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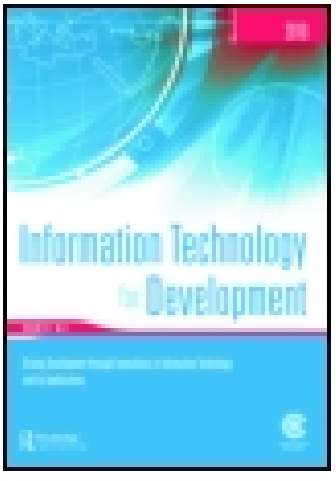

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Resources, Electronic-Commerce Capabilities and Electronic-Commerce Benefits: Conceptualizing the Links

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Past research on electronic commerce (e-commerce) in developing economies (DEs) shows that there is an acute lack of theoretical frameworks and empirical evidence to understand how DE firms orient resources to create e-commerce capabilities and achieve e-commerce benefits amidst their national constraints. This paper uses the resource-based theory and the capability life cycle to investigate how a used-car retail firm in Ghana oriented resources to create e-commerce capabilities and achieve e-commerce benefits. Findings from the longitudinal case study suggest that, first, in DEs, because the institutional foundations are weak and the obstacles are many, managerial capabilities and global information systems (IS) resources enable firms to withstand or circumvent the national constraints and create e-commerce capabilities and benefits. Second, the value of resources to a firm is relatively time and path dependent; changes in the environment can either initiate their renewal or decline in the firm. Having a focus on the strategic orientation of the firm is therefore of more value than focusing on IS resources. The paper proposes a cyclic resource-based model of e-commerce capability evolution which offers new insights into the way in which e-commerce capabilities evolve to create e-commerce benefits.

Keywords: resource-based theory; developing economies; e-commerce; capabilities

Introduction

Extant research of both information technology (IT) and electronic commerce (e-commerce) in developing economies (DEs) has identified the national-level policy and infrastructure (physical, institutional, financial, market, cultural and technological) as pre-conditions for IT usage and the conduct of e-commerce (Boateng, Molla, & Heeks, 2009; Roztocki & Weistroffer, 2009). These pre-conditions tend to act as constraints to successful e-commerce development and firms need sound strategy to manage them. Studies which have focused on the firm-level efforts echo some success stories in firms developing e-commerce capabilities and realizing e-commerce benefits (Boateng, Molla, Heeks, & Hinson, 2011; Effah, 2012). The studies tend to offer some evidence of DE firms achieving strategic, informational and operational benefits from e-commerce adoption (Molla & Heeks, 2007). The promise of these benefits has led to questions about how firms go beyond adoption to achieve benefits and align e-commerce with business strategies (Cui, Zhang, Zhang, & Huang, 2006).

In reviewing e-commerce-in-DEs literature in more detail – both conceptual (Boateng, Heeks, Molla, & Hinson, 2008; Wresch, 2003) and empirical (Boateng et al., 2011; Cui et al., 2006; Molla & Heeks, 2007) – we find the literature, first, is more oriented to investigating discriminating factors between initial adopters and non-adopters. Second, the studies echo that initial efforts to address the resource poverty in DEs is characterized by a complex interaction

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Francis Andohbaidoo is the accepting Editor for this article.

of global-, national- and firm-level resources. For example, firms in Ghana and Mexico have been reported as using web hosting services abroad to bypass the weakness of local web services and drawing on social capital to attract resources which are lacking at the firm level (Effah, 2012; Pedraza, Guerrero, & Lavin, 2011). Though valuable, these studies are quite silent on the strategies through which DE firms navigate around constraints to realize benefits. Thus, DE firms could be greatly helped by research that provides such answers.

The underpinning question of this research is, "How do DE firms orient their resources to develop e-commerce capabilities and achieve e-commerce benefits amidst their national constraints?" This research uses the resource-based theory (RBT) and the capability life cycle (CLC) framework as its theoretical lens. A few studies have used the RBT to examine e-commerce in DEs from a strategic perspective (Cui et al., 2006; Montealegre, 2002; Zhu & Kraemer, 2005). These studies, though valuable, emphasize the need for a more process-based understanding of capability development when compared with the present existence of factor-oriented models which fail to offer an understanding of how these capabilities are developed and aligned with a firm's overall strategy. There is therefore some room for contribution to research on the RBT and e-commerce in DEs. This study uses a case study of a used-car retailer in Ghana to find answers to the research question. Ghana has been chosen as the research site because it exhibits relative resource poverty as other DEs and also has some track record of e-commerce implementation (Boateng et al., 2011; Effah, 2012). This paper extends prior research stemming from a longitudinal study on e-commerce strategies of DE firms (Boateng, Budu & Okai, 2012; Boateng et al., 2011). Though valuable, none of these studies sought to empirically explain how firms orient their resources to develop e-commerce capabilities and achieve benefits amidst their national constraints. This paper proposes a cyclic resource-based model which explains e-commerce capability evolution in DE firms. The model is supported by five propositions which can be useful for future research. The paper is thus organized as follows: the first section is the introduction and the second section presents an overview of e-commerce benefits and capabilities and reviews strategic approaches to e-commerce in DEs. The third section presents an overview of the RBT and develops a model for e-commerce capability evolution. The fourth and fifth sections present the research methods used in data collection and case study findings, respectively. The sixth and seventh sections present the analysis of the case study, conclusions and research implications of this study.

E-commerce in DEs

Exploring e-commerce benefits and capabilities

In this paper, e-commerce is defined as the use of information and communication technologies (ICTs), particularly the Internet, to share business information, to maintain business relationships and to conduct business transactions involving both businesses and individuals (Zwass, 1996). E-business, sometimes used interchangeably with e-commerce, goes beyond e-commerce, as it is conceptualized as the use of ICTs, especially the Internet, in all internal and external activities of a firm (Holsapple & Singh, 2000). These conceptualizations underpin this study.

Previous literature categorizes the benefits obtained from e-commerce into three interrelated types of benefits, namely, operational, informational and strategic (Boateng et al., 2008). The benefits associated with the reduction of transaction costs and achieving operational efficiency through e-commerce are categorized as operational benefits. Firms achieve informational benefits when e-commerce facilitates improved access to market information and improved communication and relationships between the firm and its trading partners and customers. Firms achieve strategic benefits when e-commerce facilitates improved loyalty of trading partners and customers, and opportunities to extend their reach and improve revenue (Molla &

Heeks, 2007). However, firms have to be able to create and effectively deploy e-commerce capabilities before they can achieve these e-commerce benefits. Research examining e-commerce capabilities conceptualizes five hierarchical forms of capabilities which characterize the extent of integration of the Internet and its related technologies. These forms of capabilities are namely: communication, informational, interactional, transactional and transformational e-commerce (Molla & Licker, 2005). Communication capability refers to using email alongside traditional communication technologies, like fax and telephone, to support information and transactional processes. Informational capability is an extension of the communication capability where an online presence is used to inform potential and existing trading partners and customers. Interactional capability adds the capability of online interactions between a firm and its customers or trading partners to the informational capability. Transactional capability adds transactional services, such as an online purchasing, and account management to the interactional capability. Transformational capability refers to the seamless integration of business processes between a firm, its suppliers and customers for information sharing. Through these capabilities firms may achieve the three interrelated types of e-commerce benefits.

