INCREASING THE COMPETITIVE STRENGTHS OF TANZANIAN TOURISM FIRMS-THE STRATEGIC ROLE OF INFORMATION TECHNOLOGY

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ABSTRACT

This study investigates the relationship between information technology (IT) and firms' competitive advantage. A conceptual model hypothesizing the relationship between human and IT resources and their influence on firms' capabilities and competitive advantage is conceived. Market and resource-based views are applied to investigate what differentiates firms' performance as they deploy IT. Confirmatory factor analysis is used to validate the model and test the hypothesized relationships using 217 cases of SMTEs in Tanzania. The findings demonstrate that IT value depends on both IT and human resources. Industry-specific skills, knowledge and experience and managements' skills, knowledge and experience of IT determine firms' performance, not only general business skills, knowledge and experience. Operational effectiveness and strategic positioning also determine competitive advantage but integrity and innovation do not. We add the concept "extended firms' IT resources and competences", the vendors, services and expertise that complement IT resources and the competences owned and controlled by firms.

Key Words: Information technology, competitive advantage, capabilities competences

INTRODUCTION

The adoption and use of IT by firms of various size and from different sectors has altered the rules of competition. IT is relentlessly changing business management and operations. As a result, information systems are becoming a key success factor in enterprises, particularly those that are heavily dependent on information (Peter *et al.* 2008). However, its successful use is dependent on a plethora of technological, business and management factors. Peter *et al.* (2008) reveal that the impact of IT on performance is often indirect and influenced by human, organizational and environmental factors among others.

Considering the tourist industry, it is increasingly becoming an information business (Buhalis 1998; Gratzer *et al.* 2004; Poon 1993). The players in this industry are using

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new IT as innovations unfold. This potential gives tourist enterprises the ability to add value to their products and services (Elly 2011). Obviously an array of activities and enterprises engaged in tourism involves a great deal of communication and information sharing among players. This suggests that the influence of IT use could even be strategic in the tourist sector for two reasons. One, the sector is dominated by small and medium tourism enterprises (SMTEs) and two the innovations in IT are quickly unfolding. In such a scenario, competitive advantage between players may not necessarily be a function of the quantity and quality of the products and services alone, but of the way enterprises communicate and share information with customers and other stakeholders.

Furthermore in developing countries, the adoption and use of IT in the business sector has radically increased over the past few years. Before that, the use of telecommunication services and computers was limited to some government offices and individuals. In a very short time there has been a burgeoning of the ICT use led by mobile services (Acer and Mbiti 2010). Thus, it is logical to argue that there are important issues which need to be addressed with regard to IT use and firms' performance.

Although IT use is linked to firms' value (Rastrick and Corner 2010), the fundamental mechanism by which its potential could be exploited has received little attention in either IT or management literature (Kollmann, *et al.* 2009; Ravichandran and Lertwongsatien 2005). Thus, research is lacking that empirically investigates the conditions necessary for value creation based on IT use by firms (Kollmann *et al.* 2009) and particularly SMTEs. The prerequisites that underscore IT use and the performance of SMTEs are far from being documented. Since empirical evidence of the conditions which IT influence a firm's performance and give rise to competitive advantage is lacking, further research is essential. This study sets to answer the broad question "*what is it that makes some firms gain competitive advantage through IT use and not others*"?

THEORETICAL BACKGROUND

The contention for IT use and a firm's competitive advantage has been discussed from the market, economics and resource-based views, and recently, the systems concept. Competitiveness of a firm is seen as in its possession of both positional and source advantage (Day and Wensley 1988). The former is a market-oriented phenomenon and the latter is the ability that comes from skills and superior non-human resources or a combination of the two, Taking the market-based view (MBV) Porter (1980) argues that a firm's competitive advantage is determined by the industry's attractiveness

which is expressed as the firm's power over suppliers and buyers, thwarting potential entrants and out-positioning competitors. Thus, competitiveness connotes both the firm's characteristic resources and market orientation reflected in how it attracts customers and retains them. Porter and Millar (1985) see the role of IT as emanating from the ability to deploy IT for lowering costs, enhancing differentiation and changing a firm's scope through coordination of activities and the relationship between firms.

