor loading were below the recommended ratio of Eigenvalues greater than 1 (Mugobi and Mlozi, 2020).

The dependent variable made up of the ICT usage indicators variables were measured using 5 indicator variables; ICTU1, ICTU2, ICTU4, ICTU5, and ICTU6 (i.e., Our site uses ICT applications for displaying company information and products, Our site uses ICT application to communicate with my suppliers, Our site uses ICT application to communicate with my customers, I regularly use ICT application to sell my product online, Our site uses ICT application to market our service and receive payment) (Mugobi and Mlozi, 2020). During the initial CFA run, all the standardized regression weights were above 0.5 and significant at $p \leq 0.000$ except for ICTU3, which was dropped. The five indicators were analyzed throughout the study (Mugobi and Mlozi, 2020). The two hypotheses were generated, as shown in Figure 1:

H1: there is a significant relationship between perceived pressure from competitors and ICT usage in World Heritage Sites in Tanzania

H2: there is a significant relationship between perceived pressure from customers and ICT usage in World Heritage Sites in Tanzania

Figure 1: Conceptual Model



3 METHODOLOGY

3.1 Sample design and data collection

This study was conducted in seven UNESCO World Heritage Sites (WHSs) in Tanzania from August 2017 to February 2018. This is because literature reveals limited investment in ICT (Torero & Braun, 2006) and official data concerning ICT adoption and usage in WHSs. Consequently, this study would provide a better understanding of how external factors influence ICT usage at UNESCO WHSs to bring about ICT investment in Tanzania's WHSs for effective protection, conservation, and presentation of cultural and natural heritage. Stratified random sampling was employed whereby the sites were grouped into three categories, namely nature,

mixed, and culture. This realized the sample consisted of Ngorongoro Conservation Area (NCA) in Arusha Region (mixed site); Ruins of Kilwa Kisiwani and Ruins of Songo Mnara in Kilwa Kisiwani (cultural site); Serengeti National Park in Arusha and Mara Region (nature); Selous Game Reserve (SGR) in Iringa and Morogoro Region (nature); Kilimanjaro National Park in Kilimanjaro (nature); Stone Town of Zanzibar (culture) and the Kondoa Rock-Art Site in Kondoa District (culture). With regard to the research strategy, the study applied the survey method. At the sites, data were collected from directors, senior managers, general park warden, managers, heads of unit, heads of department, and zone warden officers because of their prominent role in deciding about the adoption and use of ICT at their sites. Systematic random sampling was then applied to select respondents from each stratum based on their ratio in the population; computed as X_c/XW for cultural sites, X_n/XW for goods natural sites, and X_m/XW for mixed sites (Mugobi and Mlozi, 2020).

Where X_c is the number of cultural sites

X_n is the number of natural sites

X_m is the number of mixed sites

XW is the total number of WHSs

Hence, the ratio of decision-makers from cultural sites in the population was $149/407=0.366$, the ratio of decision-makers from natural sites in the population was $191/407=0.469$, and the ratio of decision-makers from the mixed sites was $67/407=0.165$. The ratios were then used to compute the number of respondents included in the study from each stratum.

3.2 Sample size

By taking into consideration each stratum, cultural, natural, and mixed, and considering the population ratios for each, as computed in the above paragraph, the sample sizes for each stratum were computed as follows:

- I. cultural sites: $0.366 \times 200 \approx 73$ cultural sites decision-makers
- II. natural sites: $0.469 \times 200 \approx 94$ natural sites decision-makers
- III. mixed sites: $0.165 \times 200 \approx 33$ mixed sites decision-makers

The above computation gave a sample size of 200, as recommended by Byne (2010). The number of questionnaires distributed to cultural sites was $0.566 \times N_c = 73$, then $N_q = 73/0.566 \approx 129$. The number of questionnaires (N_n) distributed to natural sites was computed as $0.566 \times N_n=94$, then $N_n = 94/0.566 \approx 166$. Likewise, the number of questionnaires (N_m) distributed to mixed sites was computed as $0.566 \times N_m = 33$, then $N_g = 33/0.566 \approx 58$. Hence, the total number of questionnaires distributed was 353 (Mugobi and Mlozi, 2020).

