
Relationship between Organisational E-readiness and E-Commerce Implementation in Developing Countries: Perspectives from Tanzania

Ulingeta O.L. Mbamba 

Department of General Management, University of Dar es Salaam Business School, Tanzania
Email: mbamba@udsm.ac.tz

Abstract

This paper aimed to establish the role of e-readiness in implementing e-commerce in organisations in developing countries using Tanzania as an example. Using Molla and Licker's (2005a) model, the study evaluated the organisational e-readiness to implement e-commerce. Data collected via email came from 165 purposively selected managers from Dar es Salaam. The resultant data were subjected to confirmatory factor analysis to reduce the number of variables to a manageable level. Then the e-readiness factors were regressed to the level of e-commerce. The results show that organisational commitment, technological resources, and awareness level, as well as the government's commitment to e-readiness emerged to be important factors in determining the level of e-commerce of an organisation. Empirically, the study shows that these four factors are reliable predictors of the e-commerce level from the developing countries' perspectives. All the variables identified were significantly related to the level of e-commerce an organisation has attained. Thus, the paper argues that an organisation's commitment, technological resources and awareness level, as well as the government's commitment to e-Readiness are salient factors in determining the e-commerce level of implementation of an organisation. Implicitly, the factors the paper has identified are important in the execution of e-commerce. As such, these factors need consideration in an organisation seeking to benefit from e-commerce implementation. In other words, countries can ignore e-readiness and e-commerce implementation at their own peril.

Keywords: e-readiness, e-business, developing countries, Tanzania
<https://dx.doi.org/10.4314/udslj.v18i1.10>

Introduction

In the past few years, the use of the Internet and e-commerce, particularly, has grown tremendously. Some organisations and countries benefit more from these developments than others. Yet, developing countries fail to succeed due to lack of readiness to tap into the opportunities these developments engender. Regardless of the inherent challenges, studies in Indonesia (Rahayu & Day, 2017), Nepal (Lama, Pradhan, & Shrestha, 2020), Kenya (Karanja & Odawa, 2021) and other countries have demonstrated that e-commerce is growing rapidly due to the advantages accruing for to those who utilise it (Lefebvre & Lefebvre, 2002; Chong, 2008). E-commerce can particularly cut down costs to as much as two-thirds of a bill, bank transactions close to 90 percent, software distribution close to 100 percent, document distribution up to 80 percent, and rejects and adjustments up to 95 percent (Lefebvre & Lefebvre, 2002; Molla & Licker, 2005b; Yavuzalp & Bahcivan, 2021; Alabbadi & Al-Masaed, 2020). Yet, the diffusion of e-commerce in developing countries remains largely disappointing with several attempts made to address and propose solutions to that problem (Molla & Licker, 2005a; Arthur-Nyarko, Agyei, & Armah, 2020) yielding limited dividends.

Therefore, there was a need to evaluate the information systems to determine the extent to which the users' goals are achievable. In this regard, the evaluation of information systems has been a subject of discussion for quite some time (DeLone & McLean, 1992; Seddon, 1997; Davis, 1989; Taylor & Todd, 1995). These studies have attempted to develop and evaluate a model suitable for information systems that organisations have executed. With the passage of time, however, other issues pertaining to the evaluation of information systems have emerged. These issues include the extent to which individuals, organisations, or even countries are ready to tap the potential created by information systems and tap them fully. E-readiness happens to be one of the emerging issues. Consequently, several related terminologies such as e-finance, that is, accessing finance and financial services anytime and anywhere using information and communication technologies (Shahrokhi, 2008); e-service, that is consuming a number of services online (Sahadev & Purani, 2008); and e-customer relationship management systems, e-CRM, that is. enabling the application of Internet-based technologies such as emails, websites, chat rooms, forums and other channels to achieve CRM objectives (Kimiloğlu & Zarali, 2009) and others. Parasuraman (2000, p. 308) defines technology readiness as "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work".

Previous studies on factors influencing the implementation of e-commerce have been identified to be technological, social, cultural, legal and constitutional constraints or major factors (Molla & Licker, 2005b). Studies have provided other factors such as individual factors including personal characteristics, attitudes, knowledge, and skills (Ramdani, Kawalek, & Lorenzo, 2009; Wong, 2003; Okfalisa, et al., 2021); internal capabilities including human capital as well as research and development efforts (Chang, 2009; Chen, Chen, & Chen, 2009; Laukkanen, Sinkkonen, & Laukkanen, 2008; Aldás-Manzano, et al, 2009; Scupola, 2009; Glyptis, Vrontis, Del Giudice, Dimitriou, & Michael, 2020); contextual factors including environment (Kolsaker & Lee-Kelley, 2008; Strohmeier & Kabst, 2009; Gefen, 2000; Hsieh, 2001); and telecommunications infrastructure (Tigre, 2003; Yusif, Hafeez-Baig, & Soar, 2017).