Strategic approaches to e-commerce in DEs

The term DEs, as used in this paper, refers to economies which have a low gross national per capita income (see Roztocki & Weistroffer, 2009). Another commonly used classification, developing countries, tends to refer to low- and middle-income countries (Nielsen, 2011). A common feature to both classifications is that a majority of businesses are micro and small businesses. These businesses tend to lack access to financial, managerial and technical resources to effectively use and invest in new technologies (Polatoglu, 2007). The adoption of IT can either become stifled by these constraints or IT can also become the means through which these businesses navigate around constraints. Thus, this study seeks to explain how DE firms navigate around these constraints to create value in e-commerce.

Strategic approaches to e-commerce in DEs are increasingly gaining attention as researchers are getting interested in e-commerce strategy, support and policy studies (Boateng et al., 2009). The theoretical lens for these studies tends to cover a number of different theories in strategic management (Cui et al., 2006), theories in social–technical studies (Effah, 2012) and analytical frameworks derived from a body of theoretical works (Pedraza et al., 2011). Table 1 summarizes research on e-commerce in DEs undertaken from a strategic perspective and relevant to this study's research purpose.

These studies highlight a number of critical resources for e-commerce success, while making a case for studies on the strategic links or alignment between resources, e-commerce capabilities and e-commerce benefits. Suggested resources which underpin this alignment are in-house information systems (IS) capabilities, adaptation of business models and strategic alliances (Pedraza et al., 2011; Zhu & Kraemer, 2005). In a study on e-commerce implementation, Montealegre (2002) developed a process model of capability development consisting of the *capability to strategize*, *capability to be flexible*, *capability to integrate* and *capability to engender trust*. However, the study is silent on the link between the proposed managerial capabilities and e-commerce capabilities. This study attempts to address this gap.

Orienting resources to achieve e-commerce benefits

Defining resources

In this research, we define resources as the "assets and capabilities that are available and useful in detecting and responding to market opportunities" (Wade & Hulland, 2004, p. 109). Assets are

Table 1. Studies on e-commerce in DEs undertaken from a strategic perspective.

Research study	Focus	Underpinning theory and framework	Research method and countries	Relevant gaps for future research
Theories from strategic management				
Montealegre (2002)	Analysis of the e-commerce strategy of a stock exchange company	RBT	Qualitative	Need to explore the link between the proposed managerial capabilities and e-commerce capabilities
		Dynamic capabilities approach	Ecuador	Need for more process-based models on RBT in e-commerce research
García-Murillo (2004)	Assessing factors which influences institutions and e-commerce implementation	Institutional economics RBT	Qualitative Mexico	Need to contextualize existing knowledge to be consistent with the dynamic nature of the environment
Zhu and Kraemer (2005)	Assessing diffusion and post-adoption variation in the usage and value of e-business in retail firms in developed and developing countries	Technology–organization–environment framework	Quantitative	Need to understand the complex relationships among technology, environment and organizational performance
		RBT	USA, Mexico, Singapore, Taiwan, France, Brazil Denmark	Need to differentiate value creation ability of resources
Cui et al. (2006)	Assessing impact of environmental resources on Shanghai firms' IT usage and e-business practices	Process-based model RBT	Quantitative China	Need to investigate how local firms can create a good fit between IT physical assets and management resources
Theory from social–technical studies				
Effah (2012)	Assess culture an enabler to the success of an "e-funeral" portal	Actor network theory	Qualitative Ghana	Need to develop a strategic process of contextualization of e-business models
Framework-based approaches				
Li and Chang (2004)	Develop a network-based conceptual framework of e-business strategy	4-dimensional typology of strategy content and 3-dimensional typology of strategy process	Qualitative China	Need to explore the link between the proposed strategic recommendations and e-commerce capabilities, and how the link leads to benefits
Polatoglu (2007)	Analysis of successful strategies and approaches of a small e-retailer	Zwass 5C-framework	Qualitative Turkey	Need to understand how to create alignment between e-business and business strategies
Pedraza et al. (2011)	Analysis of the perceptions of alignment of e-business with SMEs' strategies	Strategic alignment maturity model	Quantitative Mexico	Need to understand how to use IT as a resource to support the enterprise strategy and even to reinvent it in the pursuit of superior value

the tangible or intangible inputs into a firm's processes for creating, producing and/or offering its products and services to a market; whereas capabilities are the repeatable patterns of action which underpin the use of assets in these processes (Sanchez, Heene, & Thomas, 1996). Tangible assets include the financial capital and the physical assets of the firm such as infrastructure and raw materials (Barney, 1991). Intangible assets comprise social capital, reputation, brand image and product quality (Carmeli & Tishler, 2004). Another set of assets are personnel-based or organizational assets, which include technical know-how, managerial commitment, knowledge and skills, and organizational culture (Barney, 1991). On the other hand, capabilities have received considerable coverage in strategic management literature and thus there are a number of conceptualizations of what they are and what they constitute. The seeming dominant perspectives classify capabilities as being operational, core or dynamic (Teece et al., 1997; Wang & Ahmed, 2007). Firms deploy operational or ordinary capabilities to attain a desired goal which ensures their *economic survival*. Core capabilities are deployed when a bundle of resources are deployed in the *strategic direction or orientation* of the firm. The use of the term "strategic orientation" reflects the firm's perception of the profitable opportunities that it can "see" or strategically evaluate in its business environment and is willing to take advantage of with respect to its existing and "obtainable" resources (Pitelis & Pseiridis, 1999). E-commerce capabilities may be considered as core capabilities when they are deployed to achieve specific objectives within the strategic orientation of the firm. Dynamic capabilities become the overarching capabilities which go beyond achieving economic survival and strategic objectives to ensure that a firm's performance is sustained in response to the threats and opportunities in its business environment (Wang & Ahmed, 2007). This makes them critical to a firm's performance in the volatile environments in DEs (Montealegre, 2002). In effect, assets and capabilities, as firm resources, are controlled by the firm and enable the firm to conceive and implement strategies which improve its performance. However, one may ask, do all resources have an equal effect/impact on firms? This leads us to consider the attributes which help to identify and differentiate resources. RBT posits that to create and sustain a performance beyond that of its competitors in the marketplace, a firm's resources must be *heterogeneous* and *immobile.* To have that potential, the resources must simultaneously have attributes of being valuable, rare, imperfectly imitable and not strategically substitutable by other resources (see Barney, 1991). The latter two attributes, inimitability and non-substitutability, are of primary focus since they enable a firm to sustain, protect or improve its performance. Thus, firms need to have the ability to evolve resources to acquire the higher order attributes which ensure the improvement of their performance.

E-commerce capabilities evolution and e-commerce benefits

The understanding of how resources evolve through a set of possible paths is theoretically characterized by the CLC (Helfat & Peteraf, 2003). Paths refer to the strategic alternatives available to the firm, or in relation to this study, the set of decision options through which resource evolution occurs to create benefits. While the dynamic capabilities framework argues that firms need dynamic capabilities to bring a change into a firm's capabilities in response to rapidly changing environments (Teece et al., 1997), the authors of the CLC argue that *all capabilities have the potential to accommodate change* and not all change requires the intervention of "dynamic capabilities" as intermediaries (Helfat & Peteraf, 2003). The CLC was conceptualized as a response to the absence of an understanding of the origin of the heterogeneity of resources and how resources emerge, develop, progress and decline in firms. The CLC is defined by three main stages consisting of the founding, developing and maturity stage; and then, after the maturity stage, the capability can branch into one of at least six additional stages: retirement (death), retrenchment,