3.3 Measurement scales

Measurements and scales in this study were adapted from previous studies. All items measured were adopted from Chairoel and Riski (2018), Ismail and Ali (2013), and Lippert and Govindarajulu (2006). The items consisted of perceived competitive pressure (7 items) and perceived pressure from

customer's variables (8 items). The ICT usage characteristics were adopted from Kilangi (2012). There were also six items to measure ICT usage; all the items were measured using a five Likert scale, whereby 1=strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

The drop-and-collect technique was applied: i.e., leaving a questionnaire with a respondent and going back to pick it up after it has been filled in. 238 usable responses were returned and subjected to analysis. Given the nature and location of the Tanzania UNESCO world heritage sites; and the low response usually associated with drop and collect techniques, this response rate was considered reasonably adequate (Mugobi and Mlozi, 2020). Similar studies by Bernard (2006) suggested that the paper-based survey delivered through the drop-and-collect technique, on average, achieves a response rate of up to 60%. Nulty (2008) also states that paper-based surveys achieve an average response rate of 56.5%. For the sake of avoiding over-ambition, the researcher anticipated a response rate of 56.5%, as suggested by Nulty (2008). To test the instruments' internal consistency, a reliability test was conducted, where the Cronbach Alpha values ranged from .874 to .933 (Table 1). For this construct, perceived competitive pressure and perceived pressure from the customer Cronbach's Alpha coefficient were well above the recommended minimum threshold of 0.7.

Table 1: Reliability Scores

Variable	Items	Alpha Value
Perceived competitive pressure	5	.874
Perceived pressure from customers	5	.933
ICT usage	5	.899

Exploratory Factor Analysis was used to validate the study's variables before performing the analysis and measurement of the relationship between the variables. Kaiser-Mayer-Olkin's measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity were used to assess the suitability of the variables.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.918	
	Approx. Chi-Square	14877.163
Bartlett's Test of Sphericity	DF	1770
	SIG.	.000

To warrant the application of EFA, the KMO statistic value would range from 0.6 or above (Tabachnick and Fidell, 2007), and Bartlett's Test of Sphericity had to provide a significant chi-square output. Indeed, the KMO value became 0.918, and Bartlett's Test of Sphericity became significant at $p < 0.000$. That is, the sample size appeared adequate and data appropriate for factor analysis, which does not include the identity matrix. These results are summarized in Table 2.

To decide on factors to retain, pattern matrix and Scree plot were performed, whereby all factors greater than 1 would be retained. Eventually, each of the factors had Eigenvalues greater than 1, and a cumulative variance of 74.517%. The Scree plot also produced factors above the point of inflation. Thus, EFA output results were reliable. At this stage, only variables that had acceptable loadings were taken into

account. Details of factors and their underlying factor loadings are presented in the pattern matrix in Table 3.

Table 3: Environmental Factors Analysis

Item	Factor 1	Factor 2
PCP3: ICT application increases competitive advantage		.867
PCP4: We respond quickly to other competitors		.756
PCP5: We are faced with very intense competition		.773
PCP6: Our competitors can easily offer our services and products		.763
PCP7: Our competitor applies ICT		.776
PPC2: Our customers demand compatible and accessible ICT application	-.670	
PPC4: Our customers demand online interaction	-.681	
PPC5: Our customers demand online information about our products and services	-.795	
PPC6: Our customers demand online booking	-.927	
PPC7: Our customers demand to become loyal to our org	-.841	
PPC8: Our customers demand customized services	-.773	

ICT usage was measured using six (6) items, all of which were retained for subsequent analysis. The six items were loaded on a single factor, and the factor abstracted represented a total variance of 72.455 per cent. The summary is given in Table 4.

Table 4: Environmental Factors Analysis

Item	Factor 1
ICTU1: Our site uses ICT applications for displaying company information and products	-.454
ICTU2: Our site uses ICT applications to communicate with our suppliers	-.488
ICTU3: Our site uses ICT applications to communicate with employees	-.413
ICTU4: Our site uses ICT applications to communicate with my customers	-.497
ICTU5: I regularly use ICT applications to sell my products online	-.521
ICTU6: Our site uses ICT applications to sell our services and receive payment	-.499

4 FINDINGS AND ANALYSIS

4.1 Responder's profile

Table 5 describes the respondents' profile. Starting with the gender of the respondents, male respondents who are employed in WHSs represented 68.3%, outnumbering females by 30.3%. This shows that males are still dominating the tourism employment group. Okello and Yerian (2009) reported that male respondents working in tourism-related sectors in Tanzania constituted 54%, whereas females constituted 46%. This is attributed to the vulnerability of women in formal employment in the tourism sector due to complex working conditions (i.e., working benefits, numbers of hours women work, and legal entitlements for mother) and job position. Okello and Yerian (2009) reported that men take great risks than women, and therefore, men are well represented in managerial positions compared to women.

