

2010

# A Resource-Based Analysis of E-Commerce in Developing Countries

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## Recommended Citation

Boateng, Richard; Hinson, Robert; Heeks, Richard; and Mbarika, Victor, "A Resource-Based Analysis of E-Commerce in Developing Countries" (2010). *ECIS 2010 Proceedings*. 137.

<http://aisel.aisnet.org/ecis2010/137>

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Journal:	<i>18th European Conference on Information Systems</i>
Manuscript ID:	ECIS2010-0144.R1
Submission Type:	Research Paper
Keyword:	Electronic commerce, E-business, Resource-based theory, Organizational strategies



## A RESOURCE-BASED ANALYSIS OF E-COMMERCE IN DEVELOPING COUNTRIES

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### Abstract

*Electronic Commerce is touted as a panacea for business growth and expansion in relation to both small and large firms irrespective of their geographical locations. Past research in the area shows that there is an acute lack of theoretical frameworks and empirical evidence to understand how developing country firms realise e-commerce benefits amidst their national constraints. This paper sets out to develop a theoretically abstracted but contextually grounded electronic commerce appropriation and use model for developing country contexts. We undertake a review of the e-commerce and strategy management literature in order to arrive at our conceptual model. We develop a resource – based view model of electronic commerce benefits that posits that developing country firms can orient resources towards the creation and sustenance of electronic commerce benefits. This conceptual framework provides good theoretical platform for empirically grounded research on electronic commerce in developing country contexts. We have opened a new stream of understanding in respect of developing country electronic commerce adoption.*

*Keywords: Electronic commerce, Developing Countries, Adoption, Strategy*

## 1 INTRODUCTION

E-commerce presents a lot of opportunities and benefits to firms in developing countries (DCs). There is some evidence of developing country firms achieving strategic, informational and operational benefits from e-commerce adoption (Moodley & Morris 2004, Molla & Heeks 2007). The promise of these benefits and the related broader impacts has led to questions about how firms can achieve and sustain these benefits. On the theoretical front, developing country e-commerce research has focussed more on the potential benefits to be achieved and pre-conditions to e-commerce adoption (Boateng & Hinson & Heeks & Molla 2008). Current research on e-commerce in DCs has been rather elusive on a strategic understanding of how firms achieve and sustain these benefits amidst their multi-prong contextual challenges. A number of authors have therefore called for the need for such knowledge (Boateng & Heeks & Molla 2009, Montealegre 2002).

This emphasis on the strategic guidance to creation of firm-level benefits is opportune given the potential contribution of firms in DCs to addressing the resource-poverty in their context and the broader impacts in socio-economic development. In a review of e-commerce literature in DCs, Boateng et al. (2009) evaluated three theories and conceptual frameworks which have gained some mileage in attempting to develop a strategic perspective of e-commerce in DCs. The frameworks are Porter's five competitive forces model used in a case study of a Chinese company (Chen & Lin & Li & Chen 2004); a conceptual framework for electronic business (e-business) strategy used in a case study of a Chinese company (Li & Chang 2004); and the resource-based frameworks used in both qualitative and quantitative-based studies (Montealegre 2002, García-Murillo 2004, Zhu & Kraemer 2005, Cui & Zhang & Huang 2006). Though the first two studies generated some critical lessons applicable to the generic paradigm of e-commerce in DCs and to market chain management models, only the studies using the resource-based theories offered a path to understanding the strategic options firms take to circumvent or address their contextual challenges and achieve and sustain e-commerce benefits.

The resource-based theory studies examined e-commerce adoption and assimilation across a number of developing regions including Mexico, Ecuador, China, Taiwan, and Brazil. These studies highlighted a number of research gaps:

- García-Murillo (2004) study pointed out that there exists a mismatch between the realities for DC firms and assumptions of Western models of enterprise (such as Porter's (1990) recommendations), thus proposing that as organisational business practices evolve with their changing business environments, more research is needed to redefine existing knowledge to be consistent and applicable with the dynamic nature of the environment.
- Montealegre (2002) also emphasised the need for a process-based model of dynamic capability development as compared to the present existence of factor-oriented models which fail to offer understanding of how these capabilities are developed, deployed and managed in alignment with a firm's overall strategy. Future research could offer such understanding by developing a process-based model of resource or dynamic capability development.
- Zhu and Kraemer (2005) argued that the integration of two models, Technology-Organization and Environment and the resource-based theory, is an initial step towards understanding the complex relationships among technology, environments and organisational performance and thus necessitates further research to refine application of both theories in this interrelationship.
- Cui et al. (2006) suggested that IT management, compared with IT infrastructure, plays a more important role in foreign invested firms than that in local and joint-invested firms. This tends to stem from the mature usage and experience on IT by foreign firms. Future research should consider how local firms can put more focus on a good fit between IT physical assets and management resources.

