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Exploring the Reality of eCommerce Benefits Among Businesses in a Developing Country

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Exploring the Reality of eCommerce Benefits Among Businesses in a Developing Country[1]

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Abstract

The use of e-commerce by businesses in developing countries is related to the potential benefits of participating in international value chains, increasing market access and reach, improving internal and market efficiency, and lowering transaction costs. Belief in such benefits has led to the adoption of e-commerce by some businesses in these countries. However, the questions of what and how much benefits businesses in developing countries are actually reaping from their e-commerce investments are not well covered. This paper attempts to explore the real benefits of e-commerce based on data from 92 businesses in South Africa. The findings indicate that e-commerce benefits are by and large limited to improving intra- and inter-organisational communications. Strategic benefits such as improving relationships across the value chain, increasing market reach, and reducing market, operation and supply chain management costs are not as widely found as the standard model of e-commerce would have us believe. These findings support the argument that cautions against an over-optimistic view of e-commerce for developing countries.

[1] An earlier version of this paper was presented at the Fourth International Conference on Electronic Business, Bejing, China, December 5-9, 2004.

Introduction

Many prognoses of e-commerce emphasise the opportunities that e-commerce can unveil for firms in developing countries to easily access the global market, strengthen their linkage to global supply chains, and the range of cost saving, disintermediation and competitive advantage benefits that would be expected to follow such access (Goldstein and O'Connor, 2000; Heeks, 2000; Ntoko, 1999; Singh and Tanburn, 2001; UNCTAD, 2003).

Others question the feasibility (and optimism) of e-commerce for developing countries based on untested extrapolations from the experiences of industrialised countries. For instance, Pare (2002) argues that the idea of efficiency gains promised by e-commerce is far-fetched and overlooks the lack of core capabilities. Based on case studies of Chinese organisations, Hempel and Kwong (2001) and Ho and Chen (1999) argue that there is a mismatch between the culture embedded in e-commerce and the cultures that dominate businesses in developing countries, and that such differences are likely to affect the benefit and value of e-commerce. Odedra-Straub (2003) reinforces the above reservation and argues that the premise of e-commerce for development heavily draws from the opportunities of e-commerce only and overlooks the resource and local infrastructure realities of developing country businesses. Tigre (2003), researching the Brazil case, states that even if Brazil has been successful in addressing the Internet infrastructure challenge and has an excess bandwidth capacity, Brazilian businesses' e-commerce uptake falls short of expectations.

Relevant questions that follow from the above arguments are what and how much benefit businesses in developing countries are extracting from e-commerce and whether the real benefits of e-commerce to developing countries are utopian dreams or not. The purpose of this paper is, therefore, to address these questions and explore the real benefits of e-commerce for businesses in developing countries. First, we review the literature on the potential benefit of e-commerce in general and for developing countries in particular. Then, based on data extracted from a survey of businesses conducted in South Africa, we explore the benefits of e-commerce. We finalise the paper by discussing findings and making some preliminary conclusions.

A. Literature Review

Of the various potential benefits of e-commerce for developing countries argued in both popular and academic literature, three broad themes can be identified. These are improving linkages and market access, disintermediation outcomes, and improving firm efficiencies.

A1. Linkages and Market Access

In the era of increased internationalisation of goods, labour and information (Wigand et al, 1997; Palvia et al, 1996), markets and more specifically access to markets remain one of the crucial problems of businesses in developing countries. Especially with the dominance of global commodity chains, linkage to global supply networks influences not only access to markets but also firm competitiveness (Dolan and Humphrey, 2001; Gereffi, 2001; Moodley, 2003).

Information and communication networks have the potential to make location-related constraints less influential and provide a better worldwide access to markets and market information (Wigand et al, 1997). They also facilitate the integration of national trading systems to global systems (Gereffi, 2001). Therefore, it is argued that by using e-commerce, businesses in developing countries, irrespective of size and location, can overcome the geographical barriers to trading globally and can access markets and supply networks that would have otherwise been inaccessible for them.

