

E-commerce adoption within SME's in Ghana, a Tool for Growth?

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Abstract

Electronic commerce, the act of trading online, with its myriad of potential has been seldom looked at within the context of developing countries. E-commerce presents SMEs in developing economies the opportunity to adequately compete on a global stage. The exponential growth of e-commerce in developed economies further widens the financial gap between developed and developing economies. This study looks at a practical e-commerce adoption framework for Ghanaian SMEs and by extension, developing economies and looks at the net benefits that are available to current adopters. The study uses structural equation modeling, using Partial least squares (PLS) regression to analyze the data in the research. Using PLS algorithms as well as bootstrapping calculations. It combines the use of surveys (154) and interviews (38) as means of data collection. The findings of the research indicate that there is a need for legislation on e-commerce trading to regulate the trade in Ghana, with policies such as e-contracting and e-signature laws among others. Also, a current call for an expansion of the mobile payment methods within the country. For the private investor, a ripe market for logistics services. The study also proposes a simple guideline for SMEs looking to adopt or expand their e-commerce usage, that considers technological, organizational and environmental factors that come to play within e-commerce adoption

Keywords: e-commerce, technology, organization, environment, netbenefits, SMEs, Ghana.

1. Introduction

Molla and Licker (2005) argue that one of the key tools for growth in developing countries will be the adoption of e-commerce in businesses. They regard e-commerce growth to be an indicator in this modern era, of economic growth. E-commerce enables small and medium scaled businesses alike to compete on a more global stage. Chong, Pervan, & Bauer (2001) state that, this could be first at the regional level, then to the wider international market. This has made businesses, small and large alike to gravitate to a greater use of e-commerce. This is because the world economy keeps integrating into “a global village” with a reduction in trade barriers.

There is, however, a disparity between e-commerce adoption in developed and developing countries. Developing countries often lack the needed financial, legal and physical infrastructure to help boost the development, adoption, and

diffusion of e-commerce. There also exists a huge difference in cultural and business philosophies between developed and developing countries, which makes the transfer and applicability of e-commerce models designed by and for western cultures inadequate in developing countries (Molla and Licker 2005). About 91% of e-commerce occurs in developed countries, with Africa and the Middle East accounting for approximately 2.4% of the total (United Nations Conference on Trade and Development, 20015). This highly skewed distribution in e-commerce growth implies an unbalanced benefit spread (Awiagah, Kang, & Lim 2016). This phenomenon according to Odedra-Straub (2003) further widens the digital and financial divide between developed and developing countries. Frempong (2007), however, argues that with proper structuring and modeling, e-commerce could be the disruptive tool SMEs in developing countries could use to escape the “poverty cycle”. This is because traditional means of commerce have changed with the advent of the dot-com

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era. This era came with its numerous opportunities, yet to be fully exploited by developing countries.

This study focuses on the factors that may promote or discourage e-commerce adoption among SME's in Ghana and investigate the net benefits of its adoption that may lead to growth.

II. METHODOLOGY

2.1 Research Approach

The deductive approach of research is adopted. For this research its basic template is a quantitative analysis of the factors that lead to e-commerce adoption and the net benefits associated with its adoption.

The survey strategy is related to deductive approaches of research. It permits the collection of large amounts of data from a wider population in an effective and economical way (Fink, 2003). Respondents shall be asked questions ranging from perceived usefulness and adoption intentions as well as demographics and business characteristics (Cooper and Schindler, 2003). Hence adopting the survey method shall yield suitable answers from respondents.

2.2 Validity and Reliability

The following steps were undertaken to ensure the validity of this research. The questionnaire of Awiagah, et al (2016), Ghorishi, M. (2009), Kinya, K. K., & Njihia, D. M. (2013).

was replicated with revisions based on current literature relating to technological, organizational and environmental factors influencing e-commerce adoption within an SME. The results of this study indicate that their questionnaires were well structured and designed. Following this a Pilot Test was conducted with participants consisting of 3 academic professionals and 5 SME managers, consulted to establish clarity both in academia and on the business field regarding wording choice and content of the variables that were intended to be measured. This was to ensure that content validity was well established (Mitchell, 1996). The number of individuals chosen for this pilot testing was deemed appropriate (Fink, 2003).

Reliability is checked using reliability analysis which requires researchers to study the properties of the scales they are measuring and the various items that make them up. Cronbach's coefficient Alpha was calculated based on the inter-item correlation. Its values are subsequently reported. Cronbach's alpha here is a measure of internal consistency, which shows how closely related a set of items are as an adequate unit (Fornell and Larcker 1981).

