E-Business Value in Small and Medium-Sized Enterprises in Southern Africa: A Quantitative Content Analysis of Websites

Completed Research

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Abstract

E-business models adopted by SMEs are often abstruse and poorly represented, which makes them difficult to evaluate e-business value. This research drew from different theories to create a comprehensive model for e-business evaluation. The study adopted Gerbner’s theory of communication exchange which posits that by studying the events of the communication exchange, one can infer about the state of the systems engaged in the exchange and their relationships. Consequently quantitative website content analysis of 20 SMEs was conducted to determine their e-business value. The results revealed that most products and services are offered and traded by an SME led by an entrepreneur who demonstrates commitment to the business and is visionary. Also, when there is more technology functionality within the business and its network, connections with other actors are enabled which instigates communication. Lastly, value activity is created when e-business is well maintained and used by employees with intellectual resources.

Keywords

E-business value, SMEs, conceptual model, Southern Africa, quantitative website content analysis.

Introduction

The continued use of the internet has become a predominant game changer in business practices in both developed and developing countries (Mann et al., 2014). More companies have had to re-think how they conduct business which is a resultant of the major investments made in Information and Communication Technology (ICT) adoption in businesses today. With the rapid growth of electronic business (e-business) and as more companies adopt and invest in it, it is crucial to investigate its value creation, more so in Small and Medium-sized Enterprises (SMEs) as they have become significant contributors to employment creation and helpers of local improvement and innovation (Jones and Beynon-Davies, 2011). In Botswana, Shemi and Proctor (2013) conducted a study that revealed that ICT SMEs immensely help the Botswana government with over 80% of business activity. Similarly, in South Africa, Kongolo (2010) states that 91% of the formal business entities are made up of SMEs. However, with this significant growth and economic contribution of SMEs in Southern Africa and e-business, little has been done to measure the value created in e-business adoption in Southern African SMEs.

It is essential to better understand the post-adoption differences in usage and value (DeLone and McLean, 2016) of e-business for companies to appreciate this value and to fully enjoy it. The researchers argued that there is no comprehensive model for measuring e-business value in SMEs in Southern Africa. Such a model could assist SMEs to recognize the essential elements that are critical to the company and to understand e-business operations that create value. The study seeks to answer the question – How is the value of e-business in SMEs in Southern Africa evaluated? A comprehensive model was created that evaluates the value of e-business in SMEs in Southern Africa, and the study adopted Gerbner’s communication theory to guide the quantitative website content analysis of the SMEs, thereby determining their e-business value.
The definitions below on e-business, SMEs and e-business value were adopted in the study.

E-Business: According to Barua et al. (2001), Zhu and Kraemer (2002), e-business is defined as the use of the internet to conduct or support business activities along the value chain (Porter, 2001).

SMEs: The criteria for the definition of an SME differs from country to country (OECD, 2013). For instance, in Botswana, an SME is defined as an entity that takes on less than 25 employees and has an annual turnover of between P60,000 and P1,500,000, and a medium-sized enterprise with less than one hundred workers including the owner and an annual turnover of between P1,500,000 and P5,000,000 (BICA, 2013). While in South Africa a small business is one with no more than 50 employees and an annual turnover of less than R2,000,000, and a medium-sized enterprise with less than 200 employees and an annual turnover of less than R30,000,000 (Maduku et al., 2016). This study considers both these definitions, as both countries are used in the study to represent Southern Africa.

E-business value: According to Zhu et al. (2004), it is the effect of using e-business for firm performance. This is determined by an increase in sales and profits (economic value), a better customer service, effectiveness and efficiency (social value) and improvement in coordination and transparency of inter-organizational processes with suppliers and customers (moral value).

In the following sections, the researchers begin with a literature survey of the study, followed by the methodology, findings and data analysis, discussion and finally, conclusions will be drawn from this.