The ease of accessing markets and global commodity chains, in addition to increasing market "reach", is argued to offer diversification opportunities to developing countries (see Palvia et al, 1996: 77-104). One such case is the opportunity that voice switching over the Internet and other regulatory changes unveil to businesses in developing countries, in relation to participation in services trade. Indeed, proponents of this argue that because of the cost structure of the labour market, developing countries might have a unique competitive advantage in some areas of e-services such as call centres and other back-office business processes.

A2. Disintermediation Outcomes

Disintermediation refers to the death (or gradual elimination) of the middleman (the intermediary) from the market value chain as organisations rely on the potential of electronic networks to establish direct linkages with consumers and suppliers (Sarkar et al, 1995; Wigand and Benjamin, 1995). Using network applications, such as middleware, and electronic markets, organisations can internalise activities that in the past have been performed by intermediaries (such as wholesalers, retailers, agents, distributors, brokers, warehousing operators, forwarders) and reduce the cost of the value chain.

Evans and Wurster (2000) use the notion of "richness" and "reach" to make a case for disintermediation. Richness refers to the quality of information in terms of accuracy, bandwidth, currency, customisation, interactivity, relevance, etc. Reach on the other hand measures the number of people who participate in the sharing of that information. According to Evans and Wurster (2000), some intermediaries make their living from the trade-off between "richness" and "reach" by aggregating and disseminating market information. If one considers one benefit of e-commerce, as Evans and Wurster (2000) succinctly argue, as eradicating such tradeoffs, then there might be nothing left for the intermediaries, i.e. they will get disintermediated. Although the disintermediation effect of e-commerce on all types of intermediaries and in all types of industries is critically challenged (see for example Bakos, 1998; Hartman et al 2000; Sarkar et al, 1995), it is tenable to argue that networks can enable some organisations to bypass (even if not to completely eliminate) some, if not all, of the intermediaries and hence overcome market impediments related to intermediary reach, cost and delay.

With respect to developing countries, most businesses (including those involved in agriculture; a key developing country economic sector) depend on long supply chains and intermediaries to market their products and to purchase required inputs (Dolan and Humphrey, 2001). More often than not, the intermediaries take the lion's share of the profit, and they decide which products are to be delivered to the market and from which supplier to purchase equipment and other necessary inputs (Kebede, 2000). They also add to the cost of input materials and finished products. As indicated above, e-commerce can enable producers

and/or consumers to bypass some of these intermediaries and/or the cost associated with them. This can allow producers in developing countries to market their products directly to clients (such as markets in the North), overcome "biases of dealers" (Kebede, 2001), and increase their visibility. This also benefits their clients, as some of the savings are likely to be transferred to consumers in the form of reduced prices.

A3. Efficiency Gains

One of the costs that significantly affects efficient performance of a business or any other economic activity is the coordination cost (also known as transaction cost) (Malone et al, 1989). Coordination costs include costs incurred in coordinating the activities of people and work and the costs of participating in the market (Benjamin and Wigand, 1995; Sarkar et al, 1995). They involve all information and communication-related costs in determining the design, price, quantity and delivery of a product (Benjamin and Wigand, 1995). In addition, they include the costs incurred in the "initiation, negotiation, completion, control and adaptation of a transaction relationship" (Wigand et al, 1997:19).

Transaction cost theory is an often-employed framework to support arguments about e-commerce-induced efficiency gains. Proponents assume that use of electronic networks and e-markets can reduce transaction costs significantly. For instance, Malone et al (1989) postulate that advances in information and communication networks improve the speed and cost of communicating the same unit of information and enable the design and deployment of strategic linkages among market players. In addition, electronic networks can reduce information asymmetry by lowering supplier and buyer search costs and by helping buyers and sellers to easily compare their offerings. This, in turn, leads to economic (efficient) utilisation of resources required in coordinating activities and to reduced costs of transaction (Wigand, 1997; Malone et al, 1989). Wigand et al (1997) relate the above benefits of electronic networks to e-commerce and indicate that through e-commerce organisations would be able to achieve an even cheaper unit cost of coordinating activities.