These gaps outline future research directions on the use of the resource-based theories to investigate the strategic perspective of e-commerce in DCs. This paper, in response to the above research calls, seeks not to identify the precise resources for e-commerce, but provide a theoretically-oriented understanding of how DC firms can develop, deploy and manage these resources. This theoretically-oriented understanding can then guide the empirical research to be executed via future research in order to add on a practice or managerially-oriented perspective. The paper is thus organised as follows; first, an overview of e-commerce is presented; second, an overview of the RBT is given; third, a conceptual model for identifying and developing resources that can create and sustain e-commerce benefits is developed; and fourth, the research implications and future directions are presented in the conclusion.

## **2 E-COMMERCE IN DCS: SEEKING STRATEGIC OPTIONS**

In this paper we adopt a broader perspective and define e-commerce as the use of information and communication technologies (ICTs), particularly telecommunication networks, to share business information, to maintain business relationships and to conduct business transactions involving both businesses and individuals (Zwass 1996).

Firms in DCs which use ICTs to share business information, maintain business relationships and conduct business and commercial transactions may achieve three interrelated types of benefits, namely, operational, informational and strategic benefits (Fearson & Philip 1998, Boateng et al. 2008). Strategic benefits are associated with benefits which improve the market performance of the firm – extending its reach, product differentiation, improving revenue and the loyalty of trading partners and customers. Informational benefits are associated with benefits which improve communication, relationships and enhance access to information about the firm and its products. Operational benefits are associated with reducing the costs of transactions and achieving efficiency of operations through e-commerce. The type of technology and the extent of integration of the technology into the business processes determine the ability of firms to achieve benefits of higher value.

However, DCs differ in the readiness of their institutional infrastructure – economic, cultural, legal and technological framework to support the uptake of e-commerce at the firm-level and national-level and achieve these benefits. A review of e-commerce-in-DCs research published between 1993 and 2005 suggests the preponderance of Asian studies; which is, perhaps, reflective of the relative maturity of ICT infrastructure in terms of roll-out and usage in Asian DCs as compared to that of African DCs (Boateng et al. 2008). Thus, contextual challenges may influence the ability of firms to achieve e-commerce benefits. Firms making efforts in achieving some benefits demonstrate a set of resources which are deployed and managed in manner to circumvent or address the challenges. Wresch (2003), in discussing the use of global resources, argue that the initial e-commerce efforts of firms in Ghana, Tanzania, and Kenya were characterised by their use of web hosting services abroad to bypass local web service weaknesses. Other reported accounts of websites like Ethiogift.com (Ethiopia) and Munshigi.com (Bangladesh) detail the marketing of ‘cultural capital’ products – national cultural resources – like art, flowers and sheep online to non-resident inhabitants who purchase them to be delivered to relatives or friends living at home (UNCTAD 2001). A survey in South Africa investigating factors which characterise firms that have been successful in e-commerce adoption and institutionalisation suggested that, the combination of dynamic capabilities, top management commitment and business resources enable successful firms to develop e-commerce models which work within the constraints of their environment (Molla & Licker 2005). Similar findings suggesting the complex interaction of global, national and firm level resources to address the resource poverty in DC have been discussed by Montealegre (2002) and García-Murillo (2004). This presupposes that research focusing on the strategic options these firms take to develop and deploy resources which address the contextual challenges and help achieve e-commerce benefits may offer strategic guidance to other DC firms. The resource-based theory and its extension, the dynamic capabilities framework, hold the promise of this resource perspective of e-commerce in DCs.

The following sections of this paper will examine RBT and e-commerce so as to develop a strategic approach for e-commerce adoption.

### 3 RESOURCE-BASED THEORY – AN OVERVIEW

RBT tends to be the prevailing paradigm that explains or helps to understand how and why firms develop the capability to gain and sustain competitive advantage (Penrose 1959, Wernerfelt 1984; Barney 1991). Its later extension, the dynamic capabilities approach examines how these firms adapt and even capitalise on rapidly changing technological or volatile environments as in DCs (Teece & Pisano & Shuen 1997). Within these theoretical frameworks, rival firms are viewed to compete on the basis of their internal characteristics, resources, through which they build competitive advantage and a superior long-term performance (Wernerfelt 1984, Barney 1991, Wade & Hulland 2004).