Evidently, several researches have been conducted on e-readiness (Kagoya & Mbamba, 2021; Senyoni, 2021). However, providing an accurate picture for comparison purposes remains a challenge in many developing countries because, for example, the e-government status in Africa is not that highly rated and websites are largely underdeveloped (Mutula, 2008; Mutula & van Brakel, 2006). In fact, many of the previous studies either focused on governments (2008a) or organisations (Molla & Licker, 2005b; Strohmeier & Kabst, 2009; Chong, 2008).

Statement of the Problem

The enormous investment in information technology notwithstanding, a lot needs to be done to improve the performance using information technology (Srivastava, 2021; Wachter & Howell, 2018; Dementiev, 2019; Abdinoor & Mbamba, 2017). Even though data communication is regulated, the content remains less regulated. Despite having a lot of electronic payment systems, few users of this technology make electronic payments. The number of internet service providers and mobile phone operators has increased; however, the country does not positively progress towards e-commerce. Tele-density has increased from 1 to 43 percent in 10 years, yet the use of the functionalities with value addition to the data communication system, which is not increasing at the hypothesised rate. Although tariffs have

gone down for both local and international calls and usage has increased, e-business usage has remained largely low.

Generally, even though a significant effort has been made to define e-readiness, most of such exertions have focused on country levels, which may have no impact on individual organisations, especially in developing countries (Dada, 2006). Indeed, in many developing countries, major differences have been apparent between what is done at the country as a whole and the organisations. In this regard, e-readiness may constitute a good starting point for any computerisation process, especially e-commerce.

The study establishes the factors that could lead to successful e-commerce implementation in Tanzania using the e-readiness factors Molla and Licker (2005a) proposed in their well-established model for identifying and verifying its influence of the e-commerce level. The model has been widely used (Jöhnk, Weißert, & Wyrski, 2021; Rossolov, Rossolova, & Holguín-Veras, 2021; Jnr, 2020; Szeles & Simionescu, 2020)

Literature Review

Organisation e-readiness

There are various definitions of e-readiness. Naidoo and Klopper (2005) define e-readiness as “the maturity of citizens, businesses, NGOs and governments for participating in the electronic world (e-commerce, e-government etc.)” whereas Oreku and Mtenzi (2012) refer to it as “the ability to use ICTs to develop one’s economy, to foster one’s welfare, and better participate in the global socio-economic value chains”. The former focuses on institutions whereas the latter definition dwells on an individual. There are various institutions that have created e-readiness indices, however, the one provided by the Economic Intelligence Unit by country seems to be popular. Implicitly, e-readiness can be both institutionalised and individualised. E-readiness helps to reduce corruption (Ntemi & Mbamba, 2016) and improves competitiveness (Mbamba, 2014), hence its importance.

Molla and Licker (2005b) explored factors that affect e-commerce implementation in a developing country context of South Africa. The study proposed a research model, based on perceived organisational e-readiness and perceived environmental e-readiness. Using data collected from 150 organisations, the study found that initial e-commerce implementation is explained more by perceived organisational e-readiness than by perceived environmental e-readiness. The model links e-readiness to e-commerce implementation and suggests that a combination of perceived environmental e-readiness and perceived organisational e-readiness factors affect e-commerce implementation. This study, therefore, further cements the assertion that e-readiness affects e-commerce implementation in developing countries. Even though South Africa is still classified as a developing country, it is far ahead relative to many developing countries in Africa and elsewhere. In this regard, a number of studies have shown that these factors are differently by adopters, intended adopters and those not intending to adopt (Wymer & Regan, 2005). Moreover, a number of studies linking e-readiness and other factors have underscored its importance in SMEs (Farokhizadeh, Toloie Eshlaghy, Radfar, & Shoja, 2019; Hanafizadeh, Nabavi, & Hanafizadeh, 2020; Kabanda & Brown, 2017).

Commitment and E-commerce Implementation

Organisational commitment is one of the important factors in organisational implementation of e-commerce. Focusing business-to-consumer contexts, Wang, Wang and Liu (2016) found commitment to be an important aspect of e-commerce execution. Several other scholars using different concepts such as top management support arrived at the same logical conclusion underscoring such importance (Nusair, Bilgihan, Fevzi, & Cobanoglu, 2013; Teo, Lin, & Lai, 2009).