In relation to developing countries, it has been argued that businesses in these countries incur high costs in both production and coordination of their economic activities because of inefficient systems of procurement, communication, inventory control and operation (Mann, 2001). Such high costs normally add to the market price of products and affect the competitiveness of most developing countries' products in the global market environment. On the basis of the concepts within transaction cost theory, developing country businesses' use of e-commerce can be expected to reduce the cost of coordinating the work of people and machines in all the "information, negotiation and execution phases" of their systems (Wigand et al, 1997). It can also lead to efficiency gains. In addition, through e-commerce, firms in developing countries are seen as likely to reduce the transaction costs they would otherwise incur to participate in international trade, thus enablng them to sell their products and services more easily and competitively.

There is not much data from developing countries to support or refute the above hypotheses both because of lack of research and lack of developing countries' e-commerce experience. Notable exceptions are Pare (2003) and Humphrey et al (2003). This paper continues these previous authors' efforts and presents evidence on the extent to which businesses in South Africa have realised the hypothesised benefits of e-commerce.

B. Notes On Research Methodology

The data used in this paper is extracted from a survey response of 150 businesses conducted as part of a broader research project. The instrument used to collect the data followed standard procedures suggested in the literature (Straub, 1989). The sampling criteria and other details of the survey are discussed elsewhere (Molla and Licker, 2004). For the purposes of this paper though, the e-commerce capability of the businesses was used as a data extraction criterion. In the survey, e-commerce capability was measured using a standard six-stage e-commerce growth model. In order to talk about e-commerce benefits, we assumed that the businesses needed to have at least an informational e-commerce capability. On the basis of this criterion, the 92 businesses that had attained an informational or interactive or transactional or integrated e-commerce capability were selected.

Informational capability indicates a company using a Web site to publish basic information about the company and its products and services in a static manner. Interactive capability refers to the ability of users to search the company's product catalogue, make queries and enter orders. Transactional capability allows online selling and purchasing of products and services including online payment and customer service. Integrated capability means that the company's e-commerce systems are integrated with suppliers, customers and other back office systems allowing most business transactions to be conducted electronically.

In the information systems (IS) literature, both primary and secondary attributes of the implementation and benefits of IS have been recognised (Kuan and Chau, 2001). Primary attributes refer to objective and quantitative measures of benefits whereas secondary attributes refer to perception-based measures. Some authors mistrust the subjectivity of perceptual measures (Seddon, 1997) but, because of the difficulty of obtaining economic and quantitative measures of benefits, perceived measures have been accepted widely as conceptually meaningful and easy to use proxies of actual IS benefits (Grover et al, 1998; Mirani and Lederer, 1998, Saarinen, 1996). Based on the critique by Saarinen and Saaksjarvi, Saarinen (1996:104) argued that:

> *"…investment analyses, if performed, are usually based on experts' judgment. If the estimates are based on subjective predictions, to be changed many times during the project, their objectivity becomes questionable. Use of the quantitative and financial figures, based on subjective estimates does not make them more objective than the less quantitative criteria. In fact, in many cases, the subjective measures may be even better than the quantitative measures".*

Overall, previous IS studies' findings assert that perceived measures could indicate the benefits of various information systems with some degree of consistency and can reasonably be used as proxies to actual benefits. Similarly, Delone and Maclean (2003:25) argue that such an approach can be used in measuring e-commerce success and assert that " …net benefits success measures are important…[but]…must be determined by the context…" and constituencies specific to the desired level of analysis. On the basis of the above argument, this study focuses on the perceived measures of benefits. The axiom that *perception is reality* is resonant here.