The MBV is unable to sustain a firm's competitive advantage, mainly due to imitation by competitors (Sambamurthy and Zmund 1997). The strategy is also limited to choices among alternatives, which limit creativity, through opportunities internal and external to the firm (Lado *et al.* 1992). Furthermore, the pespective is linked to most studies, which assume a direct relationship between IT investment and firms' performance (Ravichandran and Lertwongsatien 2005) and which have reported a negative relationship (Zhang and Lado 2001). Its assumptions treat firms' resources and capabilities as homogeneous and mobile.

On the other hand, hinging on the resource based view (RBV), Barney (1991) argues that a firm is said to have competitive advantage when it is able to implement a value-creating strategy not simultaneously being implemented by any current or potential competitors. The proponents see the role of IT as indirect and complementary to other firms' resources and competences (Ravichandran and Lertwongsatien 2005; Rivard *et al.* 2006). Although these two are distinct schools, scholars have generally used the latter concept to complement the former. These views succeed earlier attempts to study IT use and firms' performance using mainly econometric models, which mostly concluded a poor relationship between investment in IT and performance (Brynjolfsson and Hitt 1996).

Priem and Butler (2001) criticize RBV due to tautology, as the resource value is determined outside the RBV, whereas Spanos and Lioukas (2001) suggest that firm competitive advantage has an internal and external perspective. Moreover, Nevo and Wade (2010) propound that researchers have disregarded resources that are not strategic in and of themselves, like IT assets. As a result, it is unclear what role, if any, IT plays in supporting a firm's strategies. Considering the two perspectives, the underlying difference is the level of analysis and the metrics used for determining the relationship between IT use and firms performance. MBV emphasizes the market power imperative (Duhan et al. 2001; Rivard et al. 2006), whereas the RBV emphasizes firm-level analysis and idiosyncratic resources as a source of value (Brynjolfsson and Hitt 1998).

The Inclusive Model of IT Use and STMEs' Competitive Advantage

An inclusive model is used in this study to relate IT resources, human IT resourc, firms' capabilities and competitive advantage. We draw on the fact that value creation emanates from a matching its internal capabilities with strategic actions pursued by it, and that the value of resides in resource complementarities. Furthermore, IT and human resources give rise to a firm's capabilities, which are the essence of a firm is competitiveness reflected in the market. Industry forces influence market performance and profitability, while a firm's assets act upon accomplishments in the market which confer advantage (Spanos and Lioukas 2001). We also reckon that the motives and objectives of SME owner-managers or entrepreneurs determine strategic orientation and resource acquisition, technological position, innovation, personnel management and development among others (Aragon-Sachez and Sachez-Marin 2005).

THE CONSTRUCTS OF THE MODEL

Human IT Resource Competences (*ISHR*)

Competent human resources are needed in the continuously changing environment that requires firms to be flexible and able to respond rapidly to these changes. These are critical in enforcing fast and flexible processes while developing high quality and adaptable products and services (Kollmann *et al.* 2009). The dimensions of competence are a reflection of the owner-manager's, skills, knowledge, experience and goal orientation (Man *et al.* 2002). Competence refers to a combination of individual knowledge and task requirements, whereas a good fit of the two produce a higher level of competence (Krogh *et al.* 1995). Due to limited expertise, small firms may opt to engage consultants and IT vendors to develop and support their systems. In this study we consider the firm's competences include external expertise, skills and knowledge (see Attewell 1992; Thong 2001).

Therefore human IT-resource competences (*ISHR*) encompass: IT- industry skills, knowledge and experience (*ISind*); managerial IT skills, knowledge and experience *(ISmgt)*; IT-business skills, knowledge and experience (*ISbus*) and the ability to source IT knowledge and skills from experts outside the firm (*ISexp*) (Kollmann *et al.* 2009; Ravichandran and Lertwongsatien 2005; Bhatt and Grover 2005, Thong 2001). Since these competences are important for designing, implementing, and maintaining the business and the analogous technological basis of the firm's value proposition the study hypothesises it that:

H1: *Human IT resource competences (ISHR) influence positively a firm's capabilities (CAPABILITIES) and competitive advantage (COMPETITIVEADV)*

IT Resources (ISRES)

Information systems resources (*ISRES*) refer to the stock of available factors that are owned and/or controlled by the firm (Amit and Schoemaker 1993). These inputs in SMTEs include Internet and the web-hosting services of the vendors that augment the stock of available factors (Thong 2001). According to Attewell (1992), getting such services is like purchasing the fruits of the technology in the market, as a service from a mediating institution.