Literature Survey

E-Business in Southern Africa

When it comes to e-business development, research shows that the common challenges that most developing countries encounter are based on a lack of economic, infrastructural, social and political factors. Mutula and van Brakel (2006) categorize these factors under e-readiness, which they suggest is lower in developing countries than developed countries. E-readiness is defined as the degree to which a country or organization is willing to adopt ICT for value creation and competitive advantage (Hung et al., 2014). In his recent study, Ifenado (2005) argued that Southern African countries have an e-readiness score that is better than that of Africa’s average, which is 2.22. Based on his study, South Africa’s e-readiness is the best, with a score of 2.78, followed by Botswana, with a score of 2.47. Furthermore, he argued that Botswana has one of the best performing economies in Africa, which along with the high e-readiness of the country and that of South Africa, shows the relative strength of countries in the Southern region of Africa. Based on these arguments, these two countries were used in the study to represent Southern Africa.

Unfortunately, even with these high scores of e-readiness and some of the best performing economies, Southern African countries still encounter challenges when it comes to adopting e-business activities. Most studies, which discuss the adoption of e-business in Southern Africa identify technological, environmental and organizational factors as major impediments to e-business development. Little research has been done in evaluating e-business from an internal business perspective. The table below shows the gaps identified in literature in the Botswana and South African context.

<table>
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<tr>
<th>Source/Study</th>
<th>E-readiness</th>
<th>Resource Planning</th>
<th>ExTERNAL Environment</th>
<th>Organizational Capabilities</th>
<th>Financial Resources</th>
<th>Technological Resources</th>
<th>Team/Culture</th>
<th>Strategic Value</th>
<th>Economic Value</th>
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</table>

*X represents what’s been covered in the study

Table 1. Gaps Identified in Literature
E-Business Value

E-business value can be explained by several approaches. To explore this explanation, three main theories were identified that capture its full essence. Each theory discussed value creation from a specific perspective. The study looked at Porter’s (1985) Value Chain Model, which focuses on value creation by looking at the value adding activities in a business, that add value to the chain. It also looked at the Resource Based View (Barney 1991, Peteraf 1993), which focuses on value creation by using resources in a firm that are efficient and effective, cannot be copied by any other firm, and cannot be moved across the firm. And finally, the economic theory (Bakos and Kemerer, 1992), which focuses on value creation by using information systems on a large scale, where the demand to use technology is high and also taking into consideration the uncertainty of these value creation benefits and switching costs. In the context of SMEs, the study considered the SME value chain (McLarty 2000), which was adopted from Porter’s (1985) Value Chain Model, and developed specifically for SMEs. This unique SME value chain aims to provide recommendations for better management decision making and to be used as a framework for business development. It comprises of activities of the value chain that have been modified, removed and substituted with new elements to make the framework more relatable to SME managers.

Each approach looked at value from a different perspective. While Porter’s Value-Chain Model focuses on business activities, the Resource-based view has an emphasis on firm resources. The economic theory, on the other hand, looks at the demand and supply of IS/IT. This study encompassed some dimensions from each of these theories to develop the comprehensive framework.

Determinants of E-Business Value

When it comes to discussing e-business requirements, this paper used the viewpoints discussed by Gordijn and Akkermans (2001). They stated that in the development of IS, three major perspectives have to be considered. These are the value viewpoint which represents the creation of economic value, the process viewpoint which suggests the use of business processes for the operationalization of the value perspective, and lastly, the system architecture viewpoint, which is the IS that enables and supports e-business processes. However, Sahim (2012) suggested that for there to be competitiveness in the buying and selling of goods over the internet, resources, capabilities, processes or firm knowledge that provides firm performance have to be involved. Therefore, aside from the viewpoints of Gordijn and Akkermans (2001), this paper also recognized and incorporated the human factor capabilities, the business mission and strategy as well as the resources available.