Several researchers have outlined the potential benefit of e-commerce for developing countries' businesses as outlined in the literature review above. We drew a set of e-commerce benefit statements from the review of the literature. Drawing from such a pool improves

content validity of the adapted items. A total of 15 items were used to assess e-commerce benefits (Appendix A). On the basis of the e-commerce success literature (Han and Noh, 1999), an additional item "we are satisfied with the overall performance of our e-commerce application" was used to assess the overall perceived success of e-commerce.

Because the nature of the research design required responses from executives who could make an overall assessment of e-commerce benefits for their firms, we specifically sought out the CEOs, general managers and managing directors of the organisations to respond to the survey questions. The respondents were asked to answer the questions on a five point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). The data were analysed using descriptive and exploratory statistical techniques such as factor analysis, cluster analysis, analysis of variance and discriminant function analysis.

A wide range of demographic characteristics was covered by the extracted data subset (Table 1). The majority of the respondents held a job title of managing director or CEO or general manager. Some 58% of the responses were from the manufacturing and services sector. Most came from large businesses operating for more than 10 years.

Table 1. Demographic Characteristics of the Survey Respondents

Characteristics	Percentage
Position	
Managing director or CEO or general manager	72%
Finance director	11%
IT director	10%
eCommerce director	4%
Marketing director	3%
Number of Years in Business	
1-10	14%
>10	86%
Business Size[2]	
Small and medium	17%
Large	83%
Business Sector	
Services (financial, consulting, media, marketing & tourism)	39%
Manufacturing	22%
Primary (agriculture, construction and mining)	17%
Trade (wholesale and retail) and transport	12%
ICT (computers and communications)	10%

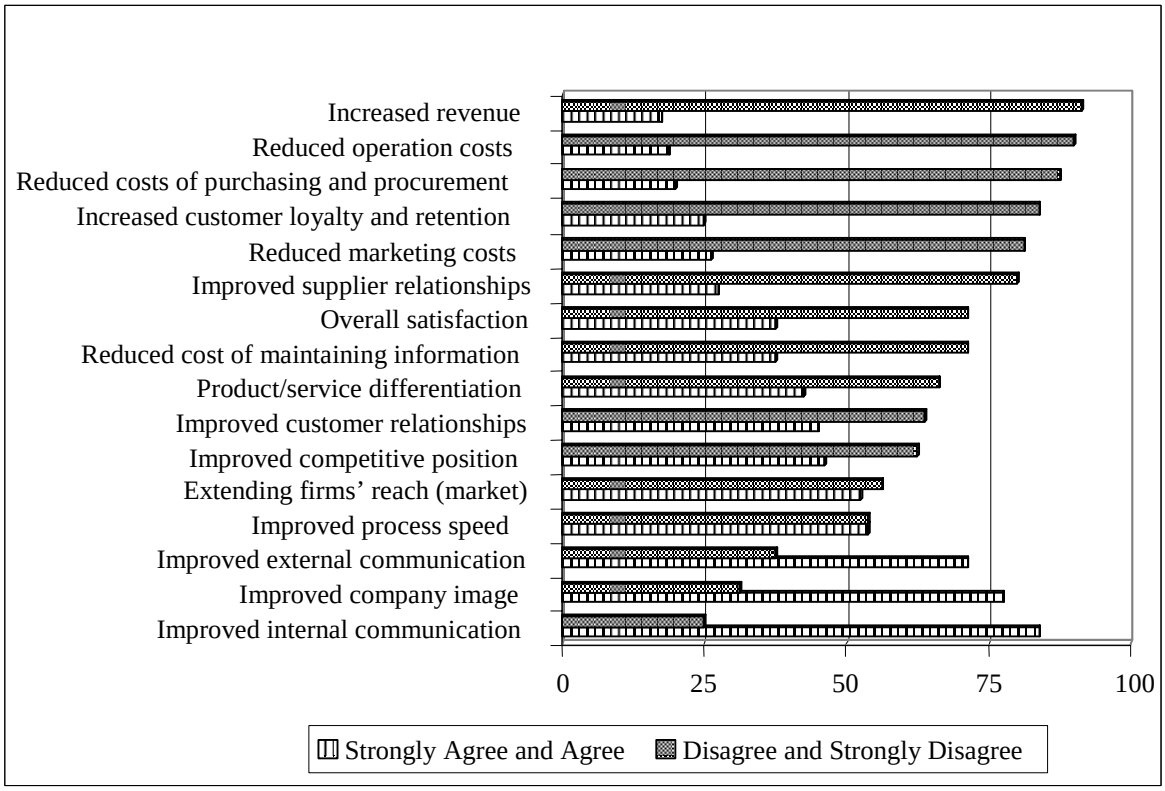
[2] According to Statistics South Africa and the South African National Small Business Act 102 of 1996, businesses with 50 or fewer full-time employees' size (FTES) are considered small. Those with 50 to 100 FTES (maximum limit of 200 in mining, manufacturing and construction) are medium, and the rest are considered large.