III. Data analysis and interpretation

3.1 Descriptive Analysis.

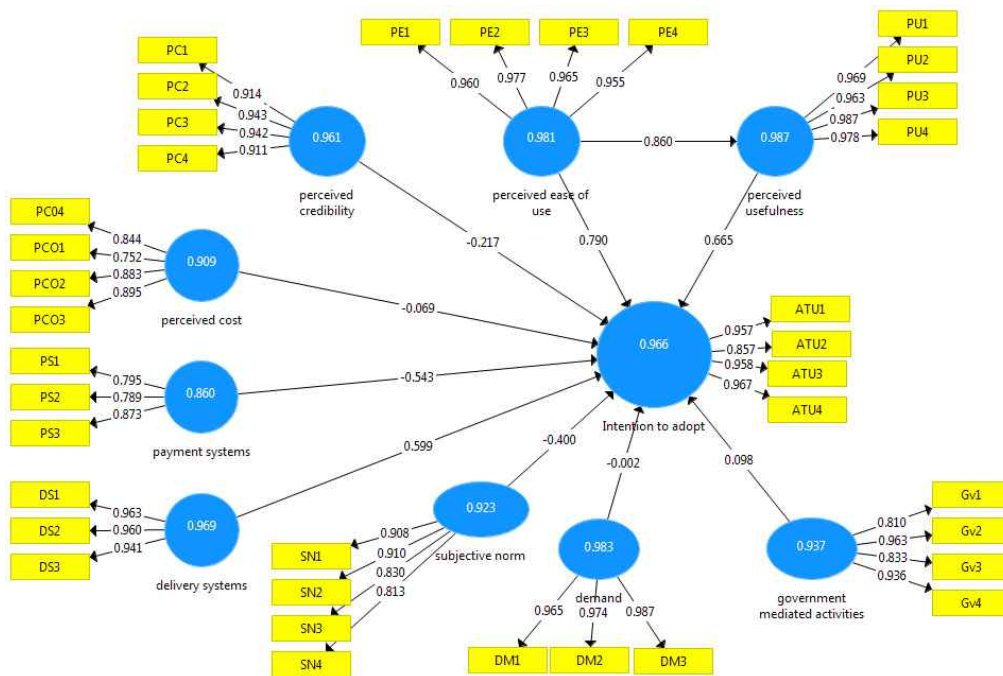
A total of 200 questionnaires were distributed among managers and owners of SMEs. 152 responds were however adopted. Out of which 114 already used e-commerce and 38 didn't use e-commerce at all.

<Table 1> Descriptive analysis of respondents

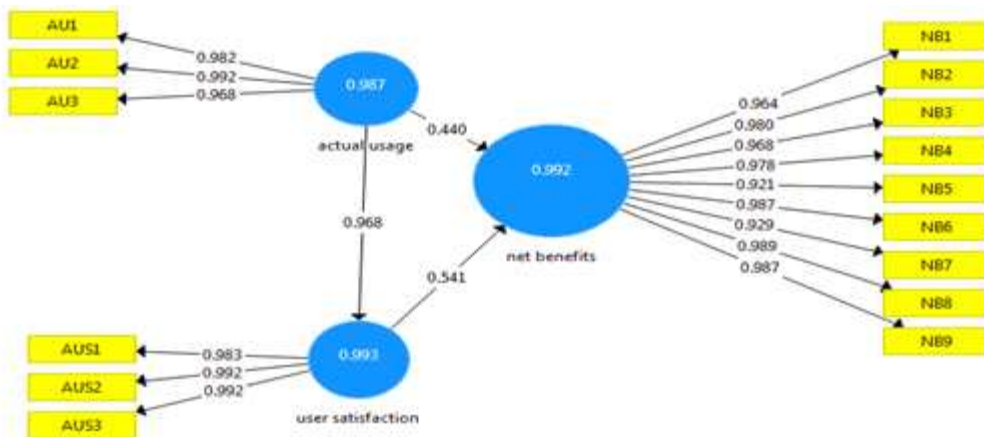
Descriptive analysis of respondents						
variable	Classification of variable	Frequency (N = 152)	Percent	Uses e-commerce		
				Yes (N = 114)	No (N = 38)	Total
position	owner	110	72.4	87	23	110
	managing director	24	15.8	12	12	24
	dept manager	18	11.8	15	3	18
gender	male	95	62.5	75	20	95
	female	57	37.5	39	18	57
age	Less than 20 years	3	2.0	3	0	3
	20 - 30 years	116	76.3	87	29	116
	31 - 40 years	33	21.7	24	9	33
education	high School	6	3.9	3	3	6
	Polytechnic	9	5.9	6	3	9

