Embracing Innovative Technology for Low Cost Housing: A Kenyan Perceptive

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Abstract: In the recent past, all sectors of the economy have been evolving through adoption of new technologies. Despite the fact that many economic sectors in Kenya have embraced e –commerce, housing sector still lags behind. This study sought to investigate factors influencing adoption of e—commerce in housing sector by determining knowledge of e-commerce benefits, technical and IT skills and cost of implementing e-commerce among 100 house owners in Nairobi County of Kenya. Simple random sampling was employed to select the respondents. Descriptive research design was used to explain the phenomenon while correlation was used to establish relationship among variables. Results showed that knowledge of e-commerce benefits, IT knowledge and skills and cost of implementing the e-commerce, significantly influenced adoption of e-commerce technology in the Kenyan housing sector. IT infrastructure and technical skills was found to have less influence in adoption of ecommerce in the housing sector. More training should be done to house owners, youths and youth enterprises to invest in housing sector while IT specialists and web developers should develop and market a website where both commercial and residential tenants seeking housing can easily access them.

Keywords: Cost, Technology, Knowledge, Infrastructure, Technical Skills.

Study Overview

The advent of the technological era has delivered a latent opportunity for entrepreneurs and other small and medium enterprises to create more value-adding activities (Jones, Hecker, &Holland, 2003). The current world is run is by technology and therefore it is widely acceptable that businesses should embrace e-commerce for them to remain competitive (Van Akkeren & Cavaye 1999). E-commerce is a technology that facilitates buying and selling of goods and services using the online platforms. In Kenya the housing sector comprises government and private owners, who supply housing services to tenants. The services offered in this sector falls under two main categories namely; residential and commercial housing. Although housing is one of the major problem experienced in many countries due to increased human population. Less attention has been given to use of technology to improve access and secure houses.

Locally, in keya there are the country has three well-known brands that offer e-commerce services namely: Jumia, KiliMall and OLX. The three mentioned brands mainly deal with retails products, electronics, cars and fashion products. Although internet connectivity in Kenya is almost hitting 60% only 30% of Kenyans are willing

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Citation: Mwangi, Patrick & Wasike, Jotham

Received: 5th September 2018

Accepted: 26th July 2019

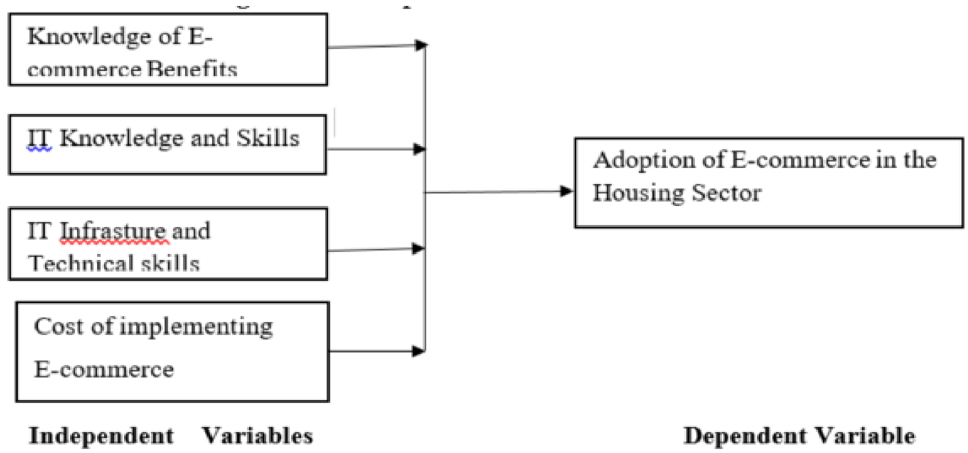
Published: 18th October 2019

to buy goods and services online (Muli, 2018) and less attention has been given to adoption of e-commerce in the housing sector despite the increasing rate of population and associated housing problem.
In Kenya, retail and hotel industry are leading in adoption of e-commerce. The "shop online" trend has significantly reduced time spent when shopping and created convenience for people with tight schedules. Despite the challenges associate with the online shopping, Kenyans are still convinced that, e-commerce is the way to go; however, adoption of e-commerce in the housing sector is very low despite its enormous benefits. This study investigated the factors influencing the adoption of e-commerce in the Kenyan Housing sector by determining the extent to which knowledge of e-commerce benefits, IT knowledge and skills, IT infrastructure and technical skills as well as the extent to which the cost of implementation of e-commerce among house owners influenced adoption of e-commerce in the Kenya housing sector.