Traditional strategic analysis considers a firm's resources as strengths that a firm uses *to conceive of and implement their strategies* (Learned & Christensen & Andrews & Guth 1969, Porter 1981). These strengths include "all assets, capabilities, organisational processes, firm attributes, information, knowledge, et cetera controlled by a firm that enable the firm to conceive of and implement strategies which improves its efficiency and effectiveness" (Daft 1983 cited in Barney 1991, p. 101). This seemingly broader perspective of firm resources has been recently narrowed as "assets and capabilities that are available and useful in detecting and responding to market opportunities" (Sanchez & Heene & Thomas 1996 and Christensen & Overdorf 2000 cited in Wade & Hulland 2004, p. 109). Assets are considered as anything tangible or intangible which a firm uses in "its processes for creating, producing, and/or offering its products (goods or services) to a market, whereas capabilities are repeatable patterns of actions in the use of assets to create, produce, and/or offer products to a market" (Sanchez et al. 1996 cited in Wade & Hulland 2004, p. 109). Other authors who tend to differentiate resources from capabilities; define resources as tangible or intangible assets or inputs to production, and capabilities as a *coordinated set of tasks* which utilise these assets for the purpose of achieving a particular end result. Both conceptualisations, however, agree that capabilities utilise assets to achieve a defined organisational objective. This research adopts the former concept – resources consisting of assets and capabilities.

Assets can be classified as tangible, intangible and personnel-based resources (Grant 1991). Tangible assets include "the financial capital and the physical assets of the firm such as plant, equipment, and stocks of raw materials"; intangible assets comprise "assets such as reputation, brand image and product quality"; and personnel-based (or organisational) assets include technical know-how, managerial commitment, knowledge and skills, organisational culture, employee training and loyalty (Bharadwaj 2000, p. 171). Assets are assembled, integrated and deployed within business processes to form the capabilities which an organisation uses to improve its efficiency and effectiveness (Grant 1991).

In a broader conceptualisation, an organisational capability is "a high-level routine (or collection of routines) that together with its implementing input flows, confers upon organisation's management a set of decision options for producing significant outputs of particular type" (Winter 2000 cited in Winter 2003, p. 991). This collection of routines can also be considered as being operational or dynamic depending on their ability to cause change (rates of change) or impact through their output in the organisation. Operational or ordinary capabilities, also known as ordinary or 'zero-level' capabilities are "those that permit a firm to 'make a living' in the short-term", while dynamic capabilities, are those that "operate to extend, modify or create ordinary capabilities" (Winter 2003, p. 991). Dynamic capabilities, from the dynamic capabilities approach (Teece et al. 1997) is "an extension of the resource-based view of the firm that was introduced to explain how firms can develop their capability to adapt and even capitalise on rapidly changing technological environments" (Montealegre 2002, p. 516). They are developed through the appropriate adaptation, integration, and reconfiguration of internal and external organisational assets, capabilities and business processes to respond to the dynamic business environment (Teece et al., 1997).

On the other hand, recent work by Wang and Ahmed (2007), in building on this conceptualisation of capabilities, further explains that “dynamic capabilities are the ‘ultimate’ organisational capabilities that are conducive to long-term performance, rather than simply a ‘subset’ of the capabilities, as Teece et al. (1997) suggest” (p. 36). The authors conceptualise capabilities in three classifications: capabilities (first order), core capabilities (second-order), and dynamic capabilities (third order). In their argument, 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 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. They enable a firm to develop core capabilities among other resources and deploy them to create and sustain a strategic advantage in its business environment. This makes them critical to a firm’s performance in rapidly changing technological environments (Teece et al. 1997) and the volatile environments in DCs (Okoli & Mbarika 2003). This transformation of resources occurs in a ‘swift, precise and creative manner’ in line with the threats and changes to its strategic orientation (Wang & Ahmed 2007, p. 36).

A capability may therefore exist as an ordinary capability until it is deployed alongside other resources in the strategic orientation of the firm to become a core capability or address an environmental change and/or to sustain firm performance to become a dynamic capability. This said it also presupposes that the creative potential of these capabilities, or in broader perspective, resources differs. One may then ask what makes these resources differ in their ability to enable a firm to create and sustain its performance in the marketplace. This leads us to consider the attributes of resources.