Kolsaker and colleagues, who analysed citizens' attitudes towards electronic government (e-government) and e-governance, found that interest in e-government is generally low overall as users appreciate personalisation, user-friendliness and the ability to communicate. (Kolsaker & Lee-Kelley, 2008). As a result, the study concluded that e-readiness was influenced by personalisation, user-friendliness and the ability to communicate. In addition, other studies support the influence of commitment to implementation (Hassen, Abd Rahim, & Shah, 2019; Katan, Mustafa, & Adnan, 2018; Ocloo, *et al.*, 2020). Therefore, it is hypothesised:

H₁: *Organisational commitment has an influence on e-commerce implementation.*

Technological resources and e-commerce implementation

In Denmark and Australia, Scupola (2009) conducted a study aimed to provide insight into factors that lead to e-commerce implementation by small- and medium-sized enterprises. The study developed a model based on literature and then used a questionnaire to collect data from small and medium-sized enterprises in the two countries. The study found that organisationally, external and technical contexts affect the implementation of e-commerce. Mutula and van Brakel (2006) obtained almost the same results.

Ramdani and others developed a model for use in predicting which small- and medium-sized enterprises are more likely to become adopters of enterprise systems such as enterprise resource management systems, customer relationship management systems, supply chain management systems and e-procurement (Ramdani, Kawalek, & Lorenzo, 2009). The research used logistic regression based on data from 102 respondents collected in north-west England. The sample was drawn using random sampling. Technological and organisational factors rather than environmental ones emerged to be instrumental. Other factors perceived to offer greater advantage were greater top management support, greater organisational readiness and larger size. Equally important, several other studies also highlight the importance of technology (Hassen, Abd Rahim, & Shah, 2019; Yusif, Hafeez-Baig, & Soar, 2017; Pal, Singh, & Dhaliwal, 2020) in fostering e-commerce. As such, we hypothesise:

H₂: *Technological resources have an influence on e-commerce implementation.*

Awareness and e-commerce implementation

Chang (2009) explored the enterprises' readiness for developing the emerging e-business technology. In the process, he also developed a three-staged e-business technology roadmap, from pre-e-business, to transactional e-business, and finally to on-demand e-business. The study used the diffusion of innovation theory (Rogers, 1995) to identify a series of enterprises'

internal capabilities and environmental drivers to explain their e-business implementation along a proposed roadmap, which was validated in Taiwan using 175 businesses (Chang, 2009).

Chen et al. (2009), who evaluated mostly e-based factors that determine continued satisfaction with the use of self-service technology, used 481 self-service technology users and analysed data using structural equation modelling to show that the developed model was stable in addition to testing the formulated hypotheses. Chen et al. (2009) found that consumers' satisfaction influenced the intention to continue using the technology whereas the perceived usefulness, perceived ease-of-use, subjective norm, and perceived behavioural control simultaneously influenced satisfaction. Optimism and innovativeness also emerged to be significant motivators of satisfaction in that study. On the other hand, the study found discomfort and insecurity to have no significant negative influence on the intention to continue using self-service technology (Chen et al., 2009). The study supports the proposition that e-readiness is determined by satisfaction with current usage.

On their part, Laukkanen et al. (2008), who evaluated consumers' resistance to Internet banking, found that psychological barriers were among the determinants of resistance to e-commerce implementation. Laukkanen, Sinkkonen and Laukkanen (2008) further established that psychological factors were instrumental in determining e-readiness, which in turn is essential in fostering e-commerce. Other studies that underscored the value of awareness in fostering e-commerce include Aldas-Manzano, et al., (2009), Wang and Ben (2021), and Ansari and Alhazemi (2016). These studies augment the argument that awareness has a bearing on the implementation of e-commerce. Thus, we hypothesise:

H₃: Awareness to e-commerce has an influence on e-commerce implementation.

Government commitment to e-readiness and e-commerce implementation

Berthon et al. (2008) created a framework for national readiness and receptivity to e-commerce at business-to-business and business-to-consumer levels. The study reviewed relevant literature on e-readiness before formulating a model. The prediction was the relatedness of e-readiness to national cultural values and corruption. Analysis at the micro level from empirical evidence affirmed that it was related to trust and website usability. Berthon et al.'s (2008) study attests to how e-readiness is determined by national cultural values, corruption level, trust, and website usability.

Also, Strohmeier and Kabst (2009) had examined the factors that influence cross-national adoption by organisations of electronic human resource management (e-HRM) in Europe to derive the major general and contextual factors that affect e-HRM. In this examination, they tested their model based on a sample of 2,336 organisations in 23 European countries using logistic regression. The study identified the major general determinants of e-HRM adoption as size, work of the organisation, and configuration of HRM. Implicitly, there are several contextual factors that affect e-readiness.