Theoretical Framework
The study was grounded on three main theories as explained. First is the resource-based theory. According to the resource based theory, organizations with more strategic resources derive more competitive advantage over organizations that do not. This theory argues that organizations achieve competitive advantage over their competitors from value creation and implementation of the various organizational strategies through effective use of its core resources (Barney, 2014). This theory helped in derivation of the first and the fourth objective of the study (knowledge of e-commerce benefits and cost of implementation). The second theory was the theory of Planned Behaviour (TPB). This theory was developed by Ajzen in the year 1991 to explain behaviour for technology-related services and products. The theory suggests behavioural intention is a central factor in human behaviour is, which is affected by attitude towards behaviour, subjective norm, and perceived behavioural control (PBC) (Ajzen, 1985, 1991, 2002). Subjective norm expresses the perceived organizational or social pressure of a person who intends to perform the behaviour in question. PBC reflects a person ' s perception of the ease or difficulty of implementing the behaviour in question and it concerns beliefs about the presence of control factors that may facilitate or hinder their behaviour. This theory was used to develop the second objective of the study IT knowledge and skills. Diffusion of Innovations Theory was the last theoretical model and it was developed by E.M. Rogers in 1962. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible. The theory was used to develop the first objective of the study.

Conceptual Framework
A conceptual frame work is a diagrammatic representation of the relationship of the various dependent and independent variables that are going to be investigated (Taylor, Bogdan & DeVault, 2015).

Figure 2: Conceptual Framework



Empirical Review

Karime (2013), examined the factors influencing adoption of e-commerce among youth entrepreneurs in Nakuru Town, Kenya. The study used a sample of 198 youth entrepreneurs. It was established that a number of entrepreneurs had adopted various aspects of e-commerce and that perceived benefits, security/privacy concerns and internet access significantly influenced adoption of e-commerce. Adoption rate was expected to be high since the target population was the youth aged between 18 to 35 years. Macharia (2009) investigated factors affecting adoption of e-commerce in SMEs in Kenya and reported that Small and Medium-sized Enterprises (SMEs) were rapidly adopting the electronic commerce (e-commerce), to enable them to compete with their larger counterparts. However, the benefits have not been realised in SMEs in developing economies like Kenya due to the slow adoption of e-commerce. The study established that there was a positive relationship between costs of e-commerce implementation, Information Technology (IT) skills and training, with e-commerce adoption by Small and Medium Enterprises (SMEs). Kenneth, et al (2012) examined the factors affecting adoption of electronic e-commerce among small medium enterprises in tours and travel firms in Nairobi, Kenya focusing on the effect of leadership styles, infrastructure, resources, and competition on the adoption of e-commerce among SMEs in Kenya. Three hundred and fifty tours and travel firms were sampled. Results showed majority of Tour and Travel firms had adopted e-commerce in their daily transactions and that infrastructure, leadership style, competition, resources and positioning on the adoption of electronic commerce significantly influenced adoption of e-commerce among the travel agencies.

Alrousan (2015) examine the adoption of E-commerce by travel agencies in Jordan and reported that travel agencies that had not adopted e-commerce were regarded as slow adopters of e-commerce, lagging far behind the developed countries. Results showed that compatibility, trialability, employees' IT knowledge, top management support, manager's attitude, and customer pressure were insignificant predictors of any of the e-commerce adoption levels.

Aljowaidi (2015) carried out a study to examine the factors that were influencing adoption of e-commerce among Saudi retailers and reported that lack of government initiatives, legal frameworks, inadequate external ICT infrastructure, and low e-readiness among local trading partners, poor physical infrastructure, and lack of e-payment methods were barriers to adoption of e-commerce. This study investigated factors affecting adoption of e-commerce in housing sector in Kenya.

Methodology

The study used descriptive and correlational research design. The descriptive research design was use to explain the phenomenon of e-commerce adoption while correlational design was used to establish the relationship between the selected variables and the dependent variables. 100 landlords were randomly sampled from Nairobi County, Kenya. Primary data was collected using questionnaires with open and closed ended questions and interview. Questionnaires were administered through drop and pick procedure. Data was cleaned and analyzed using SPSS version 23 and results presented in form oftables.

Results and Discussion

Table 1: ***Age of the Respondents***

Tables 1 and 2 below presents distribution of respondents by age and level of education respondents respectively

Age	Number of Respondents	Percentage
20-30 years	1	1.1%
31-40 years	4	4.2%
41-50 years	8	8.4%
51-60 years	20	21.1%
61-70 years	27	28.4%
71 years and above	35	36.8%
Total	**95**	**100%**

Table 2: Level of Education for the Respondents

Age	Number of Respondents	Percentage
Primary level	30	31.6%
Secondary level	33	34.7%
Diploma	17	17.9%
Degree	10	10.5%
Postgraduate level	5	5.3%
Total	**95**	**100%**

The findings revealed that majority of the house owners had not gone beyond secondary school level about 66.2% of the respondents.