ISRES is operationalized as the presence of computing platforms that meet firms' needs and link them to customers and suppliers (*ISfcs).* The presence of reliable IT services, such as the availability and reliability of both the Internet and web-hosting services (*ITservs*), and IT flexibility, which is the scalability and modularity of the IT platform (*ISflex).*The study thus hypothesizes that:

H2*: There is a positive relationship between IT infrastructure quality (ISRES), firm capabilities (CAPABILITIES) and competitive advantage (COMPETITIVEADV)*

Firm Capabilities (CAPABILITIES)

Capabilities refer to a firm's capacity to deploy resources, usually in combination, using organizational processes to affect the desired end (Amit and Schoemaker 1993). Capabilities operationalized as market access, and the integrity and functionality/operations of the firm. Market access or efficiency (*Mrkt*) is measured by efficient customer relationships, the ability to identify customer needs, and how effectively they respond to such needs in a timely fashion.

The integrity of the firm (*Intgeff)* exhibits capabilities in offering reliable products and services a competitive price, through integrated business processes, and streamlined supply mechanisms. It also includes the ability of the firm to provide services and products to customers with minimum inconvenience (Ravichandran and Lertwongsatien 2005), and the ability to offer unique products and/or services with distinctive value for the customer. Functionality or operational efficiency (*Opertn)* enables a firm to offer unique product/ services in a unique way that offer benefits to the customer and the firm (Ravichandran and Lertwongsatien 2005). Innovative efficiency (*inoeff*) represents product and service innovation (new products and services) and process innovations, which include designing new ways to create and

offer products and services (Rivard *et al.* 2006; Ravichandran and Lertwongsatien 2005)
We then assert that firms capable of deploying IT using identified capabilities are likely to perform better than their rivals.

H3: *There is a positive relationship between a firm's capabilities and competitive advantage*

FIRM COMPETITIVE ADVANTAGE

SMEs' competitive advantage is a broad concept that captures their value. It includes cash flow, survival, image/reputation, service quality, relationship quality, trust, customer retention, market share, sales, employee satisfaction, market effectiveness and increased quality of life (Cohen *et al.* 2008). In this study firms' competitive advantage is operationalized as market growth (*MarkGr)*, sales growth (*SaleGr)*, financial liquidity (*FinLiq)* and firms' growth (*FirmGr)*. All constructs discussed are summarized in annex 1.

Study Methodology

A survey involving 217 SMTEs, which had been in business for at least three years from four regions in Tanzania (Arusha, Moshi, Dar es Salaam and Unguja), was conducted in 2009/2010. Structural equation modeling is used to analyze the data and test the hypotheses.

Hypothesis Testing

The hypothesized relationships between *ISRES*, *ISHR* and CAPABILITIES and COMPETITIVEADV were analyzed following SEM techniques using AMOS (see annex 2). The hypotheses were tested based on the direction, strength and the level of significance of the path coefficients.

ISHR and Firm Capabilities and Competitive Advantage

The first relationship between IT resources and a firm's capabilities was examined using the path leading from ISHR to CAPABILITIES. A positive path coefficient (γ = .64, p< 0.001) using standardized results indicates that *ISHR* is positively related to firm *CAPABILITIES*. The standardized coefficient critical values, C.R = 5.232, p < 0.05, C.R > 1.96, indicate that the relationship is positive and significant. The results confirm a strong positive relationship between ISHR and CAPABILITIES.

The results indicate that there is a positive and strong indirect relationship between ISHR and COMPETITIVEADV. The standardized indirect (mediated) effect of ISHR on COMPETITIVEADV is .595. Based on the Bayesian estimation, the upper bound for the indirect effect relating ISHR and COMPETITIVEADV was 0.779 and the lower bound was 0.534 at 95% confidence interval. The value 0.595 lies between the two and thus in an acceptable region $p < 0.05$. In other words, *probability* ($0.534 \leq 0.595 \leq 0.779$) = 0.95, thus confirming the indirect positive relationship and value that IT resources deliver in the overall competitive advantage of firms. With these results we accept *H1*.