### 3.1 Resource Attributes

RBT posits that to create and sustain a competitive advantage or achieve a performance beyond that of its competitors in the marketplace, a firm’s resources must be *heterogeneous* and *immobile*, and to have that potential, the resources must simultaneously have attributes of being valuable, rare, imperfectly imitable and not strategically substitutable or non-substitutable by other resources (Barney 1991) – the VRIN conditions (Bowman & Ambrosini 2003). The attributes are briefly explained as follows:

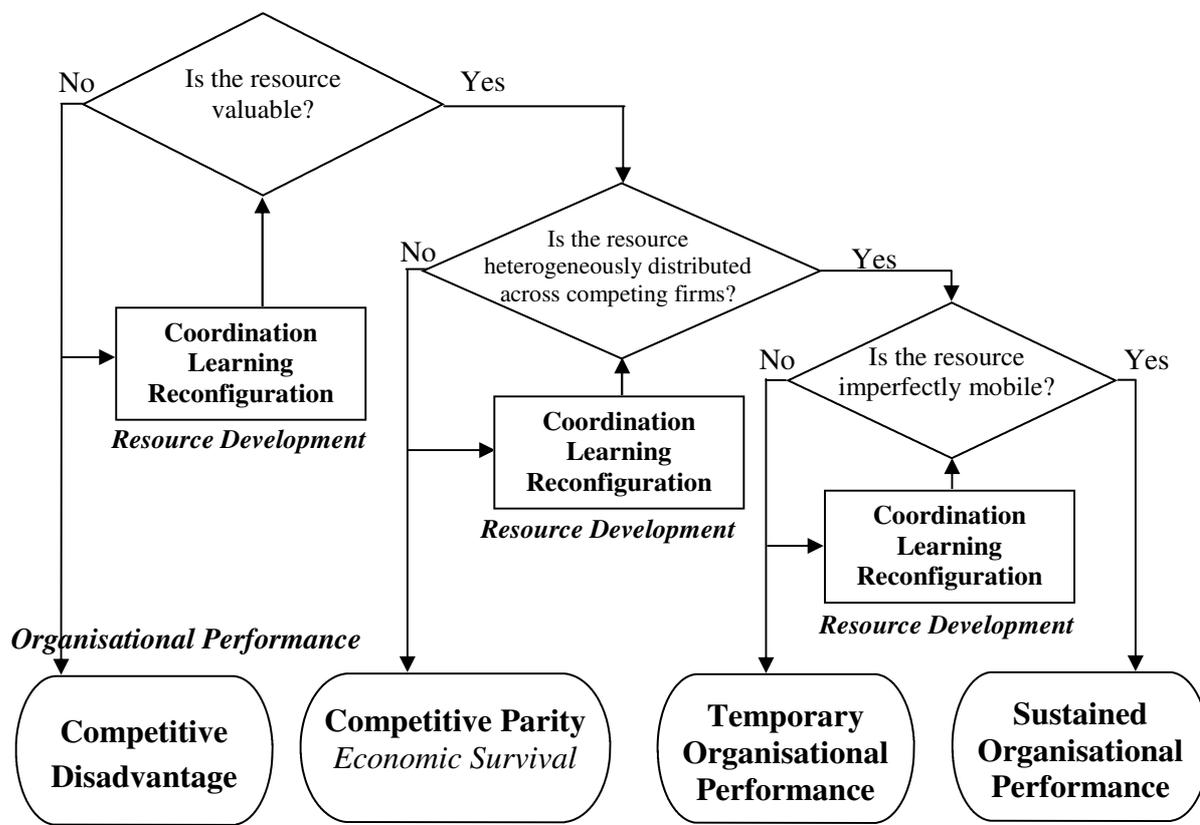
- *Valuable*: For a firm’s resources to be valuable, it must be able to help the organisation conceive of and implement strategies capable of exploiting opportunities and neutralising threats in its environment and thereby improve its efficiency and effectiveness (Barney 1991). It must be able to generate rents - lower costs in delivering products than that of competitors or revenue from differentiating its products (goods or services) - to be captured by the firm (Bowman & Ambrosini 2000). The resource remains appropriate for the rent generating activity when the costs of exploiting the resource do not offset the rents generated (Peteraf 1993). For example, in the development of a new product in a manufacturing firm, the cost of exploiting these resources should not be more than the profits made from the new product; otherwise the value creation process becomes relatively unsustainable with time.
- *Rare*: To create an organisational performance beyond economic survival, a resource has to be rare, uncommon or scarce in its distribution across the competitors in the market (Amit & Schoemaker 1993). It should be rare in its functionality and not just its type – functionality lies in capabilities generated from a combination of resources such as tangible, intangible and organisational assets (Bharadwaj 2000, p. 171). The lack of rare resources creates competitive parity, where no firm obtains a clear competitive advantage, but “firms do increase their ability of economic survival” (Porter 1980 cited in Barney 1991, p. 107). Some types of resources like IT infrastructure are easily available on the market, however when combined with other organisational resources like managerial skills and knowledge, organisations can create a functionality - market responsiveness or customer support capability - which may be rare across the competitors in the market (Santhanam & Hartono 2003).

