Improved E-Business Through Effective Knowledge Management Using The Business-To-Consumer E-Business Model

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Abstract

This paper was focused on establishing the relationship between effective Knowledge Management practices and improved e-business. The use of Information and Communications Technology (ICT) to improve Knowledge Management has gained recognition, the main factors being the push for successful innovation, having devoted and motivated individuals, and paying attention to a wide range of management activities and attitudes such as the ability to scan, predict and respond to the dynamic business environment. In the last twenty years, the importance of Knowledge Management in the business world has been ignored. This paper, therefore, aims to establish the effect of Effort Expectancy, Facilitating Conditions, Performance Expectancy, Social Influence, Relative Advantage, Complexity, Compatibility, Observability, Collaborative System, Management Software, Human Capital, and Relational Capital on effective Knowledge Management in the Business-to-consumer (B2C) e-business retail industry in Nairobi County, Kenya.

The study was based on the unified theory of acceptance and use of technology and the innovation diffusion theory. It entailed a descriptive cross-sectional research design. A total of 138 Information Technology employees of online retailers in Kenya respondents were sampled. A structured questionnaire was used for data collection. The data was then analyzed using both descriptive and inferential statistics. Structural Equation Modelling (SEM) was then used to validate the model.

The study found that all the factors have a significant and positive relationship with knowledge management in retail online stores. It was found that there was a significant effect of complexity, compatibility, effort expectancy, relational capital, human capital, management software, collaborative system, facilitating conditions, performance expectancy, social influence, relative advantage and information systems success factors with knowledge management in the retail industry. The results also show that all the factors explain 72.6% of the proportion in knowledge management in retail online stores in Kenya, as the overall R^2 value was 0.726.

The study concluded that there were factors that influenced e-business adoption for knowledge management in the retail industry. These factors included e-business facilitating and individual factors, organizational usage factors, organizational structure factors and information systems success factors. The study also concluded that these factors all had a significant influence on knowledge management. The study recommends an awareness and training policy for all staff in the retail industry, which will emphasize the importance of ebusiness factors that were found to contribute to knowledge management.

Keywords: e-business, Business-to-consumer (B2C), Knowledge Management (KM), organization, retail

1.0 Introduction

1.1 Background of the Problem

The development of the technological age from the early 1990s has brought about extraordinary inventions that have tremendously changed the way humans communicate and conduct business. According to Gouvea, Kapelianis and Kassicieh (2018), the development of Information and Communications Technology (ICT) coupled with increased globalization and liberalization resulted in the emergence of various new ICT technologies, one being the internet/web. The Internet has brought about multiple revolutions in how business is carried out. This technology explosion has brought about new ways to learn about and track customers, tailor services to meet the customer needs and communicate with the customers (Lariviere et al., 2017).

The ever-changing technological landscape has aided e-business to become one of the most lucrative and fastest-growing business sectors within the information technology sphere. For instance, according to Sani, Khristiana, Zailani and Husain (2020), the United States and China's combined e-business sales reached 1.6 trillion United States Dollars (USD) in 2017. Cross-border e-business sales are set to achieve an average annual growth rate of more than 25% through 2025. From the same study, the Asia-Pacific e-business market is predicted to be twice the size of Western Europe and North America combined. By 2025, global e-business sales will grow by more than 141% (Xu & Gao, 2021). Companies need to embrace ICT to become competitive in this growth market.

The global trend can also be seen in the African continent. In the past decade, mobile phone usage in Sub-Saharan Africa has increased annually by 49%, setting the continent at 60% mobile phone coverage. This is a massive continental leap from the 10% mobile phone

coverage in the late nineties that was concentrated in North Africa (Evans, 2019). Sawe (2019) indicates that 27% of firms in Kenya sold their products online. The study further identified that 32.1% of the companies could not sell online as their products were not suited for sale via the Internet. Chepkwony (2018) further notes the growth of e-business is established through the youth starting their online businesses, as they find it more accessible than the brick-and-mortar enterprises.