C. Findings

C1. Descriptive Results

In order to assess to what extent the businesses are benefiting from their e-commerce investments, we counted the number of respondents who agreed or strongly agreed and compared it with those that disagreed or strongly disagreed on each of the survey items. The result is plotted in Figure 1.

Figure 1. Distribution of eCommerce Benefits



Examination of Figure 1 indicates that e-commerce benefit is largely limited to internal (77% of respondents either strongly agreeing or agreeing) and external (71%) communications improvements. Other benefits that are supported by the majority of the respondents are improved company image (65%) and improved process speed (50%). On the other hand, e-commerce did not appear to enable most of the businesses in the survey to reduce the cost of marketing (76% disagree or strongly disagree), operations (83%), purchasing and recruitment (81%) or maintaining information (66%). Further, 84% of respondents did not appear to realise increased revenue as a result of e-commerce. Another 74% and 72% of respondents either disagreed or strongly disagreed with the improved supplier relationships and the customer loyalty and retention benefits of e-commerce respectively.

Overall, though, 44% of the respondents were satisfied with the performance of e-commerce. In view of the fact that the majority of the businesses have not experienced most of the benefits of e-commerce, the percentage of respondents who expressed satisfaction with e-commerce performance looks relatively high. However, inspection of the correlation coefficients (Appendix B) indicates that satisfaction with e-commerce performance is related

only to improvement in process speed, company image and inter-organisational communication items. From Figure 1, it can be seen that these three items have received a better rating and could explain why 44% of respondents expressed satisfaction despite not realising most of the benefits of e-commerce.

C2. eCommerce Benefit Constructs

Exploratory factor analysis was used in order to identify underlying constructs and investigate relationships among the 16 items used to assess e-commerce benefits. The factors were extracted using an iterative sequence of principal components extraction technique. To facilitate interpretability, this was followed by varimax rotation. The criterion used for assigning an item to a factor was a minimum factor loading of 0.5. In each cycle of the iteration, we retained only factors with eigenvalues greater than one. In addition, single item factors, items with factor loadings less than 0.5 on any one factor, and items with a factor loading greater than 0.5 on two or more factors were excluded from subsequent iterations. The final factor structure with three factors containing 12 items was obtained after the third iteration (Table 2). In addition, Cronbach's alpha was counted; the scores (0.87, 0.71 and 0.78 for factors 1, 2 and 3 respectively) were above the accepted level (Cronbach, 1979).