Value Viewpoint: This can be understood from the economic theory perspective. Gordijn and Akkermans (2001) suggested that there are various dimensions or aspects which form the e³-value ontology. This paper considered some of these value aspects which are (1) the actor (an independent economic entity capable of making a profit, for example, an individual, an entrepreneur an SME etc.); (2) the value object (the service, product, money or consumer experience that is exchanged between actors); (3) the value port (an interface or a connection point that interconnects actors so that they may exchange value objects); (4) the value interface (a mechanism that allows two or more actors to communicate or interact e.g. a website); (5) the value exchange (the act of giving value objects and receiving them in return or trading value objects between actors); (6) the value offering (the act of giving an actor the opportunity to exchange a value object) and (7) the value activity (the act of performing a process that is profitable between two or more actors). These value aspects are interlinked in that each one is dependent on another and each is necessary for value creation. For instance, the actor instigates value activity by creating value objects, which are then offered (value offering) to other actors for exchange (value exchange). These value objects are offered to other actors through value interfaces, and value exchange is enabled by value ports as they aid with this interconnection. Therefore if all of these aspects are present in an e-business model, they form e-business value.

Process Viewpoint: According to Gordijn and Akkermans (2001), the process viewpoint discussed the operationalization of the value viewpoint by using business processes. This simply means generating the value viewpoint through business processes. This can clearly be explained by the value chain theory (Porter, 1985), as it looks at value-adding activities within the firm. Taylor and Murphy (2004) discussed Foley and
Ram’s (2002) PIT model of ICT Adoption by SMEs. This model consists of processes used by SMEs through the adoption of ICT. In the current study, the researchers refer to e-business usage as the integration of e-business in a firm’s core processes (Zhu and Kraemer, 2005). Furthermore, Zhu and Kraemer (2005) provide evidence that if there is e-business usage along an organizations value chain activities, this leads to improved firm performance, indicating a strong link between e-business usage and e-business value. Therefore, the efficient and effective integration of e-business on a firms processes, will result in e-business value creation.

**Architecture Viewpoint:** In this paper, the architecture perspective implies the technology used to support business activities. Gordijn and Akkermans (2001) discussed this viewpoint as an IS/IT enabler and supporter of the e-business processes. This is explained by the technology theory, specifically the theory of ICT as an enabler. Venkatraman (1994) predicted that five (5) levels of IT-enabled business configuration should exist in an organization for there to be added value. These levels include the IT functionality within a business, leveraging IT throughout the entire business, business process integration, business network integration and business scope integration. These levels explain how technology is used to support and enable internal and external business processes as well as the organization as a whole for added value. E-business processes are better supported and enabled with advanced technology, which results in e-business value creation within organizations.

**Human factor:** This factor is explained by the entrepreneurship theory discussed by Miller (1983). According to this theory, entrepreneurs need to possess an entrepreneurial orientation consisting of certain methods, practices and organizational behaviors to keep the firm competitive. The human factor addresses this entrepreneurial orientation. For the successful adoption and value creation of e-business, an SME needs to have visionary and capable leaders. These leaders include the entrepreneur and managers. Kyobe (2008a) argued that for the success of IS, entrepreneurs have to possess certain qualities and traits that distinguish them from others. Furthermore, he suggested that behavioral characteristics such as attitude to technology, risk-taking, commitment and control over resources influence the entrepreneur’s ability to effectively respond to technology adoption. These traits and capabilities enable the human factor to run and maintain the e-business successfully, resulting in the creation of e-business value.

**Business Mission and Strategy:** Stakeholders of SMEs need to be able to understand the business mission (what the business is about) so that they can develop and implement proper and innovative business strategies that support, drive and help the business to achieve this mission. The business mission provides the overall direction in which the business is going. Both the business mission and strategy are explained by the strategic management theory. Drucker (1998) discussed innovation in strategic management as a fundamental consideration in adding value in a business. This means that for an organization to create and add value, it needs to have innovative strategies that support the business mission. It is therefore essential for the two elements to be well aligned to drive e-business adoption and create value. Kyobe (2008b), suggested that alignment is determined by the consistency between the elements being investigated, and that if the mean absolute difference between the two elements was low, then this indicated a high level of alignment.