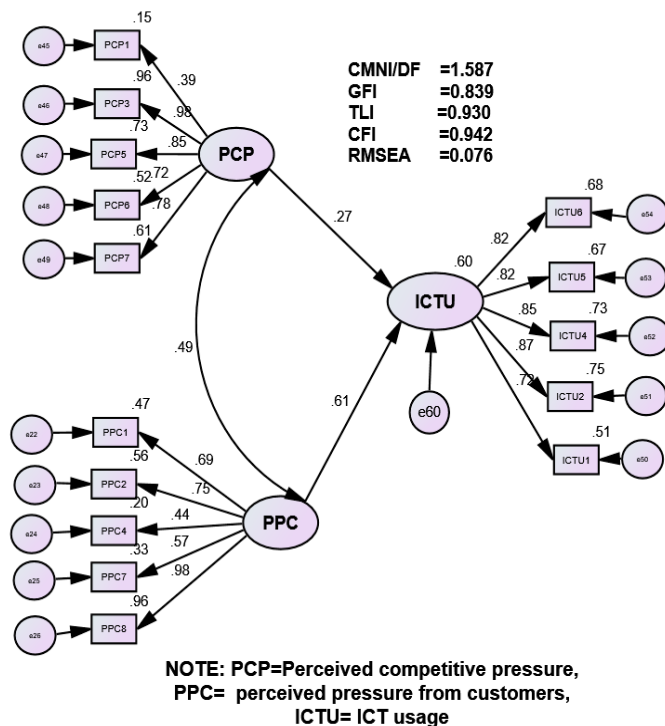
Secondly, in terms of education level, this study found that 47.7% of the respondents had attained a bachelor’s degree, while 3.8% had a master’s degree. Thirdly, the respondents’ profile also revealed that 50% of the employees had been in WHSs for between one to 10 years. Further, about one-third of the WHSs respondents had been in WHSs for between 11 and 15 years. Lastly, more than half of the sites had 40-60 employees, and about one third had between 60-80 employees, and the remaining 7% had between 100 to 5 employees.

Table 5: Characteristics of Respondents

Characteristics	Distribution of answers
Gender	Male: 68%; Female: 30%
Education	Primary school: 4%; High school: 8.2%; Certificate/Diploma: 13.2%; Bachelor’s degree: 47.7%; Advance Diploma: 24.7%; Master’s degree: 3.7%
Job position	Chief Park: 10.3%; Park Warden: 18.9%; Head of Department: 18.1%; Head of Unit: 21.4%; Others: 28.4%
Job Experience	Less than a year: 12.3%; Between 1-5 Years: 8.2%; Between 6-10 years: 40.3%; Between 11-15 years: 32.1%; Between 16-20 years: 4.1%; More than 20 years: 0.8%
Number of Employees	40-60 employees: 57.6%; 60-80 employees: 31.3%; 80-100 employees: 5.8%; More than 100 employees: 2.5%

4.2 Structural model results

Figure 2: The Structural Model for the overall sample



In testing the structural model for the overall sample, the analysis started by evaluating goodness-of-fit indices. The analysis showed that the model met the recommended guidelines for goodness of fit (CMIN/DF = 1.587, RMSEA= 0.079, GFI= 0.839, CFI= 0.942, TLI= 0.930). From Figure 2, it can be concluded that there is a perfect model fit, which confirms the suitability of testing the hypothesis of the study. The results of the analysis using IBM AMOS 24& 26 software was used in the data analysis