- *Imperfect Imitability*: Resources become imperfectly imitable when it is more difficult for competing firms to replicate them (Bowman & Ambrosini 2003, p. 291). These occur in the presence of isolating mechanisms (Rumelt 1984); when, firstly, its occurrence or availability to the organisation is due to its unique historical conditions; secondly, the link between resources and the firm's sustained competitive advantage is causally ambiguous, and lastly, resources themselves are socially complex in nature (Dierickx & Cool 1989, Barney 1991). These isolating mechanisms increase the costs of competing firms in imitating a successful firm's resources. When other competitors imitate a functionality or are able to obtain other resources capable of substituting that resource, the resource loses its ability to create a sustained competitive advantage or organisational performance, though it may be valuable to the organisation and rare among rival firms. It thus becomes important for resources to be also imperfectly imitable, and beyond that, become not strategically substitutable by other resources.
- *Non-Substitutability*: Substitutes can be in the form of imitating resources exactly or using the different resources to create the effect of a resource as used in the successful firms. Competing firms are able to develop substitutes when they are able to discern the value-creation process and understand the value contributed by the resource possessed by the successful firm (Barney 1991, p. 292). These substitutes are only valuable when competing firms are able to achieve a low-cost strategy for developing and exploiting the resource to achieve the same value or superior value than that of the successful firm. However, in the presence of the isolating mechanisms discussed earlier, discerning or understanding the value creation process of resources becomes difficult. This increases the costs of imitation and substitution, reducing the value or rents generated by the substitutes (Bowman & Ambrosini 2003, p. 292).

In effect, RBT states that creating competitive advantage lies in the heterogeneity of valuable resources or in possessing resources that are valuable, appropriate and rare or uncommon across firms, and sustaining that advantage depends on them being imperfectly mobile; inimitable and non-substitutable (Barney 1991, Wade and Hulland 2004, pp. 117-118). So then how does the concept of ordinary, core and dynamic capabilities fit in? As earlier explained, dynamic capabilities go beyond ensuring the company's economic survival to enabling it to sustain and achieve new benefits thereby sustaining and improving its performance. Economic survival occurs when a company tends to have just valuable resources that enable it to obtain competitive parity. At this stage the resources may consist of largely ordinary capabilities, and perhaps a few core capabilities. However, the need to go beyond economic survival is arguably typical of the idiosyncratic institutional uncertainties in DCs (Okoli and Mbarika 2003). Any change necessitating the detailed customisation of the product, integration with other products, or extension of its functionalities to serve a specific or different target market requires the combination and reconfiguration of organisational assets and capabilities in order to achieve and sustain new benefits thereby sustaining and improving its performance (Winter 2003, p. 991). In other scenarios such as the case of merger or acquisition at the firm-level or new developments in the national ICT infrastructure, a firm may expand its resource portfolio, however, without deploying the new resources in, perhaps, the 'redefined' strategic direction of the firm, the rent generating ability of the new resources acquired may not fully exploited. The firm may therefore need to develop higher order capabilities – core and dynamic – which extend the functionalities of existing and new assets and capabilities (largely ordinary), make them more rare, inimitable and not strategically substitutable and therefore increase their potential value contribution to a sustained organisational performance. Core capabilities are deployed when resources are oriented within the strategic orientation of the firm. Then in order to sustain the benefits achieved or respond to the threat (and/or opportunities) of core capabilities and performance of the firm, dynamic capabilities become necessary. These higher order capabilities therefore form part of a strategic process through which the firm develops, deploys and manages resources to sustain its performance in its rapidly changing or volatile business environment.

Mata, Fuerst and Barney (1995) capture the tenets of the RBV/RBT in a RBV model of competitive advantage, which examines conditions under which a firm's resources create and sustain competitive

advantage (Barney 1991). This paper relates the model (Figure 1) to achieving and sustaining organisational performance.