Furthermore, Wong's (2003) analysis of the role of the government in fostering e-commerce found entrepreneurial community and government policy initiatives to be critical in successful e-commerce. Similarly, Oxley and Yeung (2001) found institutional environment to be essential in engendering the successful implementation of e-commerce. In short, all these studies affirm the instrumentality of government support in ensuring e-readiness is essential for supporting e-commerce. Therefore, we hypothesise:

H4: *Government commitment to e-readiness has influence of e-commerce implementation.*

Several other studies were conducted on e-readiness, with some evaluating telecommunication as a major factor (Tigre, 2003), payment systems (Hsieh, 2001), familiarity and trust (Gefen, 2000). The factors listed in such empirical literature signal that there are several factors that impact e-commerce readiness. Particularly, e-readiness emerged to encompass several indicators. Specifically, the Economist Intelligence Unit published six indicators of e-readiness: Connectivity, the business environment, implementation by consumers and businesses; the legal and regulatory environment; supporting services, and the social and cultural infrastructure (Economist Intelligence Unit, 2001). These indicators facilitate the evaluation and ranking countries but not for organisations. We adopted Molla and Licker's (2005a) study specifically designed for developing countries, hence congruent with the current research conducted in Tanzania where many of the organisations are relatively still small.

Methodology

The study applied the quantitative approach to relate e-readiness to the level of e-commerce implementation in Tanzania's organisations. The respondents were current and former students of the University of Dar es Salaam, who were taking or had taken a Master of Business Administration (MBA) degree. The study used a questionnaire emailed to students (some of whom had already graduated) via their still valid group email created during their studies. The questionnaire was created using an electronic spreadsheet incorporating a data validation tool to limit the number of unusable questionnaires. The respondents filled in the questionnaire by selecting five appropriate items based on the Likert scale, the main construct in the research.

The questionnaire was based on a tool created and tested by Molla and Licker (2005a). This had greater reliability and validity for the developing country's context where this study was undertaken. The tool was developed and tested because of its reliability and validity in South Africa using factor analysis. Factors were extracted using guidelines provided by Molla and Licker (2005a). Molla and Licker (2005a) propose that all the cases with missing data are deleted, a minimum eigen value of 1 serves as the cut-off value, all the subsequent operations' factors are excluded which have a factor loading of less 0.5 or were loaded more than once with a factor loading of more than 0.5, all the single item factors are excluded for the sake of parsimony; and component-wise the Varimax raw rotation factor is extracted. The author acknowledges other models developed elsewhere (Goh & Blake, 2021; Khan, Khurram, & Zubair, 2020; Farokhizadeh, et al. 2019; Pal, Singh, & Dhaliwal, 2020)

Data were tested for reliability using the Cronbach alpha, sample adequacy using Kaiser-Meyer-Olkin's Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Cronbach alpha is expected, as a rule of thumb, to be above 0.7. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy tests whether or not partial correlations among variables are small. Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix to indicate the inappropriateness of the factor model. As a rule of thumb, KMO is also expected to be above 0.8. However, more than 0.9 is preferred. Meanwhile, Bartlett's test of sphericity significance level is expected to be close to 0.000. Thereafter, the level of e-readiness was regressed with e-commerce status while observing all the regression analysis assumptions.

Results



The research used questionnaire as data collection tool where 222 questionnaires were collected from the 620 that were emailed. All the questionnaires with incomplete information were deleted from the sample. As a result, the research remained with 165 questionnaires. Most of the questionnaires deleted had explanations in the responses but without the required numbers (Likert scale) filled out. One individual had left at least one question unanswered.

Table 1 provides the sample characteristics, indicating that all the respondents were well educated, came from different educational backgrounds and had worked in different industries, with females accounting for less than 30 percent of all the respondents. More than a fifth of the respondents had already completed their second-degree programme. A third of all the respondents had an accounting background, which indicates that they were better placed to comment on some questions regarding payments. A third of the respondents worked in banking/financial institutions.

Table 1: Sample characteristics

<i>Item</i>	<i>Number</i>	<i>%age</i>
<i>Highest Education Reached</i>		
Completed Master's Degree	34	20.6
Completing Master's Degree	130	78.8
In Post-Doctoral Programmes	1	0.6
Total	165	100.0
<i>Background Degree</i>		
Accounting	56	33.9
Agriculture (veterinary/fisheries/aquaculture)	5	3
Education	9	5.5
Engineering	12	7.3
Finance/Banking/Insurance/Social Security	12	7.3
IT/Management Science/Management Information Systems	10	6.1
Law	6	3.6
Marketing	13	7.9
Mathematical/Computer Sciences	2	1.2
Medical	1	0.6
Natural Sciences (Physics/Chemistry/Biology)	4	2.4
Others	11	6.7
Social Sciences	24	14.5
Total	165	100
<i>Respondents' Industry</i>		
Consultancy - Civil Engineering	1	0.6
Education/Training	27	16.4
Engineering consulting	5	3
Financial/Banking/Insurance	51	30.9
Hospital/Hospital services	4	2.4
Hospitality industry/Tourism/Hotel	1	0.6

<i>Item</i>	<i>Number</i>	<i>%age</i>
Management Consulting	8	4.8
Manufacturing	12	7.3
Marketing/Wholesale	5	3
Media	3	1.8
Others	27	16.4
Telecommunication	14	8.5
Transportation	7	4.2
Total	165	100.0
<i>Gender of Respondents</i>		
Female	45	27.3
Male	120	72.7
Total	165	100.0

The research used confirmatory factor analysis to extract variables as advocated by Molla and Licker (2005a). Table 2 presents the KMO and Bartlett test of sphericity. As KMO is greater than 0.8 and Bartlett's test of sphericity is significant (at 0.000), the data indicate that the sample was adequate.