Kenya's digital evolution has been accelerated by the increased access to mobile broadband and fiber optic cable connections in households. This is coupled with a drastic decrease in the cost of smartphones and tablets, driven by their high demand, that have provided mobile usage options for citizens in significantly differentiated income levels (Wildermuth, 2018). However, e-business is relatively a new way of doing business for most retail businesses. Few firms have adopted e-business for various reasons, including lack of knowledge about the benefits and fear of adopting new technology.

1.2 Statement of the Problem

Knowledge Management is essential in handling information and resources efficiently within an organization, thus gaining a competitive advantage (Chepkwony, 2018). Such acts require changes in organizational culture, technologies, and techniques as the interaction between these factors and the people within the organization allows for the successful management of knowledge. Several organizations worldwide have implemented Knowledge Management, yet many organizations, especially within emerging markets, do not know about it and the power it possesses (Kianto, Saenz & Aramburu, 2017).

The implementation of e-business applications is generally seen as an effective means of improving Knowledge Management.

In the last twenty years, the importance of Knowledge Management in the business world has been ignored. In addition, there is minimal documentation on business-to-consumer e-business and Knowledge Management in Kenya. However, there has been a significant growth of ebusinesses in the last few years. There has been an establishment of e-business hubs in Kenya, with very few performing to any desired level. Some of these companies include; African Lakes Technologies, e-business Directions, Virtual City, and InsureAfrica. E-sokoni is the only company to have survived this trend and managed to operate successfully. The African e-Forum conference recognized that the level of awareness among businesses is increasing and that certain companies were already piloting some types of e-business to local and international markets to improve their Knowledge Management and overall organizational success.

1.3 Study Objective

This research was part of a broader study on the design of the B2C e-business model for Knowledge Management in the Kenyan retail industry. Since the emergence of Knowledge Management, there was no clear business-to-consumer e-business framework or standardized methodology for improving Knowledge Management in the retail sector, including in Kenya. Therefore, the identification of the characteristics that lead to successful Knowledge Management through B2C e-business became imperative. To address this gap, this study aimed at discussing ways of improving e-business through effective Knowledge Management using the B2C e-business model for Knowledge Management.

2.0 Literature Review

2.1 Theoretical Framework

E-business involves any form of economic activity conducted over computer-mediated networks. Business-to-Consumer (B2C) e-business is when businesses trade with consumers (Mutava, 2019). Knowledge Management contains aspects such as storage, evaluation, and knowledge sharing (Alkhaffaf, 2018). Knowledge Management is, therefore, the process of creating, sharing, using, and managing information within an organization (Nisar, Prabhakar & Strakova, 2019). Okayo (2019) reported that e-business has not been adopted as anticipated and has not reached its full potential since the uptake of internet technologies in businesses has been slow, as many still prefer traditional means to search for information and communicate with others.

As per Ziyae and Sadeghi (2020), e-business is very likely related to improved Knowledge Management; this can be linked to the growth of an organization. Organizational support is established when an organization creates an opportunity to go through an "objectification stage" whereby the stakeholder can test the feasibility of an idea by communicating it to the subordinates and peers. The idea would need to be understood and agreed upon for the support to generate a new implementation within an organization and industry.

The study's theoretical foundations are based on the unified theory of acceptance and use of technology and innovation diffusion theory. The models related to the study, including the collaborative e-business process framework for Knowledge Management by Alva (2020) and DeLone and McLean information systems success model by DeLone and McLean (2003), were also used in the design of the B2C e-business model for Knowledge Management.

The models cover e-business and Knowledge Management from different contexts, such as employees and organizational structures, which assume the existence of policy frameworks to manage e-business Alva, 2020; DeLone & McLean, 2003; Lai et al., 2006). This research sought to explore the influence of e-business on Knowledge Management, an area that is underresearched, especially from the Kenyan context, in a more extensive way. A summary of the research gaps based on the models reviewed is shown in Table 1.