Source: Adapted from Mata et al. (1995) and Teece et al. (1997)

Figure 1 A Resource-Based Model of Organisational Performance

The model is based on a set of three questions about a firm's resources; assets and capabilities:

- The first question is: *Is the resource valuable* – thus, does the resource add any value to the firm such as lowering costs and generating revenue? If it does not, then the resource leads to no organisational performance, and if it does, a potential value exists and the next question is asked.
- The second question is: *Is the resource heterogeneously distributed across competing firms* – thus, is the resource rare or uncommon to competing firms? If it is not, then, the resource leads to competitive parity; and if it is, a potential for an organisational performance beyond economic survival exists and the next question is asked.
- The final question in the model is: *Is the resource imperfectly mobile* – thus, do competing firms have a disadvantage or cost in acquiring, developing and using this resource as compared to the successful firm which already possess this resource? Being imperfectly mobile captures both being imperfectly imitable and non-substitutable. If it is not, the resource leads to temporary organisational performance beyond economic survival, and if it is, a potential for sustained organisational performance exists and the resource would lead to that. Immobility of resources is based on isolating mechanisms as discussed earlier.

It is important to note that through building and rebuilding – coordination (integration), learning and reconfiguration of resources – the firm creates core and dynamic capabilities which makes resources more valuable, rare and immobile, thereby increasing their potential value contribution to sustained organisational performance (Teece et al. 1997). With this overview of RBT, the next objective is to conceptualise the link with e-commerce in DCs.

#### 4 RESOURCES AND E-COMMERCE BENEFITS – THE CONCEPTUAL LINK

In order to identify resources that can create e-commerce benefits, the framework proposed by Mata et al. (1995) can be adopted as a resource-based model of e-commerce benefits in DCs, Figure 2.