Table 2: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.911
	Approx. Chi-Square	2622.050
Bartlett's Test of Sphericity	Df	325
	Sig.	.000

Table 3 describes the extracted factors. The study finally extracted four factors with a reliability of above 0.8, indicating good reliability. The eigen values explained more than two-thirds of all the variations.

Table 3: Rotated component matrix

	Component			
	1	2	3	4
<i>Organizational Commitment</i> ($\alpha = 0.927$, %age of variations = 21.82%)				
C3: Our e-Commerce implementations are strategy-led	.787			
C6: We have staffed our e-Commerce projects with the proper resources to achieve their goals	.781			
C9: Our business demonstrates an adequate level of commitment to e-Commerce implementation	.741			
C5: Senior management champions our e-commerce initiatives and implementation	.728			
C4: All our e-Commerce initiatives have champions	.715			

C2: Our vision fore-Commerce activities is that they are widely communicated and understood throughout our company	.704			
C8: Our employees at all levels support our e-Commerce initiatives	.703			
C7: We have an e-Commerce mindset at all levels of management	.683			
C1: Our business has a clear vision fore-Commerce	.655			
<i>Technological resources: ($\alpha = 0.902$, %age of variations = 19.10%)</i>				
R21: We have an established IT infrastructure enterprise-wide		.761		
R22: Our existing systems are flexible		.719		
R24: We have adequate technological capability for e-Commerce implementation		.683		
R17: Our organization is fully computerized with LAN and WAN		.682		
R23: Our existing systems are customized to meet our customers' needs		.664		
R16: We have sufficient resources to implement e-Commerce		.629		
R14: We have sufficient experience of network-based applications		.612		
R8: Our organisation exhibits a culture of enterprise-wide information sharing		.606		
R7: Communication is very open in our organization		.580		
<i>Awareness: ($\alpha = 0,810$, %age of variations = 12.16%)</i>				
A11: In general our business has adequate awareness of e-Commerce			.777	
A9: We consider that e-Commerce makes a tremendous impact on the way business is conducted in our industry			.735	
A4: Our business recognises the opportunities and threats of e-Commerce			.713	
A10: We believe that businesses in our industry that are not adopting e-Commerce and e-business will be at a competitive disadvantage			.668	
A5: Our organisation has a good understanding of e-Commerce business models that are applicable to our business			.548	
<i>Government Commitment to e-Readiness:($\alpha = 0.834$, %age of variations = 9.36%)</i>				
GVeR3: We believe that there are effective laws to combat cyber crime				.873
GVeR2: We believe that there are effective laws to protect consumer privacy				.842

GVer4: We believe that the legal environment is conducive for conducting business on the internet				.773
---	--	--	--	------

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalisation.
 Rotation converged in 6 iterations.

Regression analysis was conducted for the four extracted factors. These factors explained three quarters of the e-commerce level of an organisation. Despite Durbin Watson being poor [Table 4 (a)], the model created is significant [Table 4 (b)], all the variables are significant and have almost the same strength [Table 4 (c)].

Table 4: Regression analysis results

(a) Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
R Square Change	F Change	df1	df2	Sig. F Change	R Square Change	Sig. F Change
0.871	0.758	0.752	0.733	0.758	125.149	1.036

(b) ANOVA test

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	269.114	4	67.278	125.149	.000 (a)
Residual	86.014	160	.538		
Total	355.127	164			

- a. Predictors: (Constant), Government Commitment to e-Readiness, Awareness, Technological resources, organisations' commitment
 b. Dependent Variable: Level of e-Commerce

(c) Coefficients of regression analysis

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta	B	
(Constant)	3.073	.057		53.832	.000
Organizations' Commitment	.624	.057	.424	10.892	.000
Technological resources	.659	.057	.448	11.506	.000
Awareness	.663	.057	.451	11.585	.000
Government Commitment toe-Readiness	.615	.057	.418	10.740	.000

Dependent Variable: Level of e-Commerce

Implicitly, organisational commitment, technological resources, organisational awareness of e-readiness and government commitment to e-readiness has a direct impact on the e-commerce level of a country.



Discussion of Findings

Organisational commitment to e-readiness ($\alpha = 0.927$) contributes more than a fifth of all variations in e-readiness and has a positive effect on the level of e-commerce. For successful implementation of e-commerce, organisations need to have strategy and devote sufficient resources to attaining that strategy. The strategy must be shared within the organisation with such exertions having a positive mind-set for the successful implementation of e-commerce. Businesses must demonstrate their commitment to the e-commerce implementation with senior managers as champions.