Relationship between ISRES and Firm Capabilities and Competitive Advantage

The standardized path coefficients ($\gamma = 0.25$, $p < 0.002$) C. R = 3.117, with values greater than 1.96, indicate that there is a positive relationship between ISRES and a firm's capabilities. The standardized indirect (mediated) effect of ISRES on COMPETITIVEADV is 0.230. Bayesian Estimation upper limit for the indirect effect between *ISRES* and COMPETITIVEADV is 0.283, while the lower bound is 0.002 at 95% confidence interval. Thus, we confirm that the value obtained lies within $p < 0.05$, that is, the probability that ($0.002 \leq 0.230 \leq 0.283$) = 0.95 and thus we accept *H2*.

The Correlation between *ISHR* and *ISRES*

The findings reveal a positive and acceptable correlation between the two (0.349). The covariance between the two is 0.182, p< 0.01 and C.R 2.59. The underlying theoretical assumption of the study is that *ISHR* will positively influence *ISRES* availability, quality and sourcing.

Firm Capabilities and Firm Competitive Advantage

A positive standardized path coefficient **(** $\gamma = 0.94$, $p < 0.001$) indicates that an increase in a firm's capabilities positively influences its competitive advantage. Generally, the model supports the hypothesized relationship in *H3*. The predictor of firm capabilities explains 57.4 % of the variance and that of competitive advantage explains 87.5% of the variance.

The Measurement Model

The findings show that all path coefficients between measured (manifest) variables and latent (unobserved) variables in the model are significant $p < 0.05$, except for Intgeff

and inoeff. Second, the observed variables with significant *probabilities* have positive standardized regression weights greater than 0.5, except for ISbus**.**

ISHR was measured using ISmgt, ISexp, ISind and ISbus. All other manifest variables show a significant contribution to ISHR but not ISbus. Three items which measured ISRES, the ISfcs, ITServs, ISflex, indicate that all factor loadings were statistically significant. The variables measuring CAPABILITIES, which were significant, are Opertn and Mrkt. The Intgeff and Inoeff were not. Firms' competitive advantage was measured by four variables (SaleGr, MarkGr, FirmGr and FinLiq) which were all significant.

DISCUSSION OF THE FINDINGS

Human IT Resources and Competitive Advantage of the Firm

Meaningful IT use by SMTEs requires them to be able to define business opportunities on the basis of IT and implement appropriate IT to capture the defined opportunities. Given their meager resources and size, improper definition of IT priorities could cost a fortune. Thong (2001) contends that, if IT implementation and use is unsuccessful, it will have severe repercussions for small businesses due to the limited resources they control. Managers who understand of the role and potential offered by various ITs are in a position to facilitate their deployment make their businesses profitable. General IT skills also enable firms to source both IT services and expertise, and acquire the necessary resources from the factor market.

Findings show that external technical IT expertise is an important for a firm's competitive advantage. The results demonstrate that firms that are able to source these skills from vendors have the potential to outperform their rivals. These findings are in line with Thong (2001) and Yeung *et al.* (2003). Additionally, this option is in line with the cost-reduction strategy as posited by Porter (2001) that the ability to maintain low-cost production is positively associated with a firm's performance. Most SMEs in developing countries may face difficulties employing and retaining employees trained in ICT, thus sourcing from providers could be the most cost-effective option.

The facts on the ground reveal that external services are paramount for the successful deployment of IT. Some small firms, for example, reported that they had established partnerships with large companies and with such links large companies supported ICT technical services. Expertise from outside complements their IT knowledge and skills. This challenges claims by the proponents of RBV, who emphasize that the resource endowments controlled by a firm are the source of value. We add that firms could mobilize and deploy IT skills and knowledge internally but obtain those which they

lack from the factor market. This option could be cheaper and more reliable for SMTEs.

The findings IT resources, demonstrate the importance of managing external experts with regard to the selection of and ensuring that the business facts are well known to the external experts so as to implement a viable IT solution. It is also important to maintain a relationship with external experts as they offer their services to ensure business continuity.