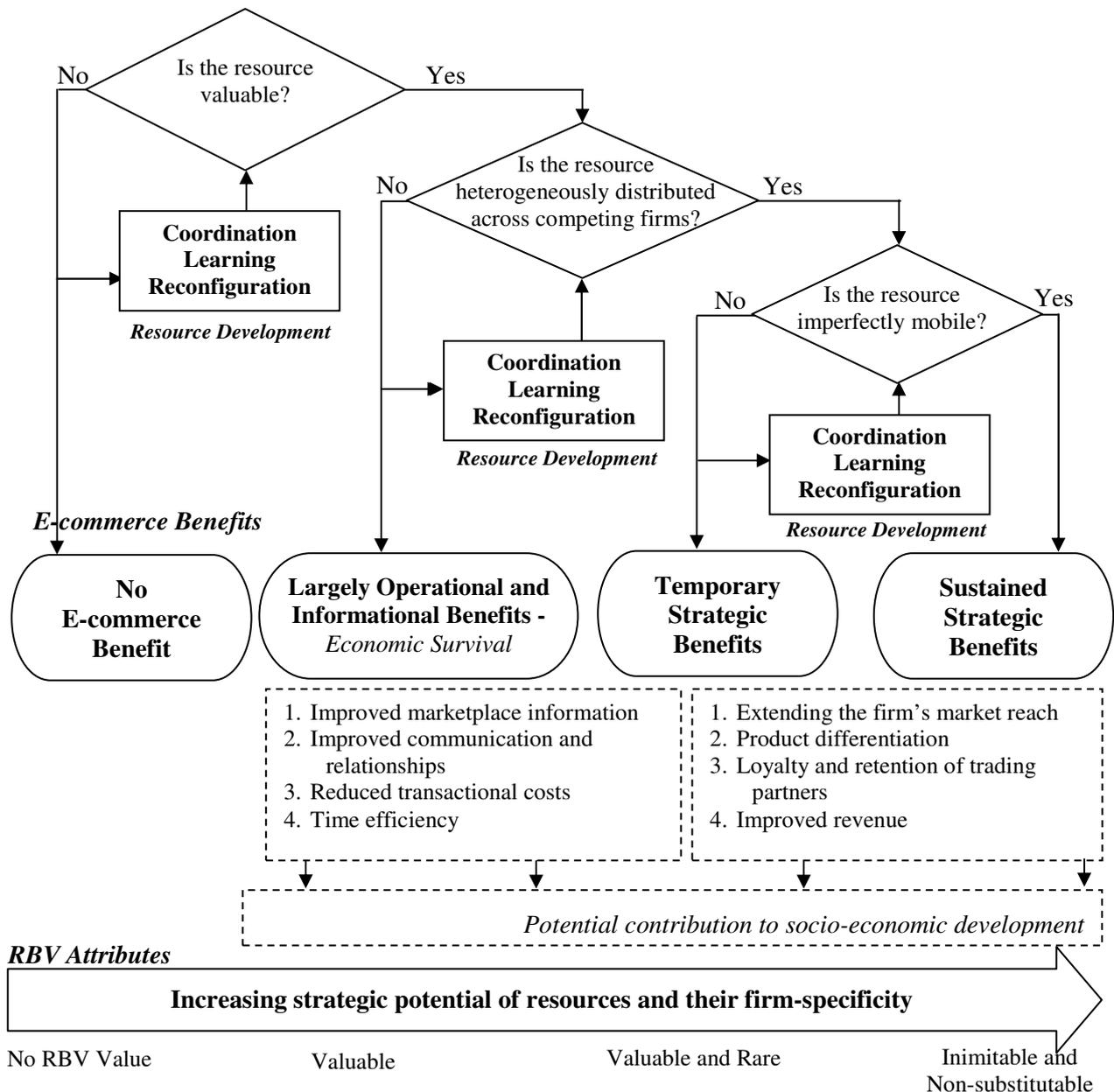


Figure 2 A Resource-Based View Model of E-commerce Benefits

The three questions of the framework can also be applied as follows:

- First, *is the resource valuable and appropriate to achieving any benefit?* – If it is not then no e-commerce benefit can be achieved, and if it is, then a potential resource may have been identified.
- For this potential resource, the second question to ask is, *Is this resource heterogeneously distributed across competing firms?* – If it is not then the resource may generate e-commerce benefits which may largely be operational and informational. These resources may consist of ordinary (and some core) assets and capabilities. For example, extant research (Wresch 2003) has

indicated that due to weak infrastructure, most DC firms end up using web hosting services in developed countries like the USA. While this means of overcoming their constraints may be valuable, it is also relatively available for all firms in the marketplace; hence, it is not heterogeneously distributed across the firms. Depending on the organisational objectives, financial capital, managerial and technical skills available, a DC firm can combine these resources to manage this external relationship in a unique and coherent manner, and thus create a capability relatively heterogeneously distributed across the firms in its business environment. Hence, these resources can be rebuilt or combined with other resources to create new resources of more potential strategic value to the DC firm. The new resources may be unique in their functionality or embedded in intangible resources (like social capital) to become firm-specific in their nature.

- Then, since the resource may be imitable or substitutable in the marketplace, the third step is to ask, is the resource imperfectly mobile? – if it is not, the resource may create e-commerce benefits of which strategic benefits may be temporal or unsustainable, and if it is, the resource may create e-commerce benefits which are strategic and sustained. For resources that are not imperfectly mobile, DC firms can create a strategic fit or resource complementarities between IS resources and core firm activities to develop firm-specific IS resources which are imperfectly mobile. Though IS resources can provide the technical online functionality, it is through their interaction with intangible resources such as reputation, social capital, trust, goodwill, and managerial knowledge, that more strategic e-commerce benefits can be obtained. When IS resources are integrated with other resources their value is reinforced in the firm. Lake (2000)'s study on e-commerce activity in Ethiopia suggested that, the success of firms in selling the work of Ethiopian artists online was based on the existing international reputations of the artists. Brunton, Gregory and Janney (2007) also argue that, in the context of DCs, because regulatory and normative institutions are relatively weak, there is an increased reliance on cognitive institutions and hence, social capital and social networks between parties – firms and their customers – become the means by which trust is developed and maintained. Complementing IS resources with intangible resources (reputation and social capital) makes the benefits creation process become complex in nature. The frequent interaction of IS resources and these intangible resources makes the functionality provided by the IS resources become embedded in the invisible actions, social relationships and image and symbols (Bensebaa 2004). They therefore become socially complex and relatively embedded in the tacit firm knowledge through frequent application. Hence, the output of this complex interaction such as customer responsiveness, product development or service differentiation is firm-specific and imperfectly mobile. This largely generates strategic benefits including an enhanced social capital and reputation. Thus, these intangible resources form part of the medium and outcome of developing and deploying resources which are imperfectly mobile.