Table 1: Research Gaps

| Theory/Model | Borrowed Constructs | Research Gaps |
|---|--|--|
| Unified Theory of Acceptance and Use of Technology | Effort expectancy Facilitating conditions Performance expectancy Social influence | Focuses on e-business facilitating and individual factors only |
| Innovation Diffusion Theory | Relative advantage Complexity Compatibility Observability | Focuses on e-business organizational usage factors only |
| Collaborative E-business Process Framework for Knowledge Management | Collaborative system Management software Human capital Relational capital Structural capital | Focuses on e-business organizational structure factors only |
| DeLone and McLean Information Systems Success Model | Information quality System quality Service quality User satisfaction | Focuses on information systems success factors only |
| Organizational E-business Readiness Model | Relative advantage Management software Organizational capital Market forces | The model combines readiness and information success factors but leaves out the aspects of the theories to be used in this study |

2.2 Empirical Literature Review

2.2.1 Effects of E-Business Facilitating and Individual Factors

The Unified Theory of Acceptance and Use of Technology by Venkatesh and Zhang (2010) is believed to be the most rigorous method in evaluating and predicting how the end-user will perceive a technology. This model is based on four major factors of usage and intention (expected performance, social influence, underlying conditions and expected effort). The model constructs are moderated by gender, age, experience, and voluntariness of use. This theory also posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system, with the intention to use serving as a mediator of actual behavior. In the current study, this theory was adopted to evaluate user acceptance of information systems based on whether adoption of e-business will improve or decrease the Knowledge Management of an organization.

Hypothesis 1: E-business facilitating and individual factors positively influence effective Knowledge Management.

2.2.2 Effects of E-Business Organizational Usage Factors

Innovation Diffusion Theory (IDT) by Rodgers is a model that explains the process by which innovations are assimilated by consumers, in this regard, e-business. Innovation diffusion theory considers a set of attributes associated with innovations that affect their rate of widespread adoption. Rogers defines these attributes as; relative advantage, compatibility, complexity, trialability and observability. This theory helped to account for factors that helped integrate technology in Knowledge Management or those that hindered combining Knowledge Management with technology in companies.

Hypothesis 2: E-business organizational usage factors positively influence effective Knowledge Management.

2.2.3 Effects of E-Business Organizational Structure Factors

The Collaborative E-business Process Framework for Knowledge Management model by Alva (2020) argues that collaboration through the organization can enable sharing information using the intellectual capital approach. Each organization needs a specific database to obtain its workflow structure. The organization needs both common and complex problems and the expertise that exists in the environment. Through this, the organization will improve the processes and issues like spending excessive time looking for information, documents, contents, or people expertise. Knowledge Management is present in each activity of people, organizations, and its value is in obtaining itself, registering itself, analyzing itself and finally giving to other users. From this model, the implementation of e-business applications is generally seen as an effective means of improving Knowledge Management.

Hypothesis 3: E-business organizational structure factors positively influence effective Knowledge Management.

2.2.4 Effects of Information Systems Success Factors

The DeLone and McLean Information Systems Success Model by DeLone and McLean (2003) attempts to explain the success of information systems, including e-business. While there are many new technological improvements, the dependent variable remains the success of an information system. The model can be applied to e-business success measurement.

The six success scopes of the DeLone and McLean information system success model can also be applied to the e-business environment. The E-business/business success model consists of three classes of variables: beliefs, attitudes and behaviors. Information quality, system quality, service quality and perceived value represent beliefs, measures of user satisfaction represent attitudes, and purpose to re-use centers on behavioral measures.

Hypothesis 4: Information systems success factors moderate the relationship between ebusiness facilitating and individual factors and effective Knowledge Management.

Hypothesis 5: Information systems success factors moderate the relationship between ebusiness organizational usage factors and effective Knowledge Management.

Hypothesis 6: Information systems success factors moderate the relationship between ebusiness organizational structure factors and effective Knowledge Management.

2.2. 5 Conceptual Framework

The B2C e-business model for Knowledge Management is derived from the existing models reviewed, the theoretical foundations and the literature review.