renewal, replication, redeployment and recombination, which influence the future evolution of the capability. In relating the above theoretical concepts to e-commerce, we argue that at the founding stage of e-commerce capability evolution, firms will have to identify resources and organize them around the objective of developing e-commerce capabilities to achieve e-commerce benefits. Resource attributes will play a key role in such an exercise. At the developing stage, firms develop e-commerce capabilities through three distinctive processes: coordination, learning and reconfiguration. *Coordination* stems from recognizing the congruencies and complementarities among and between existing resources or current processes and asset positions. *Learning* through repetition and experimentation enables a firm to acquire the tacit knowledge to perform its processes better and quicker, and for new processes to be identified. Lastly, *reconfiguration* involves the examination of a firm's business environment to reconfigure its resource portfolio to sustain the strategic value of the developed e-commerce capability to the firm. After this stage, the e-commerce capability becomes a learned organizational skill; its development may cease and enter the maturity stage. At the maturity stage, the e-commerce capability becomes more habitual and embedded in organizational memory and culture. Hence, the firm gains the potential of generating advanced forms of e-commerce benefits if the e-commerce capability is deployed within the strategic orientation of the firm. Beyond the maturity stage, the e-commerce capability may branch into two key phases: rebuilding or declining. In the rebuilding phase, the e-commerce capability may be renewed, redeployed, recombined or replicated, and thus, initiate another evolution process. In the declining phase, the e-commerce capability may be retrenched or retired and this may also affect other resources which contribute to the development of the capability. Figure 1 summarizes these conceptual arguments in a resource-based model for e-commerce capability evolution. The model has eight constructs, namely strategic orientation (as defined by the firm), three stages of capability development (founding, developing and maturity), two post-maturity stages (resource building and resource declining) and two interrelated outcomes (e-commerce capabilities and e-commerce benefits). The model informed the collection, presentation and analysis of data for this study.

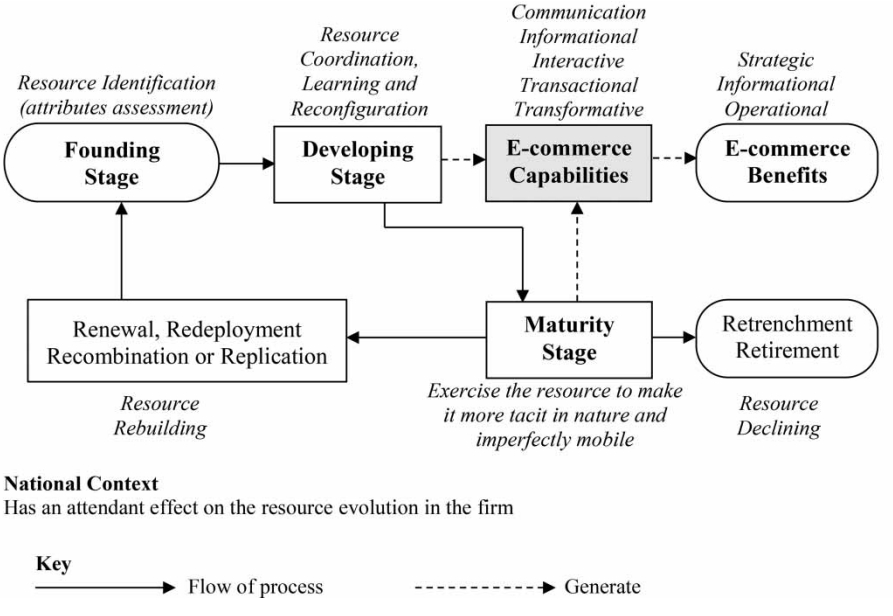

Figure 1. Resource-based model of e-commerce capability evolution.

Research methods

This research is undertaken from the perspective of critical realism (CR). CR enables an IS researcher to "get beneath the surface to understand and explain why things are as they are, to hypothesize the structures and mechanisms that shape observable events" (Mingers, 2004, p. 100). To do this, CR adopts a retroduction research strategy (Danermark, Ekstrom, Jakobsen, & Karlsson, 2002). Retroduction is "advancing from one thing (empirical observation of events) and arriving at something different (a conceptualization of transfactual conditions)" (Danermark et al., 2002, p. 96). Retroduction enables the CR researcher to establish the basic conditions for a phenomenon, such as an e-commerce capability, to exist. Hence, without these conditions the phenomenon will not exist. The use of retroduction as a research strategy involves three main steps. First, the researcher begins by examining the observed events and connections between/in a social phenomenon. In this study, this requirement leads to a thorough review of previous research on e-commerce in DEs to explore the different theoretical and conceptual underpinnings which explain the previously observed events. A thorough review had been previously done in Boateng et al. (2009) and a brief overview is also presented in the second section of this paper. Second, the researcher needs to postulate the existence of real structures and mechanisms, and how they would describe and explain relationships observed, if they existed (Easton, 2010). The CR researcher "theorizes a model of an underlying mechanism which might have produced patterns seen in the data, and then works backwards from the data towards verifying or otherwise that model" (Mason, 2002, p. 181). Figure 1 denotes the model theorization. The third step is to attempt to demonstrate the existence and operation of these structures and mechanisms postulated in the conceptual model. The researcher needs to select appropriate data collection methods which fit the research paradigm and support the research purpose. A longitudinal case study on e-commerce development in a used-car retailer in Ghana was conducted to seek answers to our research questions. A longitudinal case study tends to be an appropriate method for this study as it is argued as the best qualitative method to discover, document and unearth a phenomenon such as the strategic processes around IS and business resources (Benbasat, Goldstein, & Mead, 2002).

Selecting case organization

The external validity of case studies has been argued to be enhanced by the strategic selection of cases rather than their statistical selection (De Vaus, 2001). It entails being somewhat knowledgeable about characteristics of the case before a main case study begins. Data collection was, therefore, scheduled in two stages consisting of a pilot study, which took place from 26 April to 15 June 2006; and a main study, which took place in three phases: July 2006 to December 2006; October 2008 to December 2008 and October 2012 to December 2012. In the pilot study, data were collected across 20 firms, 3 educational institutions and 2 industrial associations (see Boateng et al., 2011). At the end of the pilot study, four firms were selected as potential case organizations. The criteria for selection were related to our theoretical concepts, particularly, a firm with a historical account of developing and experiencing varying forms of e-commerce capabilities and benefits. After the first phase of data collection, only one of the four firms, a used-car retailer, gave access for a longitudinal study and also had sufficient experience to enable such a detailed analysis of e-commerce evolution. CR researchers seek to generalize on the ability of the underlying causal mechanisms to explain a particular occurrence of the phenomenon being studied. Hence, the use of single case offers more confidence in explanations where predictions are replicated (De Vaus, 2001).

Data collection

The primary data collection method employed was semi-structured interviews. The primary source of data on the case firm was obtained through 18 semi-structured interviews in the first phase, 20 interviews in the second phase and 15 interviews in the third phase. In each phase, the five core employees of the firm who have worked with the firm since 2003 and a minimum of four clients and two bank managers were interviewed. The firm operates a staff of five core members; two of whom are full-time employees – the managing director (also the owner) and an office assistant – and three part-time employees – an Internet marketing strategist and two directors. The managing director has a postgraduate diploma in advanced IT. The directors have tertiary degrees in banking and finance. The office assistant has a higher national diploma in marketing. The Internet marketing strategist has a postgraduate degree in IT. The firm is also supported by seven business partners, namely a clearing agent, a vehicle registration officer, a lawyer, an accountant, a leasing company, a bank and an insurance company. These partners aid the delivery of its services to its clients. CR encourages the use of multiple data collection methods to enhance triangulation of perspectives. As such, interviews and participant observations were conducted with freight clearing agencies, insurance agencies, clients and other competitors to verify and obtain other perspectives on data obtained from the case firm. With the permission of the interviewees, the interviews were taped and transcribed, with copies of transcribed interviews returned to them to resolve any discrepancies. Secondary data sources included documentary materials of the firm's history, industry reports and verified media accounts.