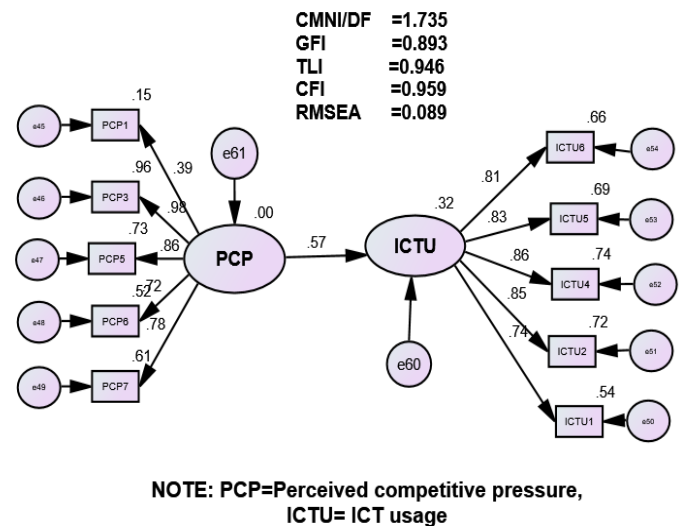
Table 6: Summarized Fitness indices for the overall sample

Name of Category	Name of Index	Model fitness indices results
Absolute Fit	RMSEA	0.076
Incremental Fit	GFI	0.839
	CFI	0.942
	TLI	0.930
Parsimonious Fit	CMIN/DF	1.587

4.3 Model path coefficients and hypothesis testing

Results of the Structural Model for the overall sample are reported based on goodness-of-fit, referred to in Figures 3 to 5 and on the direction, the strength of the standardized paths coefficient (β), the critical ratio (CR), and significance level (p-value). The descriptions of the tested hypotheses are given hereunder.

Figure 3: Model Path Coefficients between perceived competitive pressure and ICT usage



NOTE: PCP=Perceived competitive pressure, ICTU= ICT usage

Starting with H1 (ICT Usage <---Perceived competitive pressure), we proposed a positive relationship between perceived competitive pressure and ICT usage in World Heritage Sites; and that the pressure leads to the adoption of ICT usage in Tanzania World Heritage Sites. There is a support for the hypothesis ($\gamma = 0.565$; C.R.=3.165; $p = 0.002$). That is, the relationship for the overall sample is positive and significant, as shown in Figure 3. To attract and retain customers, WHSs use ICT in providing tailored products and services to meet the needs of their customers. The finding also corroborates with those of Kilangi (2012), Iacovone et al. (2016), and Ayadi et al. (2008), who equally found out that perceived competitive pressure had a positive relationship with ICT usage. Furthermore, Ghobakhloo et al. (2011) argue that competitors force businesses to adopt and use ICT to promote their services to customers and stay competitive and dynamic.

Table 7: Summarized fitness indices for H1

Name of Category	Name of Index	Model Fitness Indices Results
Absolute Fit	RMSEA	0.089
Incremental Fit	GFI	0.893
	CFI	0.959
	TLI	0.946
Parsimonious Fit	CMIN/DF	1.735

H2 (ICT Usage <---Perceived pressure from customers) postulated a positive relationship between perceived pressure from customers and ICT usage in World Heritage Sites. As we expected, there is support for the hypothesized relationship (H2) between perceived pressure from customers and ICT usage in World Heritage Sites ($\gamma = 0.735$; CR = 5.341; $p = 0.000$). Thus, H2 is supported, as illustrated in Figure 4.

Figure 4: Model Path Coefficients between perceived pressure from competitors and ICT usage