Table 2: eCommerce Benefits Factor Analysis

Variable	**Factor Loadings (Varimax raw) eCommerce Benefits** Extraction: principal components (marked loadings are >0.500)		
	Factor 1	***Factor 2***	***Factor 3***
Extending firms' reach (market)	0.840		
Product/service differentiation	0.846		
Increased customer loyalty and retention	0.809		
Improved revenue	0.596		
Improved competitive position	0.620		
Improved customer relationship	0.733		
Improved internal communication		0.859	
Improved external communication		0.906	
Improved process speed			0.588
Reduced operation cost			0.735
Reduced cost of purchasing and procurement			0.833
Improved supplier relationship			0.736
Eigenvalue	*5.142*	*1.768*	*1.280*
Total variance explained	*42.85%*	*14.73%*	*10.66%*
Cronbach's alpha	*0.87*	*0.71*	*0.78*

As can be seen in Table 2, three main categories of benefits are identified from the data (factors 1, 2 and 3). These three main factors explain 68% (cumulative value of explained variance) of the variance (different pattern of relationships) in the data. This shows some support to the benefits identified under section A above. The factor loadings indicate the

degree of correlation that exists among the items grouped under the same variable, implying that the items under each block can be used to measure three distinct e-commerce benefits. Cronbach alpha values show the reliability of the measure (see Hair et al, 1995).

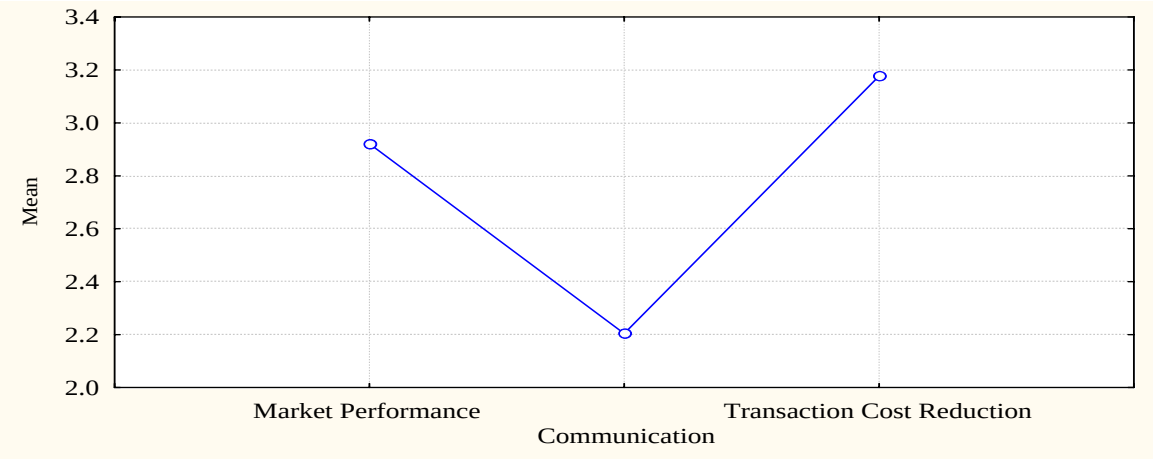
Examination of the results of factor analysis in Table 2 indicates that the first factor with six items accounts for 42.9% of the variance in the data. This means the benefits grouped under this factor explain most of the variations in responses. This factor is related to both the linkage and market access and disintermediation benefits of e-commerce and we labelled it here as the *market performance* gains of e-commerce. Factor one appears to represent variables that constitute benefits in the downstream part of the value chain. Businesses that use e-commerce can potentially increase their market reach and at the same time implement mass customisation strategies to produce products and services that suit the needs and preferences of individual consumers (Fruhling and Digman, 2000). Organisations can also use e-commerce to reengineer the selling and distribution processes and eliminate some of the intermediary activities to develop direct contact with their customers. This allows locking-in of customers, improving their relationship with the business and developing their loyalty. As a result, e-commerce might contribute to increasing the business bottom line and promoting competitiveness (Warrington et al, 2000). The results of our survey (Figure 2[3]) indicate that market performance e-commerce benefits among the South African businesses generally fall short of the above expectations.