Mode of analysis

CR requires abstraction, which entails separating the necessary and constituent properties (transfactual conditions) in a social phenomenon from contingent ones in order to find what it is in the phenomenon that makes it what it is and not something else (Danermark et al., 2002). The first set of abstraction was completed in 2010 and was published as a teaching case study, only presenting an account of e-commerce events between 2004 and 2008 (see Boateng et al., 2012). More data were collected in the third phase and presented in this paper. Analytical techniques were drawn from the qualitative data analysis approach by Miles, Huberman, and Saldana (2013) and Easton's guidelines for CR case study (Easton, 2010). Themes were developed from transcribed interviews with the aid of ATLAS.ti® software, a qualitative analysis software. Each e-commerce capability was documented and analyzed.

Case findings

Company profile

The firm, referred to as Lankah Consult (a pseudonym), began in 2003 as a general merchant selling used-cars to Ghanaians through the Internet. The business objective of the firm is to provide Ghanaians with a convenient medium for buying their choice cars at a relatively affordable price. The cars are imported from Germany and the USA through a partnership with a German used-car retailer and a license to participate in automobile auctions in the USA. The firm has no physical warehouse or showroom; the cars available for purchase are cataloged on its website. Potential customers contact the firm through the website, email and telephone to place orders. The customer makes a payment for the cost of the car and shipping, and optionally, customs processing, registration and insurance. Table 2 shows the number of cars sold between 2004 and 2012. In response to market opportunities and competition from franchise vehicle dealers, the firm stopped its services for individual customers in 2008 and focused on

Table 2. Financial profile of Lankah Consult.

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Net profit after taxes (car sales) in US dollars	6850	19,180	24,600	44,500	176,400	250,000	123,400	318,200	325,500
Number of cars sold	9	16	18	35	120	190	100	157	150
Number of core employees	4	4	5	5	5	5	5	5	5
Sales from corporate clients									
NAGRAT	–	–	–	–	25	40	Reduced budget[a]	60	70
GNAT	–	–	–	–	90	150	100	32	15
AngloGold Ashanti	–	–	–	–	–	–	–	65[b]	65[b]

Note: GNAT, Ghana National Association of Teachers; NAGRAT, National Association of Graduate Teachers.
[a]NAGRAT reduced its budget allocation which affected the ability for its members to order cars through Lankah.
[b]AngloGold Ashanti purchased high premium vehicles which enabled Lankah to make significant gains from each purchase.

corporate clients and associations. This was a strategic redirection which has increased revenue beyond US$100,000 a year since 2008.

E-commerce capability development

The development of e-commerce capabilities can be traced in three main stages: informational, interactional and redeployed informational.

Informational e-commerce capability (January 2004–December 2004)

Lankah Consult was born out of the owner-manager's keen interest in automobiles. In 2003, John, the owner-manager, spent six months studying the car retail market in Accra. After the study, John traveled to work in the UK to acquire capital to start the business. In the UK, he opened an online bank account and traveled to Germany to establish the business relationship with a German used-car retailer (hereafter known as Braun). Braun became the firm's supplier of used-cars from Germany in 2003. John considered that creating an online presence to support the firm's activities was critical to the ability to exploit this market opportunity. He explains that

> I conducted an Internet research on the used-car retail market in Europe. Though much had been studied through my diploma program (in IT), knowledge on which services and functionalities to provide, was gained through the Internet research.

The firm's e-commerce activities entailed developing an informational capability comprising a static website, the use of the Internet for online marketing and email for facilitating transactional enquiries. The first website was designed by John in January 2004. John had basic skills of using the Microsoft website development package, MS FrontPage, to develop websites. It was hosted on a free 100 MB server space provided by an American web hosting company. It consisted of three web pages, including a slideshow consisting of pictures of cars which were available for export (and sale) to Ghana from Germany. Within the first quarter of 2004, the firm claims to have received an average of about 6 email enquiries and 15 telephone enquiries per week. A majority of potential customers who made enquiries lost interest after realizing that the firm had no physical showroom. John had earlier anticipated this situation and had shipped the first two cars to Ghana before advertising them. Due to the skepticism of customers, John

focused on using social interaction to develop a personal business relationship with them. One of the customers, a resident medical doctor, comments that

> John used to frequently meet up with me at the hospital during weekdays to discuss the options available and my preferences. This information was then relayed to Braun. By the weekend, I received details and pictures of my cars of interest through email. By the time I met John during the following week, I would have my questions and/or decision on the purchase.

Though this was unsustainable for a large number of customers, John explains that it was necessary as the firm was just building its clientele and the Internet and telephone conversations were relatively not enough to do business within the Ghanaian culture.

Interactional e-commerce capability (January 2005–December 2007)

Interactional e-commerce capability development occurred in two stages: an initial attempt which failed and a relatively successful second attempt.

Failed redesign of website (January 2005–December 2005). To respond to the increasing enquiries made by potential customers, it became necessary to redesign the website with the functionality of cataloging the used-cars and making enquiries online. An interactive website was considered as a more efficient way of extending the firm's reach. An IT firm was contracted to redevelop the website. This initial attempt to develop an interactive website failed due to poor project management of the outsourced project and a number of interrelated issues including the lack of online payment platforms in Ghana, and the cost of relying on social networks (see Boateng et al., 2012). John resolved that if he had to develop a new website then it had to be done in a manner in which he can have adequate control, knowledge and flexibility in managing its content and the web hosting service. Though the firm lost its website by the end of 2005, 16 cars were sold through its website, e-mail, adverts and referrals in that year. Ten of the 16 cars were purchased by Ghanaian peacekeeping officers in Sudan and Yugoslavia. The office assistant noted that trust between the soldiers and the firm was built through social interaction with *either the soldiers' spouses or siblings*. The interrelationship between social networks, trust and online transactions is therefore further emphasized.

Design of interactive website (January 2006–December 2007). After the failed website project, John decided it was necessary to employ someone knowledgeable in website development and Internet marketing. He employed a colleague, from his undergraduate alma mater, as a part-time Internet marketing strategist (hereafter referred to as Michael) for the firm. John and Michael discussed and researched on the best means of developing the website. Michael reflects that

> Our aim was to develop the website with a customer-oriented focus and therefore considered giving it a name that emphasized a sense of personalization aimed at the customer. This was signified by the prefix "my," hence, www.myxxxxxxxxxx.com.

The design was also influenced by the structure of presentation of German automobile retail websites. The provision of the functionality for making recommendations was considered essential as the firm had learnt from its experience with the Ghanaian peacekeeping soldiers. The domain name was registered and hosted on a 10 GB server space provided by an American web hosting company at the cost of US$100 per year. The new website was built through an open-source content management system known as Joomla. The firm also purchased a web application, EZ Autos, an automobile store component which can be integrated into Joomla. The firm was able to advertise a minimum of 144 cars through the online product catalog by

December 2007. The website consisted of seven pages, including the functionality to buy, search or request for a car, recommend a car and buy insurance services through the firm's partners.

Beyond e-commerce capability development (January 2008–December 2012)

The major threat to the firm's business operations surfaced in 2006 after Ghanaian banks and private-sector firms began to offer employee vehicle loans to purchase new cars through partnerships with franchise vehicle dealers. This competition necessitated the firm to seek partnerships with financial institutions to provide financing schemes for its salaried consumers. One of the directors of Lankah Consult explained that

> Lankah Consult had to take strategic measures to respond to the competition from the franchise dealers which surfaced in December 2006. As directors, we discussed the challenges with John and introduced him to seven financial institutions.