Figure 1 shows how each of the three independent variables: e-business facilitating and individual factors, e-business organizational usage factors and e-business organizational structure factors influence directly or indirectly Knowledge Management; information quality, system quality, service quality and user satisfaction are moderating variables. The first independent variable, e-business facilitating and individual factors, is measured using effort expectancy, facilitating conditions, performance expectancy and social influence. The second independent variable, e-business organizational usage factors, is measured using relative advantage, complexity, compatibility and observability while the third independent variable, e-business organizational usage factors, is measured using relative advantage, complexity, compatibility and observability while the third independent variable, e-business organizational usage factors, is measured using relative advantage, complexity, compatibility and observability while the third independent variable, e-business organizational structure factors, is measured using the collaborative system, management software, human capital, relational capital and structural capital. The dependent variable, Knowledge Management, is measured using better decision making, quick solutions and better and fast target achievement.

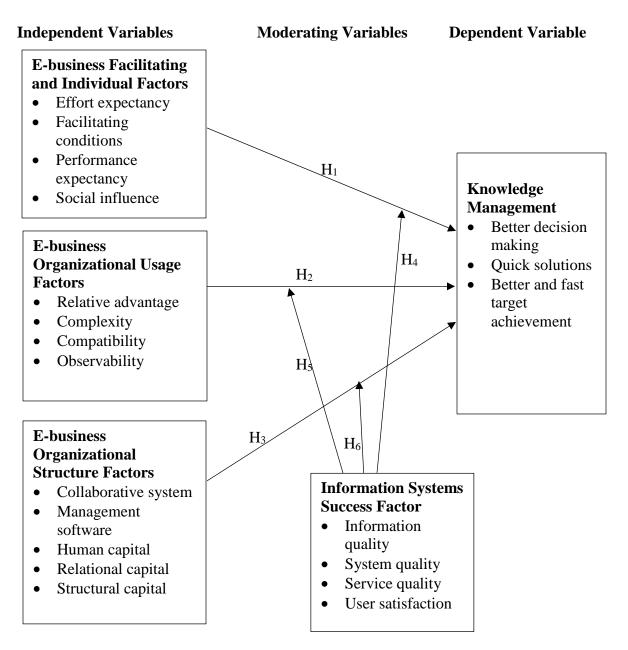


Figure 1 Theoretical Research Model: Knowledge Management

Business-to-Consumer E-Business Model for

3.0 Methodology

The study adopted a descriptive cross-sectional research design. Quantitative data relating to the variables was collected using a structured questionnaire and statistical analysis was carried out to determine the findings of the study. The study targeted the staff in the ICT department of the top 10 online retailers in Nairobi County, Kenya. The total population from the ICT departments from the stores was 346. This study targeted this population because it had the people having knowledge desired by the study.

A stratified random probability technique was used to categorize the respondents according to the retail store they work for. Random selection of the respondents was then made within the categories. This sampling method ensured that a wider representation of the target population was selected to avoid obvious biases that might have resulted from the categories. The sample size of 138 used in the study was calculated using the Cochran formula.

Data collected was cleaned, coded, and systematically organized to facilitate analysis using Statistical Package for the Social Sciences (SPSS) version 27.0 for subsequent descriptive statistical analysis to achieve accuracy, consistency, uniformity, and completeness. The data was presented using tables, graphs and charts.

4.0 Findings and evaluation

4.1 Demographic Information

The demographic information sought by the study included gender, highest education level and age bracket. The results show that 56% of the respondents in the online retail stores in Nairobi County were male while 44% were female, indicating that males slightly preferred e-business in the online retail stores. The results also show that 46% of the respondents had attained a Bachelor's degree, 33% had attained a Master's degree and 21% had a Diploma. The age distribution of the respondents was as follows: 40% were aged 36-45 years, 29% were aged 46-55 years, 18% were aged 26-35 years and 8% were aged more than 55 years. The findings indicate a slightly average-aged population in the ICT department of the online stores.