**Availability of resources:** For companies to fully experience e-business value, it is essential for them to stay interactive and maintain the e-business. Resource availability is explained by the resource-based view (Barney, 1991; Peteraf, 1993). This study focused on financial resources and the users of the e-business for the creation of e-business value. Chaston et al. (2002) discussed the need for financial resources which are necessary to invest in the right technology, to be able to regularly maintain the business websites, to integrate the company’s information management systems and to provide proper interfacing with customers. To stay interactive with the e-business, companies also need to have employees in place who ensure that this interaction is maintained. Bordonaba-Juste et al. (2012) suggested that employees need to possess some IT knowledge, IT technical capability, technical expertise and an intellectual resource (the employee’s educational qualification and work experience that distinguishes them from others). These traits make it easier to train them when adopting the new system and make them more aware of determining the value created by the system. This is especially necessary for SMEs, as they are characterized
by a smaller number of employees. With the use of financial resources and capable employees, the e-business is well maintained and stays interactive, which results in e-business value.

**Integrative Theoretical Framework, Conceptual model and Hypotheses**

Following the discussion on the value creation approaches and the different theories that explain the determinants of e-business value, an integrative framework was then developed that integrated and dealt with every theory discussed in both these sections. This framework was developed to overcome the limitations that each of the theories have, thereby providing a broader perspective of the research problem and the theories that explain this. Although they each look at value creation within the business, each of them focuses on one value creating aspect, e.g. the resource-based view (Barney, 1991; Peteraf, 1993) focuses on the use of resources only for value creation, whilst the entrepreneurship theory (Miller, 1983) looks at the entrepreneur and management capabilities. To develop this integrative comprehensive framework, McLarty’s (2000) SME value chain model, which adopts Porter’s (1985) value chain model was used in the context of SMEs, and as a template or theoretical glue holding these theories together. This model was identified as being the most suitable as it addresses the business in terms of processes, resources and value as well as business interactions internally and externally. Therefore, each of the levels and processes in the model was explained by the theories discussed. Porter’s (1985) value chain model has been extensively used in the business environment, for example in supply chain management. It consists of three levels, which are the primary activities that directly create and bring value to the customer, the support activities that enable the primary activities and the margin which indicates value creation. McLarty (2000) argued that the SME value chain fits in both the production and services sector, and that it’s more relatable to SME managers. For this integration, each of the elements in the SME value chain model was explained by one or more of the theories. Figure 1 below shows this integrative theoretical framework.

![Figure 1. The developed integrative theoretical framework](image)

Based on this integrative theoretical framework, the conceptual model below was developed to evaluate the value of e-business in SMEs in Southern Africa. It consists of the value creation elements (independent variables) and e-business value which is the dependent variable. Following the conceptual model, the hypotheses below have been formulated based on the conceptual model.

![Figure 2. E-Business Value Evaluation (EBVE) conceptual model](image)
The following hypotheses were formulated from the conceptual model:

Hypothesis 1: The more aligned the business strategy is with the business mission (E1) in an SME, the greater the value activity (V1).

Hypothesis 2a: The use of e-business to support and conduct business processes (E2) in an SME leads to greater value activity (V1).

Hypothesis 2b: The use of e-business to support and conduct business processes (E2) in an SME leads to the creation of the value object (V2).

Hypothesis 3a: The more the capabilities of the human actor (E3) are in an SME, the greater the value activity (V1).

Hypothesis 3b: The more the capabilities of the human actor (E3) are in an SME, the greater the value exchange (V4).

Hypothesis 3c: The more the capabilities of the human actor (E3) are in an SME, the better the value interface (V5).

Hypothesis 3d: The more the capabilities of the human actor (E3) are in an SME, the greater the value offering (V6).

Hypothesis 4a: The more the financial resources and employees (E4) are in an SME, the greater the value activity (V1).

Hypothesis 4b: The more the financial resources and employees (E4) are in an SME, the greater the value exchange (V4).

Hypothesis 4c: The more the financial resources and employees (E4) are in an SME, the better the value interface (V5).

Hypothesis 4d: The more the financial resources and employees (E4) are in an SME, the greater the value offering (V6).

Hypothesis 5a: The more the technology (E5) there is in an SME, the greater the value ports (V3).

Hypothesis 5b: The more the technology (E5) there is in an SME, the better the value interface (V6).

Hypothesis 6: The more value creation elements there are in an SME, the greater the e-business value.