Consequently, in July 2007, the firm approached four financial leasing companies and three banks to explore the possibility of providing a pre-finance facility for its salaried customers. An international bank and one of the leasing companies accepted the firm's proposal. By March 2008, three customers, medical doctors, had benefited from the scheme and the purchase of the cars had been fulfilled. The firm's partnerships engendered trust and good firm reputation, which generated further referrals and recommendations, and reinforced social relationships and the growth of social networks. On the other hand, through this association, John assessed that it was more financially beneficial and *secure* to trade with corporate clients and associations. Upon his investigation, registered groups like the National Association of Graduate Teachers and Ghana National Association of Teachers were interested in purchasing a large number of cars, between 50 and 100, annually (Table 2). These orders could not be fulfilled by Braun, which was a dilemma for the firm. In June 2008, the firm was invited by trade officials from the US Embassy in Ghana to participate in US automobile trade shows in Las Vegas. These trade shows included the Automotive Aftermarket Products Expo and Specialty Equipment Market Association. The firm took advantage of the opportunity and has attended both auto shows since 2008. John also obtained an auction license in Virginia to enable the firm to participate in auto auctions. By December 2008, the firm had begun to purchase cars in large quantities for a number of associations and firms (Table 2). The capability to buy used-cars from the USA initiated a gradual decline of three key resources or strategic business initiatives as they lost their value and relevance to the strategic direction of the firm, namely the sale of cars to individual clients; the strategic alliance with Braun and the interactive web functionality for individual clients. John considers the decline of the key resources as difficult, but a necessary strategic decision. He comments that

> It was much more financially sound to work with the registered associations since they were more attractive to the banks for pre-financing. In respect of our working relationship, I travelled to Germany and discussed the opportunity with our German partners. This was necessary since I used the German partners as referrals in my trade negotiations with used-car dealers in the USA.

Concerning the website, the decline of the interactional capability led the firm to redeploy the capability to support transactions with corporate clients and associations. The redeployment led to the rebuilding of an informational capability relevant to the new strategic orientation of the firm. John explains that

> We have not totally abandoned the Internet. We have bought a software named "Online Ringman/Xcira" which will help us launch an online car auction platform by 2015. We have also for the first time purchased land to build an ultra-modern auto-shop to provide sales and engineering services to our corporate clients.

The firm has moved back to informational e-commerce capability, but with a focus on a different market segment. The website and email address are currently used for initiating business relationships and transactions, and informing clients. The firm plans to move to a more transactional e-commerce capability by 2015.

Discussion: capability development as an emergent process

A critical realist view of causation

The critical realist view of causation entails four components: events, mechanisms, structures and conditions (Easton, 2010). Events are the outcomes of the phenomenon which the researcher is seeking to investigate. In this case, there are three main events which characterize the evolution of e-commerce capabilities. The first event, development of *Informational Capability*, characterizes the initial adoption phase of e-commerce. The second and third events, development of *Interactional Capability* and *Redeployed Informational Capability*, characterize the post-adoption phase when the firm sought to institutionalize e-commerce. These events tend to stem from mechanisms which depend on certain structures (embodied in entities) and conditions to occur. The way things act are known as mechanisms. Entities, also known as objects, are anything that have causal powers and liabilities (Easton, 2010). These may include employees, e-commerce technologies, resources, social capital and so on. Entities have structures, consisting of sets of internally related objects and practices. Our case firm, as an organization, consists of a set of other entities (people, resources, processes and so on) which affect one another. CR researchers seek causal explanations; explanations which identify entities and the mechanisms that connect them to generate events within specific conditions. There could be the possibility of one or more causal explanations at work for any given event. The researcher's objective is to identify which of these causal explanations is working in the particular case being studied. To do this, we begin with the condensation and display of data, Figure 2 and Table 3, to identify the key entities and conditions which combine within mechanisms to generate particular events (Miles et al., 2013).

In reference to our conceptual model, we postulate the stages of capability development – founding, developing and maturity – as the processes which led to the generation of three events. However, our findings demonstrate that there is an extra stage, *Orienting Stage*, which seeks to unearth how the case firm aligned e-commerce capabilities with business processes (Figure 2). Table 3 summarizes the key resources (entities) and strategic actions (conditions) which underpin these stages of capability development.

In reference to Figure 2 and Table 3, we observe the three main events to be sequential, which is tempting to suggest that events cause events. However, from the CR perspective, when the constituent entities and conditions of an event change, a new event is generated (Easton, 2010). Figure 2 and Table 3 illustrate these changes. Two possible mechanisms can be identified in the three events. Events one and three stem from mechanisms which characterize the use of the informational capabilities as *enablers* of business processes. Event two stems from a mechanism which characterizes the use of the interactional capability as a *driver* of business processes. Further, consistent with previous studies, earlier discussed, we observe a number of key entities or resources (global IS resources, social capital, strategic alliances, strategic orientation and managerial capabilities) which matter in the development of the mechanisms which underpin e-commerce capabilities. But we need answers on how these resources connect to generate certain mechanisms which lead to observed events. Each of the stages of e-commerce evolution will be examined for answers.