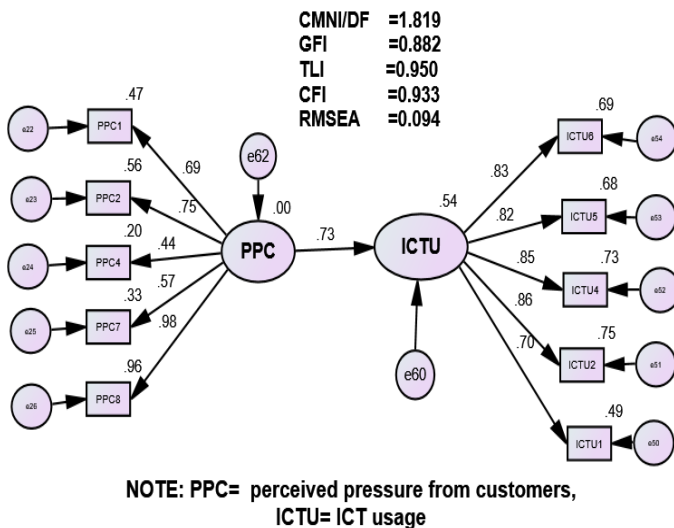


Table 8: Summarized fitness indices for H2

Name of Category	Name of Index	Model Fitness Indices Results
Absolute Fit	RMSEA	0.089
Incremental Fit	GFI	0.893
	CFI	0.959
	TLI	0.946
Parsimonious Fit	CMIN/DF	1.735

According to Ghobakhloo et al. (2011) and Kim and Kim (2018), perceived pressure from customers is considered one of the most critical factors for ICT usage. Other researchers (Alam and Noor, 20011; Taylor, 2017; Chian, 2010; Otiso et al., 2012) also found that external pressure, including pressure from customers, had a positive relationship with ICT usage. This implies that World Heritage Sites decision-makers need pressure from customers to adopt ICT to meet their customers' tangible and intangible needs and maintain such customers' loyalty. Without pressure from customers, decision-makers tend to consider the adoption of ICT a waste of resources (Alam and Noor, 2011).

5 DISCUSSION

5.1 Relationship between Perceived Competitive Pressure (PCP) and ICT Usage In WHSS

It was hypothesized in H1 of the study that there is a positive relationship between perceived competitive pressure (PCP) and ICT usage in WHSS. Perceived competitive pressure (PCP) is one of the environmental determining factors of ICT usage (Bakkabulindi, 2012; Kilangi, 2012) as indicated in our framework (Figure 1). Findings from the current study supported this relationship ($\gamma = 0.180$; C.R = 2.899; $p = 0.004$). The findings suggest that when WHSS decision-makers perceived a high level of competitive pressure, they started using ICT. One possible reason is that Tanzania's tourism industry is more involved with the visitor from all over the globe. The level of competition between East and South African countries is almost the same. As a result, there is more pressure from competitors for WHSS to start utilizing ICT in their daily operations. The growing importance of ICT usage in the tourism industry caused several threats and opportunities which transform the value chain of the industry. The findings of this study are supported by Gratzer and Winiwarter (2003). They argue that perceived competitive pressure from ICT usage forces a company to find new ways to expand its market to compete, attract, and retain customers. A company adopts and start using ICT to gain a competitive advantage. Kilangi (2012) also says that many SMEs in developing countries adopt and use ICT for communication and distribution due to increased pressure from competitors and suppliers. Likewise, Buhalis and Deimezi (2004) found out that pressure from competitors increases ICT usage in Greece. In addition, Iacovone et al. (2016) argue that the increase in competition induced innovation and ICT usage in OECD countries. Meanwhile, Ayadiet al. (2008) argue that competitive pressure positively significantly influences ICT usage among Botswana organizations.

However, the findings of this study contradict those obtained by Mihalic and Buhalis (2013), where Tourism managers in Slovenian perceived competitive pressure to be the least determining factor of ICT usage. Cakmak and Tas (2012) equally found no tangible evidence that constructive firms' decisions to use ICT were influenced by the increasing level of competition in the industry. They were of the view that ICT is adopted at the operational level for the sake of technical and economic benefits. Similarly, Alam and Noors (2009) found that external pressure, such as from customers, insignificantly influenced Malaysia's ICT adoption. He attributed the findings to Malaysian SMEs noninvolvement in global business that would subject it to pressure from customers or suppliers to adopt ICT in their business operation.

Furthermore, Mukamanzi and Ndikubwimana (2018) recently established that competitors' pressure is insignificant in SMEs' ICT adoption in Rwanda. In our view, these contrary findings are because of the differences in the fields, locations, socio-economies, technologies, political conditions, and tourism attractions of these studies compared to WHSS in Tanzania. We concluded that WHSS decision-makers in Tanzania have to adopt ICT for their daily operations to keep up with both internal and external competition, managing change, and stay ahead of their

competitors, as also recommended by Ghobakhloo et al. (2012).