4.2 Regression Analysis

Simple linear regression analysis was done to determine the influence of a single independent variable on the dependent variable (Knowledge Management). The results show that all the factors have a significant and positive relationship with Knowledge Management in online retail stores in Kenya, as p = .000. The results are shown in Table 2.

| Independent Variable | Dependent Variable | R | R ² | p value | F Value |
|-------------------------|----------------------|------|----------------|---------|---------|
| Effort Expectancy | Knowledge Management | .496 | .246 | .000 | 37.451 |
| Facilitating Conditions | Knowledge Management | .520 | .271 | .000 | 42.733 |

 Table 2: Simple Linear Regression Analysis

| Performance Expectancy | Knowledge Management | .513 | .263 | .000 | 41.025 |
|------------------------|----------------------|------|------|------|--------|
| Social Influence | Knowledge Management | .676 | .457 | .000 | 96.596 |
| Relative Advantage | Knowledge Management | .545 | .297 | .000 | 48.682 |
| Complexity | Knowledge Management | .471 | .222 | .000 | 32.837 |
| Compatibility | Knowledge Management | .551 | .304 | .000 | 50.194 |
| Observability | Knowledge Management | .602 | .362 | .000 | 65.258 |
| Collaborative System | Knowledge Management | .533 | .284 | .000 | 45.586 |
| Management Software | Knowledge Management | .515 | .266 | .000 | 41.586 |
| Human Capital | Knowledge Management | .612 | .374 | .000 | 68.802 |
| Relational Capital | Knowledge Management | .652 | .425 | .000 | 84.966 |

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The results also show that the T values are well above 1.96, testing at 5% significance level and 95% confidence level. This confirms that all the independent variables significantly influence Knowledge Management in online retail stores in Kenya. The results are shown in Table 3.

| Variable | Constant | Unstandardized coefficients | | Standardized T coefficients | | <i>p</i> value |
|-------------------------|----------|--------------------------------|----------|--------------------------------|-------|-------------------|
| | | В | Std. Err | Beta | | |
| Effort Expectancy | 1.639 | .579 | .095 | .496 | 6.120 | .000 |
| Facilitating Conditions | 1.960 | .549 | .084 | .520 | 6.537 | .000 |
| Performance Expectancy | 1.941 | .539 | .084 | .513 | 6.405 | .000 |
| Social Influence | 1.246 | .726 | .074 | .676 | 9.828 | .000 |
| Relative Advantage | 1.692 | .593 | .085 | .545 | 6.977 | .000 |
| Complexity | 1.232 | .670 | .117 | .471 | 5.730 | .000 |
| Compatibility | .907 | .788 | .111 | .551 | 7.085 | .000 |
| Observability | .192 | .927 | .115 | .602 | 8.078 | .000 |
| Collaborative System | .466 | .835 | .124 | .533 | 6.752 | .000 |
| Management Software | 1.477 | .613 | .095 | .515 | 6.449 | .000 |
| Human Capital | 1.304 | .738 | .089 | .612 | 8.295 | .000 |

 Table 3: Summary of Regression Coefficients

| Relational Capital | 1.333 | .662 | .072 | .652 | 9.218 | .000 |
|--------------------|-------|------|------|------|-------|------|

Multiple linear regression on how the constructs collectively influence Knowledge Management in online retail stores in Kenya is as shown in Table 4. The results show that all the factors explain 72.6% of the proportion in Knowledge Management in online retail stores in Kenya, as the R^2 value is 0.726. This means that other factors not studied in the present study contribute to 37.4% of the proportion in Knowledge Management in online retail stores in Kenya.