Knowledge of E-commerce Benefits

76% of respondents strongly agreed that knowledge of e-commerce benefits influenced adoption of e-commerce in the housing sector (table 3). Multiple regression analysis was carried out on the measures and $R2$ value of 0.522 as obtained for the measures of knowledge of e-commerce benefits (Table 4). There was a strong positive relationship between benefits of e-commerce and it adoption (r=0.72). These results indicate that knowledge of e-commerce benefits influences 52.2 % of the decision to adopt e-commerce in the housing sector.

Table 3: Descriptive Analysis of Benefits of E-commerce Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	76	76.0	80.0	80.0
	Agree	19	19.0	20.0	100.0
	Total	95	95.0	100.0	
Missing	System	5	5.0		
Total		100	100.0		

Table 4: Regression Analysis of Benefits of E-Commerce Knowledge

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.0.722[a]	.522	-.008	.487

a. Predictors: (Constant), Knowledge of E-commerce

IT Knowledge and Skills

Table 5: Descriptive Analysis of IT Knowledge and Skills

IT Knowledge and Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	60	58.3	63.2	63.2
	Agree	27	26.2	28.4	91.6
	Neutral	8	7.8	8.4	100.0
	Total	95	92.2	100.0	
Missing	System	8	7.8		
Total		103	100.0		

Table 6: *Regression Analysis of IT Knowledge and Skills*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.751[a]	.5625	-.001	.454	.737

58.3 % of respondents strongly agreed while (26.2%) agreed that IT knowledge and skills significantly influenced adoption of e-commerce in the housing sector. Regression analysis model was carried out on the measures and $R2$ value of 0.5625 obtained (Table 6). These results indicated that IT Knowledge and Skills influenced 56.25 % of the decision to adopt e-commerce in the housing sector. There was a strong relationship between IT knowledge and skills to adoption of e-commerce, r= 0.751e analysis also showed that the relationship between IT knowledge and skills to adoption was very strong r= 0.751

IT Infrastructure and Technical Skills

Majority of the respondents 53% strongly disagreed that IT infrastructure and Technical Skills influenced adoption of e-commerce in the housing while 37% disagreed (Tables 7 and 8). From regression analysis it was clear that IT infrastructure and Technical skills only influenced 11.8% decision on adoption of e-commerce in the housing sectors. Thus there was a weak positive relationship between the variable and adoption of e-commerce r = 0.343.

Table 7: Descriptive Analysis of Infrastructure and Technical Skills

IT Infrastructure and Technical Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	1.0	1.1	1.1
	neutral	4	4.0	4.2	5.3
	disagree	37	37.0	38.9	44.2
	strongly disagree	53	53.0	55.8	100.0
	Total	95	95.0	100.0	
Missing	System	5	5.0		
Total		100	100.0		

Table 8: Regression Analysis of Infrastructure and Technical Skills

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.343[a]	.118	.088	.429	.867

a. Predictors: (Constant), It Infrastructure and technical skills, Knowledge of ecommerce benefits, IT knowledge and skills

b. Dependent Variable: Adoption of Ecommerce

Cost of Implementing E-commerce

Table 9: Descriptive Analysis of Cost of 1mplementing E-commerce

Cost of implementing e-commerce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	71	71.0	74.7	74.7
	Agree	22	22.0	23.2	97.9
	neutral	2	2.0	2.1	100.0
	Total	95	95.0	100.0	
Missing	System	5	5.0		
Total		100	100.0		

Table 10: Regression Analysis of Cost of Implementing E-commerce

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.85[a]	.7225	.016	.450	2.747

a. Predictors: (Constant), Cost of implementing e-commerce

b. Dependent Variable: Adoption of Ecommerce

71% of the respondents strongly agreed that cost of implementing e-commerce significantly influenced adoption of e-ecommerce in the housing sector. Regression analysis showed that 72.25% adoption decision was influenced by the cost aspect while 27.75% indicated that adoption of e-commerce was influenced by other factors (Table 9 and 10). There was a strong positive relationship between cost and adoption of e-commerce r=0.85.

Conclusions and Recommendations

Results of this lead to a conclusion that knowledge of e-commerce benefits, IT knowledge and skills, cost of implementing e-commerce significantly influenced adoption of e-commerce in the Kenyan housing sector. There is need to educate house owners on the benefits that are likely to accrue as a result of adopting e-commerce and that youth be encouraged to invest in housing sector through utilization youth funds and well as mobilization of resources through table banking initiatives. It is also recommended that IT web developers should take this opportunity to develop and market a website where commercial and residential tenants can seek housing facilities. The website should have photos of the houses, their prices, and location, contact of the owners or the caretaker and a reservation system.

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