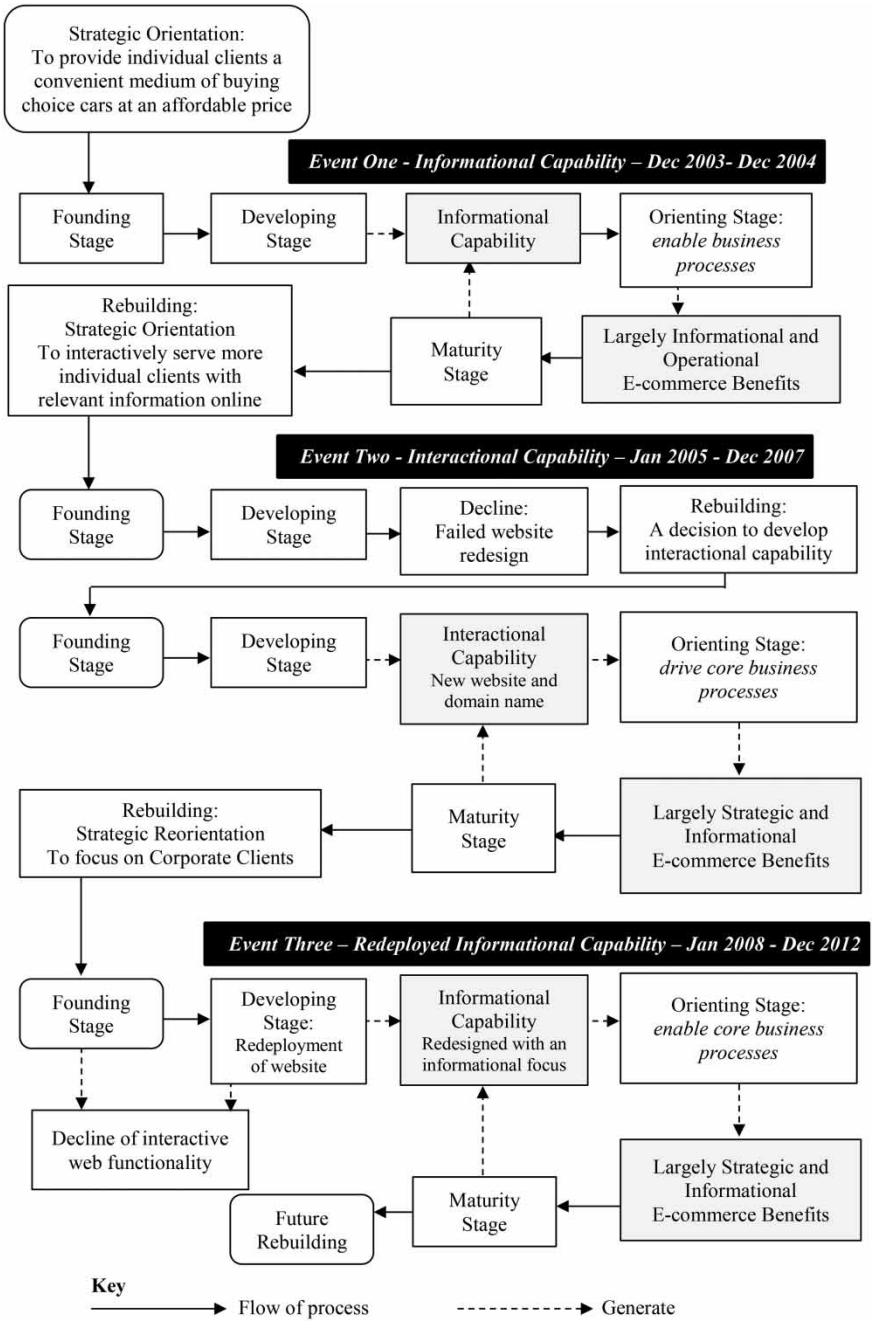

Figure 2. E-commerce capability evolution in Lankah Consult.

Founding stage

At the *founding stage*, the firm is required to identify the necessary valuable resources and organize them around the objective of developing an e-commerce capability. In event one, developing an informational capability was conceived as an enabler of the firm's *strategic*

Table 3. Key resources and strategic actions which underpin e-capability evolution.

Founding stage	Developing stage	Orienting stage	Maturity stage
Key resources (entities)	Key actions (conditions) used in e-commerce capability development	Key actions (conditions) for alignment of e-commerce capability and business processes	Key actions (conditions) for e-commerce capability maintenance
Event one: informational capability – December 2003–December 2004			
Use of resources abroad: changing national ICT context (percentage of internet users: 1.19–1.72)[a] *Social capital for offline marketing* *Strategic alliances with Braun* *Strategic orientation* *Managerial capabilities* *Innovative capability* *IS technical skills*	1. Researching to inform e-commerce capability development 2. Identifying and acquiring valuable global IS resources 3. Using the path of least cost to develop e-commerce capability – internal IS skills	*E-capability as an enabler* 1. Building social capital to complement online functionality 2. Using online functionality to support core activities including buyer decision-making	1. Identifying the weaknesses and threats to the e-commerce capability and benefits 2. Seeking alternatives to improve the value creation ability of the e-commerce capability
Event two: interactional capability – January 2005–December 2007			
Use of resources abroad: changing national ICT context (percentage of internet users: 1.83–3.85)[a] *New web design skills* *Social capital with clients* *Strategic alliances with Braun* *Strategic orientation* *Managerial capabilities* *Innovative capability* *Absorptive capability*	1. Learning from past experience/failed projects 2. Identifying and acquiring valuable global and industry IS resources 3. Using the path of least cost to develop e-commerce capability – open-source technologies	*E-capability as a driver* 1. Integrating online functionality with core activities to drive the activities 2. Using social capital to inform web functionalities 3. Integrating knowledge from business partnerships into website content	1. Identifying the weaknesses and threats to the e-commerce capability and benefits 2. Seeking alternatives to improve the value creation ability of the e-commerce capability

(*Continued*)

Table 3. Continued.

Founding stage	Developing stage	Orienting stage	Maturity stage
Event three: redeployed informational capability – January 2008–December 2012			
Use of resources abroad: changing national ICT context (percentage of internet users: 4.27–17.11)[a]	1. Redeploying the capability to be consistent with strategic orientation of the firm 2. Identifying and acquiring valuable global IS resources – online auction software – for future capabilities	*E-capability as an enabler* 1. Taking strategic decisions to retire or decline previously key resources 2. Moving beyond e-commerce capabilities to focus on managerial capabilities 3. Initiating the adaptation of both e-commerce capabilities and business strategies to respond to future opportunities	1. Identifying the threats/ substitutes to firm's performance 2. Seeking alternatives to improve the value creation ability of the e-commerce capability
New web design skills *US auction license* *Strategic partnerships with corporate clients* *Strategic reorientation* ***Managerial capabilities*** ***Adaptive capability*** ***Innovative capability*** ***Absorptive capability***			

Notes: Italic text stands for core assets and capabilities. Bold italic text stands for dynamic capabilities.
[a]International Telecommunications Union Statistics (2013).

orientation of providing a convenient medium for buying choice cars. However, one may ask why did the firm develop an informational capability when compared with other e-commerce capabilities? To answer, the tenets of the CLC model argue that a firm's ability to build capabilities depends on the resources available to it. The resources employed by the firm in this event consist of an interaction of global-, national- and firm-level resources to deploy e-commerce capabilities (Table 3). Global resources refer to the use of web hosting services abroad. The national resources refer to the changing national ICT context which was partly a response to government readiness and other firm-level innovations (see Boateng et al., 2011; Effah, 2012). Firm-level resources refer to the internal resource portfolio of the firm (Andoh-Baidoo, Osei-Bryson, & Amoako-Gyampah, 2012). Having no IT staff, IT decisions were dependent on the IS business knowledge of the manager. John's postgraduate diploma in advanced IT played a key role in providing basic skills to develop the firm's first online presence. Another valuable resource was the strategic alliance with Braun. This was a necessary prerequisite to initiate the business and it involved a thorough evaluation of different European used-car retailers and a business visit to establish the relationship (see Boateng et al., 2012). Further, when John realized that the online presence was insufficient in establishing the confidence of clients, he leveraged on social networks and personal relationships to establish "some" perceived credibility to complement the e-commerce capability. These actions demonstrate an innovative capability which is part of John's managerial capabilities. Innovative capability may be demonstrated as identifying new markets, discovering new sources of supply, risk-taking by top management, and seeking unusual and novel solutions (Biedenbach & Müller, 2012). The actions also demonstrate the *capabilities to engender trust* and *to strategize* as noted by Montealegre (2002). Thus, the key resources which can be classified as core capabilities are the firm's strategic orientation, social capital, strategic alliance and managerial capabilities. In event two, the strategic orientation was focused on increasing the firm's ability to serve more individual clients online. This was a response to the limited reach of face-to-face interactions and perhaps the need to improve the benefits gained from adoption. In relation to the management of resources, Castanias and Helfat (1991, p. 162) note that "the greater the ability to collect their earned rents, the greater the incentive to generate these rents and to institute the requisite decision process/strategic process which stems the process." Thus, by being able to obtain *observable* benefits from the informational capability, the firm was keen to institute measures to improve this benefits creation ability. After a failed attempt, the firm leveraged the services of an Internet marketing strategist who provided the strategic insight of using open-source technologies and of personalizing the domain name to enhance the firm's visibility. John tends to demonstrate an ability to identify alternative paths to acquire resources to address the internal resource poverty of his firm. This capability is described as an absorptive capability, which refers to "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends . . . " (Cohen & Levinthal, 1990, p. 128). The key resources which can be classified as core capabilities in this event are new web design skills, the social capital, strategic alliance and managerial capabilities. However, it is important to note that the ICT climate in Ghana had changed considerably between 2003 and 2008 (Table 3). For example, Internet penetration increased by more than 200% over the period. This improved Internet penetration also had an attendant effect on the related ICT innovations accessible to firms like Lankah. It shaped the firm's assessment of profitable resources within the country. Hence, the notion of a complex interaction of resources is iterated. In the third event, the interactional capability was redeployed as an informational capability. This was in response to the strategic reorientation to focus on corporate clients. The change in orientation initiated the decline of resources such as the strategic alliance with Braun and the interactive web functionality for individual clients. On the other hand, new resources were developed like the US auction license (core asset) and the strategic partnerships

with corporate clients (core capability). We assess that, the firm aimed at instituting measures to protect and improve the achievement of its strategic benefits. John's innovative and absorptive capabilities, as well as the support of the two directors, demonstrate an adaptive capability. This is the ability to respond to changes, threats and opportunities through the balancing of exploration and exploitation strategies in a speedy manner (Staber & Sydow, 2002). Montealegre (2002) puts it as the *capability to be flexible*. These managerial capabilities can be classified as dynamic capabilities, since they were deployed in response to the threats and opportunities in the business environment.