Technological resources ($\alpha = 0.902$) explain slightly under a fifth of variations in e-readiness and has a positive effect on the e-commerce level. The technological infrastructure for e-commerce contrasts with those of the previous ones particularly covering the industrial age. Organisations need to have a well-coordinated data communication system which is flexible and preferably centralised background resources and are sufficient for implementing e-commerce. Flexible systems could help organisations to cope with any changes in customer requirements.

Awareness ($\alpha = 0,810$) contributes slightly over a tenth of all the variations and has a positive effect on the level of e-commerce. Implementation of any new technology, therefore, requires knowledge on that technology, i.e., awareness. Organisations need to follow the trends happening in e-commerce and attempt to predict the opportunities and threats emerging from them. Recognising the strategic advantages accruing from using e-commerce could assist organisations in tapping them through using the proper model.

Government commitment to e-readiness ($\alpha = 0.834$) accounting for slightly under a tenth of all variations has had a positive effect on the level of e-commerce. The belief that the negative consequences of e-commerce can be resolved through existing laws has a positive impact on e-commerce implementation. Moreover, the government can cushion the risks and then implementation could be successful. Furthermore, governments may provide appropriate infrastructure for e-commerce (technology). The study has also shown that the e-commerce level of an organisation depends on the level of e-readiness in terms of perceived government commitment to e-readiness, awareness, technological resources, and organisational commitment.

Conclusion and Recommendations

The major factors affecting e-readiness in developing countries include government commitment to e-readiness, awareness, technological resources and organisational commitment. These factors explain two-thirds of the variations in e-readiness. Collectively, these four factors predict three-quarters of the e-commerce level of an organisation, with all four factors being important in predicting the e-commerce level. It is important for organisations to evaluate these four factors while implementing their e-commerce efforts, as otherwise, it is highly likely that the implementation of e-commerce might not succeed. As the factors identified in this study only contribute only two-thirds of all the variations in e-readiness and explain only three-quarters of the e-commerce level, it is important to identify contextual factors that might predict the ability of organisations to adopt e-commerce. Moreover, the

construct was developed in South Africa and applied in Tanzania. However, the results from this study could be extended to other developing countries with caution and qualifications.

References

- Abdinoor, A., & Mbamba, U. O. (2017). Factors influencing consumers' adoption of mobile financial services in Tanzania. *Cogent Business & Management*, 4(1), 1-20.
- Alabbadi, H., & Al-Masaeed, S. (2020). The impact of e-readiness on strategic flexibility. *International Journal of Management and Enterprise Development*, 19(3), 257-272.
- Aldaś-Manzano, J., Lassala-Navarre, C., Ruiz-Mafè, C., & Sanz-Blas, S. (2009). Key drivers of internet banking services use. *Online Information Review*, 33(4), 672-695.
- Ansari, Z. A., & Alhazemi, A. (2016). An empirical study of the consumer awareness and acceptance of online shopping in Saudi Arabia. *International Journal of Development Research*, 6(2), 6918-6925.
- Arthur-Nyarko, E., Agyei, D. D., & Armah, J. K. (2020). Digitizing distance learning materials: Measuring students' readiness and intended challenges. *Education and Information Technologies*, 1-16.
- Berthon, P., Pitt, L., Cyr, D., & Campbell, C. (2008). E-readiness and trust: macro and micro dualities for e-commerce in a global environment. *International Marketing Review*, 25(6), 700-714.
- Chang, H.-L. (2009). A roadmap for adopting emerging technology in e-business: an empirical study. *Information Systems and E-Business Management*, 8(2), 103-130.
- Chen, S.-C., Chen, H.-H., & Chen, M.-F. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management & Data Systems*, 109(9), 1248-1263.
- Chong, S. (2008). Success in electronic commerce implementation: Success in electronic commerce medium-sized enterprises. *Journal of Enterprise Information Management*, 21(5), 468-492.
- Dada, D. (2006). E-readiness for developing countries: Moving the focus from the environment to the users. *The Electronic Journal of Information Systems in Developing Countries*, 27(6), 1-14.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13, 319-340.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60-95.
- Dementiev, V. E. (2019). Productivity paradox in regional dimension. *Ekonomika Regiona*, 43.
- Economist Intelligence Unit. (2001). *E-readiness rankings*. New York: Economist Intelligence Unit.
- Farokhizadeh, F., Toloie Eshlaghy, A., Radfar, R., & Shoja, N. (2019). A dynamic model of e-Readiness for SMEs to enter the e-Commerce domain. *Modern Research in Decision Making*, 4(2), 97-122.
- Gefen, D. (2000). E-commerce: the role of familiarity and trust. *Omega*, 28, 725-737.
- Glyptis, L. C., Vrontis, D., Del Giudice, M., Dimitriou, S., & Michael, P. (2020). E-Government implementation challenges in small countries: The project manager's perspective. *Technological Forecasting and Social Change*, 152, 119880.
- Goh, P. S., & Blake, D. (2021). E-readiness measurement tool: Scale development and validation in a Malaysian higher educational context. *Cogent Education*, 8(1), 1883829.