	Bachelors	116	76.3	87	29	116
	Masters	21	13.8	18	3	21
Management Training	yes	67	44.1	49	18	67
	no	85	55.9	65	20	85
Kind of Enterprise	Sole proprietorship	84	55.3	58	26	84
	Partnership	38	25.0	29	9	38
	Private Limited Company	27	17.8	24	3	27
	Others	3	2.0	3	0	3

PLS path model (drawn in smart-pls software) after PLS algorithm calculation for intention to adopt e-commerce



PLS path model (drawn in smart-pls software) after PLS algorithm calculation for net benefits of e-commerce adoption of users who have already adopted



Variable	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Perceived Usefulness	0.982364	0.987	0.950
Perceived Ease of Use	0.974746	0.981	0.930
Perceived Credibility	0.946356	0.961	0.861
Payment System	0.757743	0.860	0.672
Delivery System	0.951478	0.969	0.911
Perceived cost	0.882220	0.909	0.715
Government Mediation	0.909000	0.937	0.788
Demand	0.974655	0.983	0.952
Subjective Norm	0.890574	0.923	0.751
Intention to Adopt	0.951939	0.966	0.876
actual usage of e-commerce	0.980061	0.987	0.962
net benefits	0.991367	0.992	0.936
user satisfaction	0.989777	0.993	0.979

3.2 Assessment of Structural model

Issues of Collinearity (our independent variable being linearly predicted from the others with a high level of accuracy) that may exist within constructs were addressed by validating variance inflation factor (VIF) values. VIF quantifies how much the variance or standard errors, is inflated. These values were expected to be less than 5. All VIFs found < 5. Issues of Collinearity were duly ruled out among constructs.

The R2 value for Intention to adopt (dependent variable) for this study is 0.923 hence the combined effect of all the independent variables can cause 92.3% variation in Intention to adopt e-commerce (dependent variable).

The R2value in our second model for netbenefits (dependent variable) for this study is 0.948 hence the combined effect of all the independent variables can cause 94.8% variation in the netbenefits of e-commerce usage (dependent variable)

Q2values larger than zero for reflective endogenous latent variable indicate the path model's predictive relevance for the construct (Hair et al., 2014, pp 178). To determine these values, the blindfolding procedure smart PLS was used with omission Distance (D) value =10. Values greater than zero were obtained, indicating a high path model's predictive relevance. Intention to adopt:0.779. Perceived Usefulness: 0.680. Net benefits: 0.837. User satisfaction: 0.977

The PLS bootstrapping procedure is used to determine the

SRMR criterion. SRMR (intention to adopt): 0.035, T Statistics: 4.536 and SRMR (net benefits): 0.030 T Statistics: 5.574. We observe here that SRMR values are less than 0.08; hence we can say that the model is meeting the goodness of fit criteria.

RMS_theta (Intention to adopt) :0.034 and RMS_theta (net benefits): 0.039The model is considered a good fit because RMS_theta values below 0.12 are indicators of good fit(Henseleretal.,2014).

The chi-square test is used to determine if the sample data matches its population. The chi-square statistic of the model was X^2 (df:41,N=152)557.280,p=.00. The ratio of chi-square to degrees of freedom was not acceptable at 13.54341 (557.28/41) 9.64 (250.74/26).

The goodness-of-fit of our model provides a computational value of 0.375 for Intention to adopt and 0.428 for net benefits indicating a good model fit.

IV. HYPOTHESIS TESTING

The two research models propose a total of 11 hypothesis and 13 paths, first to predict intention to adopt, then to determine net benefits of those who had already adopted only. These hypotheses are direct relationships from the various independent variables and matched to the two dependent variables. Using PLS algorithm as well as

bootstrapping calculations, we determined the path coefficient of these relationships and P values for confirming whether the proposed relations were statistically significant.

Hypothesis Testing Result for H1 to H 11				
Hypotheses	Path	Coefficient	P Value	Supported
H1		0.665	0.000	Yes
H2a		0.790	0.000	Yes
H2b		0.860	0.000	Yes
H3		-0.217	0.064	Yes
H4		-0.069	0.187	No
H5		-0.543	0.000	yes
H6		0.599	0.000	Yes
H7		0.098	0.042	Yes
H8		-0.400	0.000	yes
H9		-0.002	0.978	No
H10a		0.440	0.000	Yes
H10b		0.968	0.000	Yes
H11		0.541	0.000	Yes

4.1 Control Variable Analysis

MGA Analysis result - R	Square values of different groups	
	R2 (Female)	R2 (Male)
Intention (gender)	0.657	0.801
	R2 (Yes)	R2(No)
Intention (Management Training)	0.734	0.587

After Multi group Analysis (MGA) was run, the results showed that more males (80.1%) were more willing to adopt and implement e-commerce usage than females (65.7%).