Table 4: Multiple Linear Regression Analysis

| Mod el | R | R Squar e | Adjuste d R Square | Std. Error of the Estimat e | R Squar e Chang | Change F Chang e | e Statis df 1 | df 2 | Sig. F Chang e |
|-----------|-----------|-----------------|--------------------------|---|--------------------------|---------------------------|---------------------|---------|----------------------|
| 1 | .852 a | .726 | .695 | .57881 | е .726 | 22.98 6 | 12 | 10 4 | .000 |

a. Predictors: (Constant), Relational Capital, Management Software, Effort Expectancy, Relative Advantage, Complexity, Collaborative System, Facilitating Conditions, Human Capital, Social Influence, Compatibility, Observability, Performance Expectancy

The ANOVA findings indicate that the multiple regression model is reliable. This is because the study found a significant value of 0.000 which is less than 0.05 at 5% significance level with F value of 22.986. Therefore, the regression model is reliable in explaining the relationship between the independent variables in relation to Knowledge Management in online retail stores in Kenya. The ANOVA findings are shown in Table 5.

 Table 5: ANOVA Test Findings

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|-------------------|-----|----------------|--------|-------------------|
| 1 | Regression | 92.408 | 12 | 7.701 | 22.986 | .000 ^b |
| | Residual | 34.842 | 104 | .335 | | |
| | Total | 127.250 | 116 | | | |

a. Dependent Variable: Knowledge Management

b. Predictors: (Constant), Relational Capital, Management Software, Effort Expectancy, Relative Advantage, Complexity, Collaborative System, Facilitating Conditions, Human Capital, Social Influence, Compatibility, Observability, Performance Expectancy

5.0 Discussion

5.1 Knowledge Management strategies to improve e-business

This model can be used successfully in e-businesses. Several strategies can be put in place to improve e-business performance using effective Knowledge Management based on the study results. The strategies are as follows:

- 1) Effective Knowledge Management should be promoted as an intervention to promote improved e-business. Knowledge Management should be promoted to people in a social system with the goal of adoption. The most successful adoption of Knowledge Management results from understanding the target population and the factors influencing their rate of adoption. Organizational and technological factors that determine IT adoption and diffusion, including firm size and scope, technological competency and expected benefits.
- 2) A collaborative e-business system should be promoted to improve organizational processes. These new processes give high efficiency and additional competitive advantage in real-time process and synchronous work between actors of the value chain, create a learning curve for rapid productivity and create a holistic approach to collaboration challenges among people, processes and systems.
- 3) E-business systems should be designed in such ways that are easy to use, flexible, and functional to serve their purpose. The model will be applied to measure the success of effective Knowledge Management as a driver of improved e-business.

5.2 Impact on Digital Economy

Focusing on intellectual knowledge present within an organization and utilizing them or enhancing them fully will lead to the development of solutions and innovations that will improve e-business efficiency, leading to economic growth. Sharing knowledge within an ebusiness will also encourage employees to develop their skills and knowledge and share them with others. Knowledge sharing and transferring best practices in support of improving quality and efficiency throughout the organization is also promoted by using collaborative Knowledge Management systems. Customer-focused knowledge management also enables customertargeted marketing, which focuses on understanding consumer needs, pushing products that the customer wants, and producing products and services that address those needs. This will lead to increased sales and economic growth.

6.0 Conclusion

The study aimed to confirm that e-business can be improved by using the business-to-consumer e-business model for effective Knowledge Management. The study tested the hypothesis and

found that efficient Knowledge Management led to improved e-business in the Kenyan retail industry. The study concluded that a significant positive relationship exists between the ebusiness facilitating and individual factors, e-business organizational usage factors and the ebusiness organizational structure factors and effective Knowledge Management.

The benefits of effective Knowledge Management are a more efficient workplace, faster, better decisions, increased innovation and collaboration, increased customer satisfaction and improved employee expertise.

The concept of Knowledge Management is just beginning to emerge in the Kenyan e-business retail industry, providing an ideal opportunity to evaluate knowledge capturing, sharing and storing systems properly. Further research is required to reconcile the concepts of Knowledge Management and e-business for optimal e-business processes. Further research should also be done to investigate and incorporate the organizational impact on an e-business. This e-business model needs further development and validation before it could serve as a basis for selecting appropriate e-business improvement measures as it has a broad concept.

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