5.2 Relationship between Perceived Pressure from Customers (PPC) and ICT Usage in WHSS

It was hypothesized in H2 that there is a positive relationship between perceived pressure from customers (PPC) and ICT usage in WHSS. Perceived pressure from customers (PPC) is another environmental determining factor of ICT usage (Bakkabulindi, 2012; Kilangi, 2012). Findings from the current study supported this ($\gamma = 0.286$; C.R = 34.932; $p = 0.000$). The findings suggest that when WHSS decision-makers perceive customers' pressure, they are more likely to adopt ICT to satisfy their customer's tangible and intangible needs, maintain customers, and build loyalty. The findings are consistent with Ghobakhloo et al. (2011) and Kim and Kim (2018), who found that perceived pressure from customers significantly determines ICT usage and success in Portuguese manufacturing SMEs.

Similarly, Alam and Noor (2009) found that perceived pressure from the customer is one of the major factors influencing ICT usage among SMEs in Malaysia. These results are consistent with those of Taylor (2017), who indicated that small businesses adopt and use ICT to heed their customers' demand. Chian (2010) and Otiso et al. (2012) also found that external pressure, such as pressure from customers, determines ICT usage by SMEs in Europe.

Nonetheless, Alam and Noor (2009), reported that customers' pressure did not significantly influence ICT usage by SMEs in Malaysia. The main reason for this is that Malaysian SMEs were not involved in global business, which did not put pressure on them to use ICT in their business operation. Setiowati et al. (2015) equally supported that SMEs' pressure from customers in Indonesia did not determine ICT usage but skills and innovativeness of managers. Our argument is that these findings are different because the studies were done outside Tanzania, where the geography, socio-economic conditions, and tourist attraction are quite different from those of Tanzania. Given the increase in global competition, conforming to customer demand and expectation, ICT usage is inevitable if these sites wish to survive in the changing market demand (Leung et al., 2015).

5.3 Practical and contextual implications

This study's findings revealed perceived competitive pressure (PCP) and perceived pressure from customers (PPC) significantly influence ICT usage at WHSS. This implies that Tanzanian WHSS are obliged to adopt ICT to promote sustainably, distribute information, and compete on a level playing field (Moya and Engotoit, 2017; Rishi, 2013; Christou and Nella, 2016). ICT usage will enlighten many people about the heritage sites in the country and increase the popularity of the sites and generate stable income to cater to the maintenance of the sites (Monko et al., 2017, p 53).

6 CONCLUSIONS

The results of this study shed an exciting light on ICT usage in World Heritage Sites in Tanzania. The study finds that perceived competitive pressure and perceived pressure from

customers are the environmental factors with significant positive relationships with ICT usage in World Heritage Sites. The findings imply that the government, all its related agencies, and private organizations should recognize ICT usage as a critical factor for rapid socio-economic growth and becoming a middle-income country. Similarly, the sites need to set out critical measures for ensuring effective and efficient use of ICT in their service to gain international visibility of their attractions, increased access to global supply chains, expedite access to information to prospective tourists, and meet the principles of greater openness and transparency (Kim and Kim, 2017; Pirnar et al., 2019).

Decision-makers and stakeholders in the tourism industry ought to adopt ICT and gain its full advantage in World Heritage Sites. They should understand that the adoption and use of ICTs innovation are the mandatory requirements for success in the tourism business today. This is because ICT usage in the tourism industry enables the management to reach tourists and prospective tourists directly. Moreover, ICT allows online promotion and marketing, distribution of tourism products, managing and coordination of all stakeholders involved in the creation and delivery of tourism products (Nella et al., 2000; Adukaite et al., 2016; Sotiriadis and Shen, 2017). Future research may investigate ICT usage in heritage sites that are not under UNESCO, and through different methods for comparability of results. They can counteract the limitations of the present study, such as the use of small sample size by setting enough time and enough research funds to enable them to carry out comprehensive research whose results can be generalized to all UNESCO World Heritage Sites in the world. The present study thus serves as the baseline for similar future research. It informs them of the methodologies, theoretical framework, and necessary precautions for reducing biases in research of this kind.

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SUBMITTED: MAY 2020

REVISION SUBMITTED: OCT 2020

2nd REVISION SUBMITTED: DEC 2020

ACCEPTED: JAN. 2021

REFEREED ANONYMOUSLY

PUBLISHED ONLINE: 15 FEB 2021