So what resources do DC firms need? We are looking for a combination of internal and external (accessible to the organisation) assets, ordinary, core and dynamic capabilities which enable the organisation to develop e-commerce capabilities that create and sustain e-commerce benefits at a certain point of their strategic orientation. Valuable resources enable DC firms to achieve firm-level benefits that are largely operational and informational, and resources that are imperfectly mobile (inimitable and non-substitutable) enable DC firms to achieve and sustain strategic benefits. By developing dynamic capabilities – building and rebuilding resources – the firm develops e-commerce capabilities that enable it to achieve e-commerce benefits and relatively impact on socio-economic development in its context. E-commerce capabilities are a *coordinated set of tasks*, which utilise e-commerce technologies and other firm resources for the purpose of achieving e-commerce benefits. These e-commerce capabilities are developed through firm-specific resource development processes – coordination, learning and reconfiguration - and through their frequent usage they become tacit in nature and imperfectly mobile and hence contribute largely to creating and sustaining strategic benefits. The argument of this paper tends to be captured in a framework (Figure 2) of understanding that a firm's resources are the input to a process of resource development that creates capabilities that enable the firm to achieve e-commerce benefits at the firm-level and relatively contribute to socio-economic development in their developing context.

The RBV model for e-commerce benefits presupposes that, as a DC firm progresses to achieve and sustain strategic benefits, the resources become largely owned by the firm and integrated into its business processes which may not be even restricted to e-commerce alone. As resources move from ordinary to dynamic forms, their integration with firm core activities and interaction with other firm resources increases. Imperfect imitability and substitution tend to be the underpinning attributes of intangible resources such as reputation, trust, social relationships and networks. The integration of e-commerce capabilities with these resources increases their firm-specificity and reduces their mobility, and hence, increases their potential contribution to e-commerce benefit creation and impact on development. On this premise we hypothesise that:

1. *Resources and capabilities differentiate the level of adoption and assimilation of e-commerce by firms in developing countries, hence:*
  - a. *Firms that develop valuable resources are more likely to develop e-commerce capabilities that create (largely) operational and informational benefits.*
  - b. *Firms that develop imperfectly mobile (inimitable and non-substitutable) dynamic resources are more likely to achieve a greater extent of e-commerce capabilities that create and sustain strategic benefits.*

Further, there exist other knowledge gaps which new research on RBV and e-commerce in DCs can fill. Researchers have questioned whether IS resources (like IS infrastructure and technical skills which have gained much focus in IS literature), must interact with other constructs – non-IS resources (like firm reputation and brand) – to create e-commerce benefits (Wade and Hulland 2004, p. 124). The emerging success stories of e-commerce in DCs noted earlier are also suggestive of other non-IS resources such as socio-cultural capital and networks being key resources to e-commerce adoption. Hence, research exploring how such non-IS resources interact with IS resources to create e-commerce benefits will be a welcome contribution to knowledge. We hypothesise that:

2. *IS resources influence the creation of e-commerce benefits both directly and indirectly through interaction with other resources.*
3. *Intangible resources (reputation, social capital and status) play a critical role in complementing efforts of developing country firms in using tangible resources (technology, skills and physical capital) to create capabilities which enable them to achieve e-commerce benefits.*

These hypotheses form the building blocks for future research based on the RBV model of e-commerce benefits developed in this paper.

## 5 CONCLUSION

This paper began with an objective of determining how firms in developing countries develop, deploy and manage resources to implement and realise e-commerce benefits amidst their national constraints. For this objective, RBV has offered the understanding that DC firms can orient their resources to circumvent their constraints and create and sustain e-commerce benefits. The conceptual framework proposed emphasises the need for DC firms to focus on or seek to develop distinct resources that are valuable, rare, imperfectly imitable and non-substitutable. However, the development process of these resources is a cumulative, expansive and a highly path-dependent process which thus requires the commitment of the organisation and a defined focus to achieve it. Identifying the resources is not enough, knowing how to dynamically integrate organisational processes and assets to be congruent with the changing business environment is what is critical.

Arguably, the model developed in this paper may be applicable to developed countries or more institutionally e-commerce ready contexts, however, the fact that the model moves away from the current research focus on institutional readiness and adoption factors to a more strategic perspective of reinforcing or developing resources to navigate institutional constraints and achieve and sustain e-commerce benefits, makes it more applicable to DCs or resource-poor contexts. Current success stories suggest the need to develop complementarities or a strategic fit between IS resources and

intangible resources like social capital and reputation. For DCs this may be considered a necessary recourse to the weaknesses of regulatory and normative institutions which may affect e-commerce adoption, and further, this is an opportunity to also develop more imperfectly mobile resources which sustain benefits. As there are no universal sources for achieving e-commerce success (Barney 1997), future research may begin from the outlined research hypotheses and conduct an empirical study that will make the model more theoretically-grounded and practically-orientated to the context of developing countries.

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