Methodology

The study used quantitative website content analysis as a data collection strategy. As defined by Berelson (1952), content analysis is “a research technique for the objective, systematic and quantitative description of the manifest content of communication” (p. 18). In other words, this is the observation and examination of certain words and concepts in messages and texts, using quantifiable methods. Content analysis is explained by the communication exchange theory discussed by Gerbner (1958). This theory posits that by studying the events of the communication exchange, one can interpret and infer about the state of the systems engaged in the exchange and their relationships. Gerbner (1958) further states that the sum of the interpretations that can be made about these communication events is referred to as the content of communication, and that communication events may reveal something about the precise exchange that instigated them, instead of what we think and expect them to mean.

Data was collected from 20 websites in SMEs in both South Africa and Botswana. To derive this data, a code book was developed, consisting of variables derived from the literature, which were guided by the constructs in the conceptual model. In addition, these variables were verified by an already existing theoretical framework that consists of measurable features and indicators that make up a successful website, regardless of the service that the company provides. This framework was developed by Hasan and Abuelrub (2011), in their study on assessing the quality of websites. A five-point Likert scale where 1 indicated “strongly disagree” and 5 “strongly agree”, with a midpoint of 3 being “somewhat agree” was used to measure each variable. Table 2 below shows these constructs and their sources.
Findings and Data Analysis

Assessment of Validity and Reliability: To assess validity, the variables used for measurements were obtained from literature and previous studies as shown in table 2 above. The reliability of the data was tested by using Cronbach alpha coefficient. This was to ensure that each variable had internal consistency. According to Hair et al. (2006), a threshold of above 0.60 is required in exploratory studies for reliability tests. All the variables were therefore above this threshold, confirming that there was internal consistency.

Descriptive Statistics: The results of the descriptive statistics revealed high means of 4.70, 4.30 and 4.25 for the rest of the variables. Consecutively, these variables were e-business value object, e-business value activity, e-business value interface, e-business value offering and business processes.

Measuring Alignment: Hypothesis 1 predicted that the more aligned the business strategy is with the business mission in an SME, the greater the value activity. Venkatraman (1989) discussed six (6) different perspectives of alignment as being moderation, matching, mediation, gestalts, profile deviation and covariation. For these two elements (Business mission and Business strategy) alignment as matching was adopted. In this perspective, fit is postulated as the match between two related variables and the effect of this fit is examined (Venkatraman, 1989). Using difference score analysis (Chan and Huff, 1993), the mean absolute difference between the two variables was used to determine fit, and a T-test was conducted to test the significance. If the mean absolute difference between the two elements was low, and a T-test of this was significant, then this indicated a high level of alignment. The results of this analysis revealed a mean of 3.35 for business mission and 3.10 for business strategy. The absolute difference in mean was 0.85. This revealed a small difference in mean between the two variables and was further confirmed by a statistical significance level (p-value) of 0.02. A p-value less than 0.05 indicates that 95% of the findings have a chance of being true or 5% of being untrue. Therefore, the small difference in means of business mission and business strategy indicated that there was a high alignment between the two variables.

Regression Analysis: Regression is used to test the strength/relationship of the independent variables and dependent variable. It is also used to test the conceptual model for individual impact, combined influence and its appropriateness in the predictions being tested. This test was used to determine the relationships between one independent variable at a time and the dependent variables for hypotheses 1 to 5b, using the regression coefficient, p-value and the variance (r-value). Table 3 below summarises these results.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Coefficient</th>
<th>Independent Var</th>
<th>Dependent Var</th>
<th>p-value</th>
<th>R value</th>
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Table 3. Summary of Regression Analysis (Hypotheses 1 – 5b)
The table below shows results for hypothesis 6. The hypothesis predicted that the more value creation elements there are in an SME, the greater the e-business value. This hypothesis was tested using a nonparametric test due to the small sample size. By looking at the variable means for each company, the results were determined by how many variables in the company were above the midpoint of 3.00, and how this affected the e-business value variable. The expectation was that if more than three (3) variables were above the midpoint, then this would result in a high e-business value. This was based on discussions in previous literature that suggest that the availability of most of these variables result in high e-business value. For instance, Sahim (2012) argued that firm competitiveness is enhanced by factors such as financial resources, technological resources, a strategic business plan, employees and management capabilities as well as processes. In another study, Wiengarten et al. (2013) discussed the significance of organizational processes, culture, strategy and structure in e-business value creation. These studies revealed the importance of having these variables in place for e-business value. A T-test was also conducted to determine the significance of the difference of the means of these variables. The results are shown below.