Taken together, the importance of external IT technical expertise and the complex coordination role of managers in crafting and maintaining trust and a viable relationship with external vendors require interpersonal and communication skills. This complex technical skills acquisition and use is heterogeneous. Therefore it is an important source of sustainable competitive advantage.

Likewise, industry-specific knowledge and skills represent the presence of ISHR who have knowledge and experience of a specific business as opposed to general business knowledge and experience. This typifies those who, through training and/or working for a long time in a tourist-related business, have accumulated plenty of experience and knowledge. It is wise then to reason that knowledge of a specific business and the ability to make use of IT and understand firms IT requirements could result in a number of advantages. Consequently, as a result of a more focused IT deployment, these firms are likely to develop strong functionality capabilities.

Managers with such an understanding of the business are able to foresee business needs and develop reliable and working systems even sooner than competitors. This is due to the ability to strike a balance between business requirements and information systems resource requirements and use. If this combination is lacking, small firms may spend a lot of time attempting to negotiate between technological capability and business functionality requirements.

The findings further show that ISbus contribution to ISHR variance is not significant. This implies that firms with employees possessing general business knowledge and experience as opposed to specific knowledge of tourism are unlikely to be able to deploy various IT resources for value creation.

Information Systems Resources and Competitive Advantage

The findings from our study demonstrate that firms' ISRES influence positively both their capabilities and competitive advantage. Bharadwaj *et al.* (1999) point out that IT infrastructure is the foundation for an enterprise applying services which determine the

reach and range of the business opportunities available to the firms using IT to shape business strategies. While some studies have shown a significant and positive relationship between ISRES and firms' performance (see Emdad and Bhatt 2009; Porter and Miller 1985; Bharadwaj 2000), others found no significant contribution (Bhatt and Grover 2005; Dehning and Stratopoulos 2003). The latter argue that ISRES are readily available in the market and are not prohibitively expensive, so firms can easily acquire and make use of them. But the question that remains is whether merely possessing IT resources guarantees better performance.

We also found that IT infrastructure that connects a firm with its customers and suppliers and integrates separate data sources with various business partners is a predictor of better performance. A similar observation is mode by Kumar (2004). The role of this platform is related to the requirements of tourist firms to share information and data with an array of stakeholders, banks, travel agencies and attractive sites. In doing so, a great deal of communication, networking and data transfer is required. Therefore, such firms require a robust and proper IT platform to facilitate this interaction.

The computing platform was measured by the infrastructure that meets IT application needs and links firms with suppliers and customers. The importance of such an infrastructure is that firms are able to adequately and efficiently process their information and communicate with stakeholders. Thus, a computing platform will enable firms to reach global buyers and importantly suppliers will have the capacity to gather knowledge on customer preferences, thus making it possible to offer preferred products and services.

More importantly these findings point out the role a computing platform could play in overcoming the severe participation and communication barriers of SMTEs operating in the context of developing countries. Since other means of communication and transport are inadequate and poor in developing countries, the use of IT has the potential to help SMTEs overcome these barriers. Thus, the choice made on which IT platform to invest in and develop has the potential to differentiate between those which can enter into competition and those which cannot.

Additionally, it was found that the presence of reliable IT services - both the Internet and web-hosting services was critical for firms' performance. This component has a huge influence on firms' IT resources, and because they rely on external services, the reliability and quality of the services is vital. Essentially, there is a strong relationship between the IT resources a firm owns and controls and those owned and controlled by providers. Thus the internal and external IT resources and infrastructure need to merge

and work as if they are owned and controlled by a single entity. Failure to attain this kind of complementarity means that none of the components will perform as expected.

Thus, Internet service providers on the one hand and web-hosting services on the other are the backbone of communication in the tourist business. The ability to choose the providers and make them part of the business supply and value chain depends not only on the management's knowledge and experience but also on the presence of reliable providers.

In Tanzania, and perhaps most other developing countries, there are several providers of Internet and web-hosting services. With such a number of providers, small firms may face difficulties in choosing the appropriate provider, although they could choose them based on the cost of the service. Therefore, firms that are able to strike an appropriate deal in obtaining such services and thoroughly integrating external and their own resources stand out in terms of their performance.