-
- Hanafizadeh, P., Nabavi, A., & Hanafizadeh, M. R. (2020). Designing an e-readiness assessment model for Iranian informatics small and medium size companies. *Commercial Strategies*, 8(44), 251-272.
- Hassen, H., Abd Rahim, N. H., & Shah, A. (2019). Analysis of models for e-commerce adoption factors in developing countries. *International Journal on Perceptive and Cognitive Computing*, 5(2), 72-80.
- Hsieh, C. T. (2001). E-commerce payment systems: critical issues and management strategies. *Human Systems Management*, 20, 131–138.
- Jnr, B. A. (2020). Examining the role of green IT/IS innovation in collaborative enterprise-implications in an emerging economy. *Technology in Society*, 62, 101301.
- Jöhnk, J., Weißert, M., & Wyrski, K. (2021). Ready or Not, AI Comes - An interview study of organizational AI readiness factors. *Business & Information Systems Engineering*, 63(1), 5-20.
- Kabanda, S., & Brown, I. (2017). Interrogating the effect of environmental factors on e-commerce institutionalization in Tanzania: a test and validation of small and medium enterprise claims. *Information Technology for Development*, 23(1), 59-85.
- Kagoya, S., & Mbamba, U. (2021). User participation approach to key attributes of e-government implementation in developing countries: A case of Tanzania. *Business Management Review*, 24(1), 87-107.
- Karanja, E. M., & Odawa, R. (2021). The determinants of e-commerce in saving and credit cooperative societies: An empirical study from Kenya. *International Journal of Business Information Systems*, 39(4), 449-473.
- Katan, R., Mustafa, S. E., & Adnan, H. M. (2018). The readiness of e-publishing among Malaysian book publishers. *Publishing Research Quarterly*, 34(3), 362-377.
- Khan, M., Khurram, D. S., & Zubair, D. S. (2020). Societal e-readiness for e-governance adaptability in Pakistan. *Pakistan Journal of Commerce and Social Sciences*, 14(1), 273-299.
- Kimiloğlu, H., & Zarali, H. (2009). What signifies success in e-CRM? *Marketing Intelligence & Planning*, 27(2), 246-267.
- Kolsaker, A., & Lee-Kelley, L. (2008). Citizens' attitudes towards e-government and e-governance: a UK study. *International Journal of Public Sector Management*, 21(7), 723-738.
- Lama, S., Pradhan, S., & Shrestha, A. (2020). Exploration and implication of factors affecting e-tourism adoption in developing countries: a case of Nepal. *Information Technology & Tourism*, 22(1), 5-32.
- Laukkanen, P., Sinkkonen, S., & Laukkanen, T. (2008). Consumer resistance to internet banking: postponers, opponents and rejecters. *The International Journal of Bank Marketing*, 26(6), 440-455.
- Lefebvre, L. A., & Lefebvre, E. (2002). E-commerce and virtual enterprises: Issues and challenges for transition economies. *Technovation*, 22, 313-323.
- Mbamba, U. O. (2014). The Relationship between E-government Status and Global Competitiveness: Evidence from 2010 Country Data. In *Promoting Trade Competitiveness in Developing Countries* (pp. 117-130). Cambridge.
- Molla, A., & Licker, P. S. (2005a). E-commerce adoption in developing countries: A model and instrument. *Information & Management*, 42, 877-899.
- Molla, A., & Licker, P. S. (2005b). Perceived e-readiness factors in e-commerce adoption: An empirical investigation in developing countries. *International Journal of Electronic Commerce*, 10(1), 83-110.