The more likely one had been trained on some form of effective or improved management practice the more likely they were to adopt at 73.4% and 58.7 without any training. This was interesting, especially because follow up interviews showed that only 1 out of 10 management trainings had e-commerce as an area treated, but the results showed 7.3 out of 10 adopting whether they had some form of training on e-commerce or not.

V. Conclusion and Implications

5.1 Probable reasons for the hypotheses (cost, demand) not supported

Demand: interviews with some managers and CEOs showed

that demand wasn't really expected to be of a prime issue to them now. They generally considered that e-commerce was still in its infancy within their region and they wanted to simply to learn about its structure and how to effectively operate it before the phenomenon took off. They stated that after e-commerce had become more main stream, then demand would be of major concern. Most adopters were combining e-commerce usage with their traditional methods of "pick-and-pay". Businesses who also used just e-commerce stated that they engaged in it on a part time basis. Their reasons for not pursuing it fully was similar as stated earlier, that the field of e-commerce was still new and not everyone had come to terms with online trade. These reasons could be a justifiable reason as to why demand had been insignificant. Smith, H. (1937).in his work, A Note on Time Elasticity of Demand. Stated that in a short period demand could be less elastic and become more elastic in the long run. His projection is reflected in this current study. With demand being considered to become significant in time.

Cost: Heads of SMEs, they stated that the concept of cost was not going to be a new additional major cost they needed to include in their budgets or would take a significant portion in their statement of accounts. They deemed cost to be insignificant because almost all who had already adopted e-commerce already had computers with internet access and or business smart phones which were already being used before adopting e-commerce. The existing computers had been used to keep records, perform payroll and engage in email correspondence with some clients (mainly suppliers). The mobile phones were also used in place of the fixed office phones that are prevalent in most larger corporations. The mobile phones were cheaper, more convenient and could be used for more than making and receiving calls. Since these basic technology items which were the "basic startup kits" needed existed they did not consider that they had to acquire any new infrastructure in terms of setting up to operate. Most businesses traded on SNS platforms of other existing e-commerce trading platforms which were all free. Few businesses spoke of their use of company personal websites, but they were all tech-oriented companies and didn't consider their involvement in e-commerce to bare any additional cost to them.

5.2 Contributions of this study

The adoption and extension of these two theories (TAM and TOE) within the context of e-commerce presents an upgrade of the TAM and TOE models, hence increasing their predictive power and explanatory scope. This research instrument which was developed and validated in this research can be used to study other emerging technological advancements such as Virtual reality, especially in developing economies. The methodological contribution of this study was the use of structural equation modeling, using Partial least squares (PLS) regression to analyze the data in the research. Using PLS algorithm as well as bootstrapping calculations.

This study also answers the call by Awiagah, et al (2016), to look at the benefits that may be available for initial adopters. The study also contradicts earlier findings by Iddris, F. (2012), that online sales were nonexistent in the country. With some managers interviewed indicating some involvement in online trade as at 2012

5.3 Implications

The implications of this research would be of importance to heads of SMEs, larger corporations' policymakers as well technology and service vendors such as internet service providers. There is a growing global need for regulation on trade, technology usage as well as online trading. Within the Ghanaian Community of weighty concern to heads SMEs were the general lack of enforced SME regulations. Very little effort had been made to make the public aware of the laws and regulations that exist about SME operations. Interviews conducted showed that most CEOs or managers were not aware of the existence of any rules governing the SME sector. Our research showed that, though there were regulations for SME activities, there was however NO REGULATIONS about e-commerce usage. Since e-commerce is currently gaining a strong front within the field of trade especially within the area of SNS, it is of high importance that policy makers take pragmatic steps to put and enforce regulations regarding online trading. The government loses heavily in this regard in terms of taxes since it is not regulated. Since it's a fast-growing field, incentives could be provided for adoption when regulation for its use is being

implemented. These policies could include e-contracting, e-signature laws among others that seeks the interest of business to encourage adoption and promote credibility. In that light cyber crime should be off prime concern to the nation's security agencies.

Policy makers could consider an expansion of the mobile payments that are currently used in the country to include other forms of electronic payments to ensure that Ghanaian traders could adequately reach audiences outside the borders of Ghana. Since mobile payments are confined to the borders of the country.