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Table 4. Company Analysis

Discussion

The results showed that of all the value creation elements that predicted value activity, only hypothesis 4a which measured financial resources and employees over value activity was supported. The rest of the variables, which were business strategy and mission (hypothesis 1), business processes (hypothesis 2a) and human actor capabilities (hypothesis 3a) over value activity were not supported. It is possible that these variables did not show a significant relationship because they do not directly impact value activity. As defined in the literature, value activity is the act of performing a process that is profitable between two or more actors. The employees of the company are directly responsible for performing business activities which create value activity. The rest of the variables which were not significant with value activity are involved in the support and guidance of the employees to perform these processes. This would explain why hypothesis 4a was the only hypothesis that predicted more value activity that was supported. Hypothesis 2b, which predicted that the use of e-business to support and conduct business processes leads to the creation of value objects was also supported. As discussed in the literature, technology enables and supports business processes (ICT as an enabler theory), which results in the creation of products and services. This explains why this hypothesis was supported. The theory of ICT as an enabler further confirms why hypothesis 5a which predicted that more technology leads to greater value ports was also supported. SMEs connections develop when technology is integrated within an SME and its network.

The value exchange was predicted to be more if there were more human actor capabilities (hypothesis 3b), financial resources and employees (hypothesis 4b). Hypothesis 3b was supported, while hypothesis 4b was not supported. While the financial resources and employees enable and perform this exchange, the human actor needs to possess entrepreneurial skills, which keep the firm competitive. They need to be visionary and strategic when trading the value objects and encourage their employees to engage in value exchange.

All the value creation elements that predicted a better value interface were not supported (see hypotheses 3c, 4c and 5b). The value interface is the mechanism that allows interaction between actors. This interaction
is directly enabled by the value ports on the website. This means without these connections, the value interface would be irrelevant even if there are more human actor capabilities, financial resources and employees and technology. Before measuring the effect of all of these variables on e-business value, value offering was also measured. The predictions were that value offering would be greater if there were more human actor capabilities (hypothesis 3d), financial resources and employees (hypothesis 4d). While hypothesis 3d was supported, 4d wasn’t.

Table 4 revealed that for majority of the variables, the means of the independent variables, i.e. mission and strategy, business processes, human actor, resources and technology were above the midpoint of 3.00, and this led to a high mean for e-business value (the dependent variable). This concluded that when there were more value creation elements, e-business value was high. The t-test further confirmed that the differences in means for these variables was significant. Hypothesis 6 was therefore supported for most of the SMEs. However, six (6) companies gave inconclusive results.

Conclusion

The objectives of the study were to create a comprehensive model that evaluates the value of e-business in SMEs in Southern Africa and adopt Gerbner’s communication exchange theory to guide the data collection through quantitative website content analysis of the SMEs, thereby determining their e-business value. The study revealed that the value creation elements discussed in the paper have an influence on e-business value, and therefore a company consisting of these elements would have more e-business value. The developed model can guide further research in assisting stakeholders in SMEs on e-business operations and elements necessary for the smooth running of the e-business. Such studies will have implications in practice as it can help guide government policies and initiatives to encourage the diffusion of new ICT technologies in Southern Africa. There is also a need to educate and train entrepreneurs and managers on the benefits of e-business as well as technology as a whole, as they are drivers of the business. Such training would help them possess competent capabilities necessary for them to make informed and innovative decisions on the business mission and strategy, processes and practices. This research also advances theory by coming up with an integrative framework and using Gerbner’s theory to explain website content analysis. The study has some limitation. Data was collected from only 20 company websites, therefore, caution needs to be exercised when interpreting the findings. Large sample sizes need to be used in future studies.

REFERENCES