- Mutula, S. M. (2008). Africa's e-government status with developed and transitional nations. *Information Management & Computer Security*, 16(3), 235-250.
- Mutula, S. M., & van Brakel, P. (2006). E-readiness of SMEs in the ICT sector in Botswana with respect to information access. *The Electronic Library*, 24(3), 402-417.
- Naidoo, D. E., & Klopper, R. (2005). A Framework of Factors for Determining e-Readiness in Emerging Societies. *Alternation*, 12(2), 132-158.
- Ntemi, W. D., & Mbamba, U. O. (2016). The relationship between electronic readiness and corruption reduction: Countrywide data analysis. *Cogent Business & Management*, 3(1).
- Nusair, K. K., Bilgihan, A., Fevzi, O., & Cobanoglu, C. (2013). Generation Y travelers' commitment to online social network websites. *Tourism Management*, 35(1), 13-22.
- Ocloo, C. E., Xuhua, H., Akaba, S., Shi, J., & Worwui-Brown, D. K. (2020). The Determinant factors of business to business (b2b) e-commerce adoption in small-and medium-sized manufacturing enterprises. *Journal of Global Information Technology Management*, 23(3), 191-216.
- Okfalisa, O., Anggraini, W., Nawanir, G., Saktioto, S., & Wong, K. (2021). Measuring the effects of different factors influencing on the readiness of SMEs towards digitalization: A multiple perspectives design of decision support system. *Decision Science Letters*, 10(3), 425-442.
- Oreku, G. S., & Mtenzi, F. J. (2012). A review of e-government initiatives in Tanzania: Challenges and opportunities. In *Handbook of Research on E-Government in Emerging Economies: Adoption, E-Participation, and Legal Frameworks* (pp. 37-70).
- Oxley, J. E., & Yeung, B. (2001). E-Commerce readiness: Institutional environment and international competitiveness. *Journal of International Business Studies*, 32(4), 705-723.
- Pal, A., Singh, D., & Dhaliwal, R. K. (2020). Identification and relevance of e-readiness assessment tools for ICT use in agriculture. *Current Journal of Applied Science and Technology*, 93-102.
- Parasuraman, A. (2000). Technology readiness index (TRI): a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307-320.
- Rahayu, R., & Day, J. (2017). E-commerce adoption by SMEs in developing countries: Evidence from Indonesia. *Eurasian Business Review*, 7(1), 25-41.
- Ramdani, B., Kawalek, P., & Lorenzo, O. (2009). Predicting SMEs' adoption of enterprise systems. *Journal of Enterprise Information Management*, 22(1/2), 10-24.
- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). Free Press.
- Rossolov, A., Rossolova, H., & Holguín-Veras, J. (2021). Online and in-store purchase behavior: Shopping channel choice in a developing economy. *Transportation*, 1-37.
- Sahadev, S., & Purani, K. (2008). Modelling the consequences of e-service quality. *Marketing Intelligence & Planning*, 26(6), 605-620.
- Scupola, A. (2009). SMEs' e-commerce adoption: perspectives from Denmark and Australia. *Journal of Enterprise Information Management*, 22(1/2), 152-166.
- Seddon, P. B. (1997). A respecification and extension of DeLone and McLean model of information system success. *Information Systems Research*, 8(3), 240-253.
- Senyoni, W. F. (2021). Health information systems implementation: Weaving alliances in East African Community. *The Electronic Journal of Information Systems in Developing Countries*, 87(1), e12152.

- Shahrokhi, M. (2008). E-finance: Status, innovations, resources and future challenges. *Managerial Finance*, 34(6), 365-398.
- Srivastava, S. K. (2021). IT Capital in improving national innovation productivity: Understanding IT productivity paradox through cognitive path-dependence model. *Information Technology for Development*, 27(2), 314-335.
- Strohmeier, S., & Kabst, R. (2009). Organizational adoption of e-HRM in Europe: An empirical exploration of major adoption factors. *Journal of Managerial Psychology*, 24(6), 482-501.
- Szeles, M. R., & Simionescu, M. (2020). Regional patterns and drivers of the EU digital economy. *Social Indicators Research*, 1-25.
- Taylor, S., & Todd, P. A. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(2), 144-176.
- Teo, T. S., Lin, S., & Lai, K.-h. (2009). Adopters and non-adopters of e-procurement in Singapore: An empirical study. *Omega*, 37(5), 972-987.
- Tigre, P. B. (2003). E-commerce readiness and diffusion: The case of Brazil. *Digest of Electronic Commerce Policy and Regulation*, 26, 173-183.
- Wachter, R. M., & Howell, M. D. (2018). Resolving the productivity paradox of health information technology: A time for optimism. *Jama*, 320(1), 25-36.
- Wang, W.-T., Wang, Y.-S., & Liu, E.-R. (2016). The stickiness intention of group-buying websites: The integration of the commitment-trust theory and e-commerce success model. *Information & Management*, 53(5), 625-642.
- Wang, Z., & Ben, S. (2021). Effect of consumers' online shopping on their investment in money market funds on ecommerce platforms. *Information Systems and e-Business Management*, 1-22.
- Wong, P. K. (2003). Global and national factors affecting E-commerce diffusion in Singapore. *The Information Society*, 19(1), 19-32.
- Wymer, S. A., & Regan, E. A. (2005). Factors influencing e-commerce adoption and use by Small and Medium businesses. *Electronic Markets*, 14(4), 438-453.
- Yavuzalp, N., & Bahcivan, E. (2021). A structural equation modeling analysis of relationships among university students' readiness for e-learning, self-regulation skills, satisfaction, and academic achievement. *Research and Practice in Technology Enhanced Learning*, 16(1), 1-17.
- Yusif, S., Hafeez-Baig, A., & Soar, J. (2017). E-health readiness assessment factors and measuring tools: A systematic review. *International Journal of Medical Informatics*, 107, 56-64.