The ISRES quality was also measured by the extent of its flexibility. This represents the scalability and modularity of the system. Information system flexibility gives a firm the ability to quickly and reliably adopt new software applications earlier than their competitors. Firms with a flexible IT infrastructure are able to modify the existing computing platform with little or no disruption to the current settings (see Ravichandran and Lertwongsatien 2005). As such, this capability makes it possible for firms to react quickly to technological advances and market changes, such as product and services customization.

THE FIRM'S CAPABILITIES

Evidence from this study shows that firms that are able to build market and operational capabilities perform better than others. This is a function of combining and mustering various resources in a manner that produces superior performance. Small firms which focus on customer needs and use IT to realise and meet these needs are better off in the marketplace than those which lack this focus. Using IT to deliver products and services quickly and cost effectively differentiates firms in terms of their performance. Furthermore, such use of IT to identify customer demands in an attempt to tailor products and services is crucial.

From the evidence gathered it is also important to notice that small firms that capitalize on the use of IT for ensuring streamlined business operations and efficiency so that objectives are met will continue to perform well. This reduces operational costs and leads to reduced waste and redundancy. Furthermore, efficient processes, whether

operational or not, are reflected in the way the firm meets its customers' needs or delivers its offerings in the marketplace, which essentially calls for the owner-managers to be both market and internally focused. These markets and operational efficiencies are important and valuable capabilities as opposed to integrity and innovative efficiency. There is no evidence whatsoever that SMTEs that use IT to develop integrity and innovative capabilities have performed better. Either SMEs have not explored this or if they have, the capabilities have never worked.

CONCLUSION

The empirical evidence has led to the classification of facts that were independently evaluated against firms' performance. It is thus important to note that the performance of the firm is a function of those resources, competences and capabilities working together but not a function of its individual resources, competences or capabilities. The total value of the IT resources and competences used as an appropriate strategy of a firm have the potential to differentiate it from others through better performance. The model validated combines in an integrated way the distinct types of resources and capabilities valuable for SMTEs' competitive advantage as they deploy IT. It is therefore important for SMTEs to consider all the variables of the model which significantly influence performance.

From the policy viewpoint, the findings clearly indicate the importance of stable and updated IT infrastructure. In the tourist sector we find numerous actors at regional, national and international level with appropriate IT- and Internet-based systems, all of whom can be connected via smooth- working and effective cooperation arrangements. Another policy implication from the study is the obvious need for support programmes for education and training in IT competences. The analyses hereby imply that SMTEs and their significant actors have to be closely involved in the process to further develop IT skills. External resources, in terms of experts and consultants, can only complement the core IT competencies of SMTEs.

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Annex 1: The Constructs of the Model

Latent /factor/construct Variables	**Manifest /indicator/ observed Variables**	**Source/References based on**
Firm Competitive advantage (*COMPETITIVEADV)*	Sales growth(*SaleGr)* Market growth (*MarkGr*) Firm growth (*FirmGr*) Financial performance(*FinLiq*) Market share	Rivard et al, (2006); Ravichandran and Lertwongsatien, (2005); Bhatt and Grover,(2005); Covin *et al*.,(2006)
Firm Capabilities (*CAPABILITIES)*	Operational efficiency(*Opertn*) Market efficiency (*Mrkt*) Integrity efficiency (*Intgeff*) Innovation efficiency (*Inoeff*)	Rivard et al, 2006; Ravichandran and Lertwongsatien, 2005
Firm IT Resources (*ISRES*)	Computing platform meeting current business needs, and linking suppliers, customers, and firm(*ISfcs*), IT flexibility (*ISflex*), Service provider(Internet and web hosting services)(*ITServs)*	Bhatt and Grover, 2005; Ravichandran and Lertwongsatien, 2005 Thong, 2001, Attewell, 1992 Developed based on pilot study
Firm Human IT resources competences (*ISHR*)	Managerial IT skills(*ISMgt*) IT Business skills and experience(*ISbus*) Industry knowledge and experience(*ISind*) Reliable IT knowledge source hired (*ISexp*)	Ravichandran and Lertwongsatien, 2005; Bhatt and Grover, 2005 Thong, 2001, Attewell, 1992

Annex 2: SEM Results