The arguments in the above discussion are congruent with the findings of past research on e-commerce in DEs by Zhu and Kraemer (2005) and Molla and Licker (2005). First, the resources identified demonstrate that there is a complex interaction of resources – global-, national- and firm-level – in a firm's path to developing e-commerce capabilities and achieving benefits. However, national resources tend to shape the actions of a firm in e-commerce to a larger extent. Where national IT infrastructure is less developed, IS activities become restricted (Boateng et al., 2011). Nonetheless, some managers, like John, attempt to navigate around the constraints by substituting global IS resources for unavailable national- or firm-level resources to create e-commerce capabilities and benefits. Second, relative to national and global resources, managerial capabilities matter more in institutionalizing e-commerce in firms (Molla & Licker, 2005). The suggestive finding from the above discussion is: *Finding one* – in DEs, because the institutional foundations are weak and the obstacles are many, managerial capabilities and global IS resources enable firms to circumvent the national constraints to create e-commerce capabilities and benefits.

Developing stage

In reference to Table 3, we will analyze how the strategic actions of the firm depict the capability development processes postulated in our conceptual model. Three strategic actions led to the development of the informational capability in event one. We identify *learning* and *coordination* as the distinctive processes underpinning the actions. The learning process is characterized by the actions of pre-adoption research conducted by John, which partly led to the decision to develop the informational capability, and the identification of global IS resources (web hosting services) to achieve the objective. The coordination process is characterized by the distinct way of acquiring and combining global IS resources and internal IS skills to develop the informational capability. In event two, the three strategic actions (Table 3), which led to the development of the interactional capability, also largely depict *learning* and *coordination* as the distinctive processes used to develop the interactional capability. The learning process in this event is characterized by the transfer of knowledge from the informational capability phase to inform the development of new capabilities. The ability of the case firm to identify the limitations of its capabilities, lessons from failed projects and the new functionalities needed stems from the absorptive capability which lies in the managerial capabilities of John. The coordination process is characterized by the distinct way of leveraging global IS resources (web hosting services and open-source applications), and industry resources (Internet marketing strategist) to develop the interactional capability. In event three, the two strategic actions (Table 3), which led to the redeployment of the informational capability, largely depict *reconfiguration* as the distinctive process used to redeploy the informational capability. In response to changes in the business environment, the case firm, in a relatively speedy manner, reconfigured the interactional capabilities to target business clients (Biedenbach & Müller, 2012). In effect, we identify *learning* and *coordination* as the primary processes for developing e-commerce capabilities; however, *reconfiguration* is critical to the protection of the value creation ability of its capabilities (Teece et al., 1997). Learning, on the other hand, tends to matter

more, especially when firms seek to develop advanced forms of e-commerce capabilities. This form of learning lies in the absorptive capacity of the firm to recognize relevant external resources, assimilate and apply them to create e-commerce capabilities and achieve benefits (Cohen & Levinthal, 1990). The suggestive finding from the above discussion is: *Finding two* – though both learning and coordination influence capability development, learning tends to matter more when advancing from lower to higher forms of e-commerce capabilities.

Orienting stage

In reference to Table 3, the orienting stage outlines the strategic actions for alignment of e-commerce capability and business processes (two actions in event one and three actions in events two and three). The key process which characterizes the actions in the three events is the strategic alignment or integration between IT resources and business resources. Montealegre (2002) puts it as the *capability to integrate.* However, the extent of integration was differentiated by the objective of the e-commerce capability as a "mechanism" – *enabler* or *driver*. Drawing on IT business alignment literature, Luftman (2003) argues that when IT becomes a driver, it goes beyond enabling to drive changes to both business processes and strategies. IT as a driver requires the owner-manager and IT manager or chief information officer to share a clearly defined vision. Rockart, Earl, and Ross (1996) also add that successful integration of IT into business strategies requires IT managers to be knowledgeable about IT technologies which can be used for such integration, know and understand corporate strategies and tactical plans, and understand the powers and liabilities of selected technologies and their implications on the firm's strategic orientation. These arguments are consistent with the actions taken by the case firm in events one, two and three. As an *enabler*, the informational capability acted as a complement to another driver of the firm's strategic orientation – social capital with clients in event one and strategic alliances with corporate clients in event three. The viability of the online functionality became partly dependent on these drivers. On the other hand, in event two, the e-commerce capability was envisioned as a driver of the firm's strategic orientation. John and Michael shared a clearly defined vision of using e-commerce capabilities to drive the objective of serving more individual clients. However, the interactional capability as a *driver* lost its value when the firm's strategic orientation changed. Then again, the firm understood the powers and liabilities of the technologies in use and took the seemingly appropriate decision to retire certain resources and redeploy relevant capabilities. In effect, we observe, first, there was a complementary relationship between e-commerce capabilities and other business resources. The difference lies in the extent of investment or priority. As an *enabler*, the focus is on the business resources (as the driver); while, as a *driver*, the focus is on the e-commerce capabilities. Depending on the firm's strategic orientation, the e-commerce capability may either be leveraged as the *enabler* or *driver* of the business processes. The suggestive finding from the above discussion is: *Finding three:* the extent of integration of a firm's e-commerce capability with its business processes is influenced by the use of the capability as an enabler or driver of the strategic orientation of the firm.

Second, despite the "mechanism" in action, firms need to identify and understand the complementarities between resources. Identifying complementarities will require firms to recognize and examine congruencies among existing resources, and between them and their strategic orientation (Teece et al., 1997). The essence is to understand the powers and liabilities of resources and to create a strategic fit where a resource is reinforced by the presence of other resources. The suggestive finding from the above discussion is: *Finding four* – managerial capabilities create strategic ties between IS resources and non-IS resources in a manner that reinforces the value of these resources in achieving e-commerce benefits.

Maturity stage

The maturity stage is concerned with the maintenance of the resource. The two key actions used to maintain the e-commerce capabilities developed in the three events centered on identifying the weaknesses and threats to the capabilities and benefits, and seeking alternatives to improve the value creation ability of the capabilities. These actions characterize the adaptive and absorptive capabilities which lie in the managerial capabilities of John. John had an intimate or direct interaction with the development and use of e-commerce capabilities. This intimacy facilitated the use of other managerial capabilities to identify and manage opportunities and threats associated with the use of e-commerce to support firm activities. For example, John undertook a personal visit to Braun to explain the decision to dissolve the strategic alliance. Braun, later, became a point of reference for other strategic alliances in the USA. In effect, the maintenance of resources requires firms to be engaged in a continuous environmental scanning to identify and neutralize threats while taking advantage of new or future opportunities. Managerial capabilities, as dynamic capabilities, keep a firm focused on its strategic orientation instead of focusing on e-commerce capabilities (Helfat & Peteraf, 2003). Thus, when resources lose their value, strategic decisions are taken to rebuild or decline them. However, measures are also instituted to prevent the declined resources from becoming a future threat. The suggestive finding from the above discussion is: *Finding five* – the maintenance (ability to protect the value) of e-commerce capabilities lies in the consistent evaluation of opportunities and threats in order to establish measures to maximize their value to either enabling or driving e-commerce benefits.