Government support is also needed in the adoption of e-commerce among SMEs in the wake of extreme global competition in every market area. Ensuring a nation-wide availability of internet access by the various service providers will heavily enhance adoption. The identification and incorporation of e-commerce within SMEs will eventually give the nation a competitive advantage in the growing world digital economy.

After follow up interviews with non- adopters, they mainly cited, ignorance, fear of credibility and general skepticism as their reasons for not adopting. Public education could greatly offset this.

The Theoretical foundations of this study call for a tailor-made intervention in enhancing technology adoption within SMEs. As seen in in the examples of countries such as South Africa, South Korea, China, Malaysia and Botswana.

For the private investor, there exist a huge business opportunity for logistic services within the country. The data shows that the market is ripe and ready for a nationwide delivery service. Venturing into such an area promises to be short of nothing but successful, all things being equal. Private industries also looking to develop simple, user friendly software's for management of SMEs could also cash in, since there is ready market for them within the country. Internet service providers could also look at the expansion in the provision of Wi-Fi services as opposed to the current internet data usage. It hasn't proven to be favorable within the market.

Within the research we sort to build an e-commerce adoption model for Ghanaian SMEs and by extension, developing economies. We hence have proposed and validated a predictive model for managers that can serve as a guide for managers in adopting new technologies. Due to the

various constraints faced by SMEs mainly financial, its important they consider what values they seek to gain from the adoption of e-commerce technology. Whether to improve managerial throughput or creating an organizational support system. They will then have to consider

1. Perceived Usefulness of e-commerce and the perception as to whether the organization is ready is adopt it.
2. Perceived Ease of Use and its associated knowledge of how to adequately use e-commerce technologies.
3. Payment Systems that may be available to both the business and their clientage
4. Delivery Systems the business could employ to deliver their goods
5. The stance of Government in terms of laws, taxes etc., if any
6. The overall perceived net benefits they can achieve from adoption, such as increase in sales and an expansion in customer base.
7. The ability to use an e-commerce platform or technology should also be considered.

Mangers and CEOs should therefore consider these factors in their decision making in adoption of e-commerce or expansion in e-commerce usage. It would be beneficial to SMEs to improve the areas the can and outsource the ones they can't. Example establish an effective payment system and control of the company's e-commerce website or webpage and outsource the delivery of products to clients.

REFERENCE

- Abor, J., & Quartey, P.(2010). Issues in SME development in Ghana and South Africa. *International research journal of finance and economics*, 39(6), 215-228.
- Ajzen, I.(1985). From intentions to actions: A theory of planned behavior. *In Action control*, 11-39). Springer Berlin Heidelberg.
- Brynjolfsson, E., & Smith, M. D.(2000). Frictionless commerce? A comparison of Internet and conventional retailers. *Management science*, 46(4), 563-585.
- Deshmukh, S. P., & Naware, A. M.(2014). Mobile Money: M-payment System for India. *International Journal of Computer Science & Information Technologies*, 5(2), 2672.
- Dholakia, R. R., & Kshetri, N.(2004). Factors impacting the adoption of the Internet among SMEs. *Small Business Economics*, 23(4), 311-322.
- Dillman, D. A.(1978). *Mail and telephone surveys: The total design method 19*. New York: Wiley.
- El-Nawawy, M. A., & Ismail, M. M.(1999, June). *Overcoming deterrents and impediments to electronic commerce in light of globalisation: the case of Egypt*. In 9th Annual Conference of the Internet Society, INET (Vol. 99).
- Elkin, N.(2001). *Online privacy and security in Latin America*.
- Fink, A.(2003). *The survey handbook* (Vol. 1). Sage.
- Fischer, E., & Reuber, R.(2000). *Industrial clusters and SME promotion in developing countries* (No. 3). Commonwealth Secretariat.
- Fornell, C., & Larcker, D. F.(1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.
- Turban, E., King, D., Lee, J., & Viehland, D.(2002). *Electronic commerce: A managerial perspective 2002*. Prentice Hall: ISBN 0, 13(975285), 4.
- Turban, E., King, D., McKay, J., Marshall, P., Lee, J., Viehland, D.(2008), *Electronic*
- Turner, C.(2000). *The information e-economy: business strategies for competing in the digital age*. Kogan Page Limited.
- Venkatesh, V., & Davis, F. D.(2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D.(2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Walsham, G.(2002). Cross-cultural software production and use: a structural analysis. *MIS quarterly*, 359-380.
- Worldbank(2016) *World Development Indicators: Power and communications*. Available at: <http://wdi.worldbank.org/table/5.11> (accessed20February2018).
- Young, D., & Benamati, J.(2000). Differences in public web sites: The current state of large US firms. *J. Electron. Commerce Res.*, 1(3), 94-105.