Causal explanation of e-commerce capability development

A revised resource-based model of e-commerce capability evolution is presented in Figure 3 and subsequently explained below.

We began this study with the objective of understanding how firms in DEs orient resources to achieve e-commerce benefits amidst their national constraints. Using a case study, we evaluated

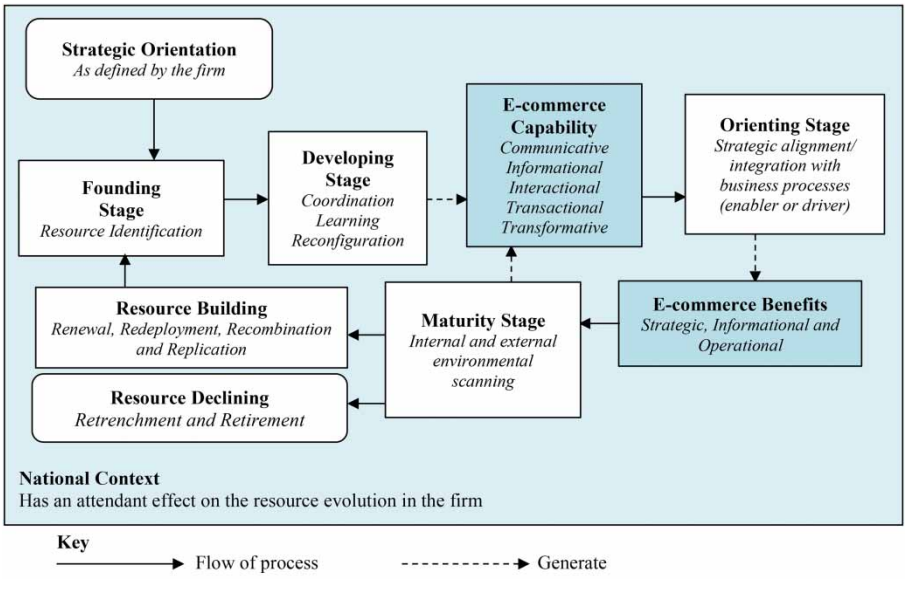

Figure 3. Revised resource-based model of e-commerce capability evolution.

a proposed model and gained empirical evidence to revise constructs and propositions postulated. The cyclic resource-based model, Figure 3, has nine constructs, namely strategic orientation (as defined by the firm), four stages of capability development (founding, developing, orienting and maturity), two post-maturity stages (resource building and resource declining) and two interrelated outcomes (e-commerce capabilities and e-commerce benefits). These constructs are supported by five propositions or findings. The model posits that e-commerce capability evolution stems from a firm's strategic orientation. Strategic orientation establishes the need to develop a capability and helps to determine the type of capability required to leverage a potentially profitable opportunity. After, the firm enters into the founding stage where it has to identify resources required to develop a specific e-commerce capability. The resources required consist of a complex interaction of global-, national- and firm-level resources. The key resources identified in this study are managerial capabilities, strategic orientation, global IS resources, strategic alliances and social capital. To a larger extent, managerial capabilities and global IS resources tend to determine the nature of firm-level innovations deployed in e-commerce activities. At the developing stage, any of the six types of e-commerce capabilities may be developed by the firm. The development occurs through learning, coordination and reconfiguration processes. Of the three processes, the study suggests that learning matters more when advancing from lower to higher forms of e-commerce capabilities. After development, the capability enters into the orienting stage. It requires firms to establish a strategic alignment between an e-commerce capability and business processes. Depending on the firm's strategic orientation, the capability may either be leveraged as the *enabler* or *driver* of the business processes. At the maturity stage, the firm engages in environmental scanning to identify and neutralize threats, while taking advantage of new opportunities. As the capability matures, it may enter into a post-maturity stage of rebuilding or declining with respect to the firm's strategic orientation.

In effect, though the model was initially conceptualized as a linear process, the findings suggest an e-commerce capability evolution cycle. A linear path of capability evolution may occur during initial adoption, however, beyond adoption, the firm enters the stage where e-commerce capabilities, being an output, also become integrated with other firm resources. Thus, as far as the strategic orientation of the firm still considers an e-commerce capability as valuable, there is a somewhat consistent effort to rebuild the capability and use it either as an *enabler* or *driver* of the firm's strategic orientation.

Conclusion

With respect to the purpose of this research, this paper has proposed a model explaining e-commerce capability evolution in DE firms. The study also developed five propositions (Figure 3) which can be useful for future research. Resources, as entities, have powers and liabilities which can influence the process of capabilities development. However, firms that emerge as "winners" in this process are those which possess the managerial capabilities to innovatively acquire external resources and integrate them with their core business processes. These firms also acknowledge the powers and liabilities of IS resources and are able to retire or recombine them to fit the current strategic orientation when necessary. These findings spell a number of implications for research and practice. Concerning practice, we learn that the evolution of e-commerce capabilities is path dependent and emergent; while some paths enable the "natural" advancement of capabilities to higher forms, other paths, in responding to threats, can initiate the decline or redeployment of e-commerce capabilities. Thus, despite the processes and resources, it is more relevant for DE firms to ensure that capabilities evolve within the strategic orientation of the firm (Pitelis & Pseiridis, 1999). That consistent focus lies in the managerial capabilities of the firm. On the other hand, DE firms can also form industrial clusters to lobby

and initiate change in the technological readiness of their context or enhance accessibility to global resources necessary for the effective conduct of e-commerce activities. Concerning research implications, this research tends to be one of the few works that explain how e-commerce capabilities evolve in firms. Previous research, which attempts to trace e-commerce capability development and develops models, is limited. These attempts focus on managerial capabilities and are silent on the link between the managerial capabilities and e-commerce capabilities (Montealegre, 2002). Others tend to focus on identifying resources for the conduct of e-commerce (Effah, 2012) or only propose the need for alignment between IT resources and managerial capabilities (Cui et al., 2006). We have proposed a cyclic resource-based model of e-commerce capability evolution, which appears to offer a unique understanding of how DE firms develop e-commerce capabilities and navigate around their constraints to achieve e-commerce benefits. The CLC (Helfat & Peteraf, 2003) tends to conceptualize a linear path of development. However, this cyclic model argues that a linear path of e-commerce capability development may occur during the initial adoption of e-commerce; but, beyond this phase, a complex interaction of resources occurs as firms seek to integrate e-commerce capabilities with their strategic orientation. The cyclic model tends to explain the nature of this complex interaction – a direction quite silent in previous research. We would therefore recommend the application of this model in future e-commerce-in-DEs research. In the tenets of CR, the causal explanation, as presented here, is based on the case studied. Corroboration with multiple case studies, perhaps with firms in other industries and/or with the development of transactive and transformational capabilities, is therefore necessary to provide a good test of the proposed research model. Furthermore, as observed with the use of web hosting services abroad, research can also investigate how DE firms can take advantage of cloud computing services as global IS resources to circumvent the resource poverty in their context. We hope that the model and its propositions will be useful to researchers in future research.

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