The second factor, with two items, accounts for 14.7% of the variance and is labelled *communications* improvement benefits of e-commerce. Kalakota and Whinston (1996) consider communication as one dimension of e-commerce. Use of e-mail, intranets and extranets might help organisations to improve the reach and richness of the information to be communicated. In addition, such networks can improve the speed and cost of communicating the same unit of information and enable the design and deployment of strategic linkages among market players (Malone et al, 1989). Our findings (Figure 2) indicate that this is one area in which businesses seem to benefit more from e-commerce.

The third factor, with four items, accounts for 10.66% of the variance. This factor is related to the firm efficiency theme identified in the literature review and is labelled here as the *transaction cost reduction* benefit of e-commerce. Wigand and Benjamin (1995) differentiate between market and hierarchy transactions. While market transactions refer to those that support coordination between multiple buyers and sellers, hierarchy transactions, on the other hand, refer to those supporting coordination within the firm as well as the supply chain. The items under factor three appear to show hierarchy transaction cost savings. Such savings are expected from reductions in operation costs (such as personnel, rent and order processing), supply acquisition and supplier management costs, and from improvements in internal processes. However, such benefits of e-commerce appear to have rather eluded our respondents (Figure 2).

[3] The Y-axis of Figures 2, 3, 4 and 5 indicates average perceived benefits. Note that the scale used is 1=strongly agree … 5= strongly disagree. Thus, lower mean values mean higher benefits.

Figure 2. Status of eCommerce Benefits



The three factors extracted above demonstrate some relationships (Table 3). Particularly, there is a relatively stronger relationship between market performance and transaction cost reduction than between the other factors. This implies that if a business is not successful in reducing transaction costs, then it is unlikely for that business to perform better in the market, which means it would find itself at a competitive disadvantage.

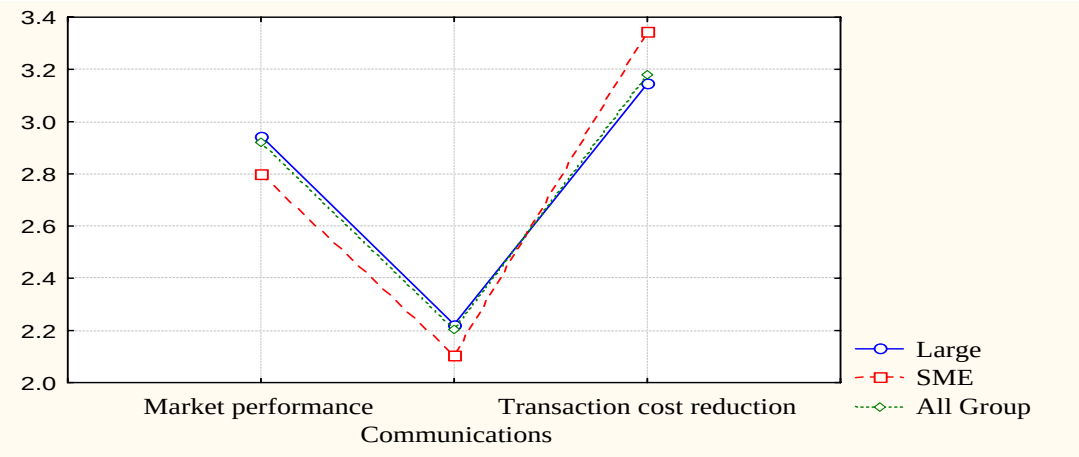
Table 3. Correlation Coefficients

Variable	Correlations: eCommerce Benefits Marked correlations are significant at $p < 0.05$		
	Market Performance	***Communication***	***Transaction Cost Reduction***
Market Performance	(1.00)	*0.29*	*0.54*
Communication	*0.29*	(1.00)	*0.35*
Transaction Cost Reduction	*0.54*	*0.35*	(1.00)

C3. Impact of Demographic Variables

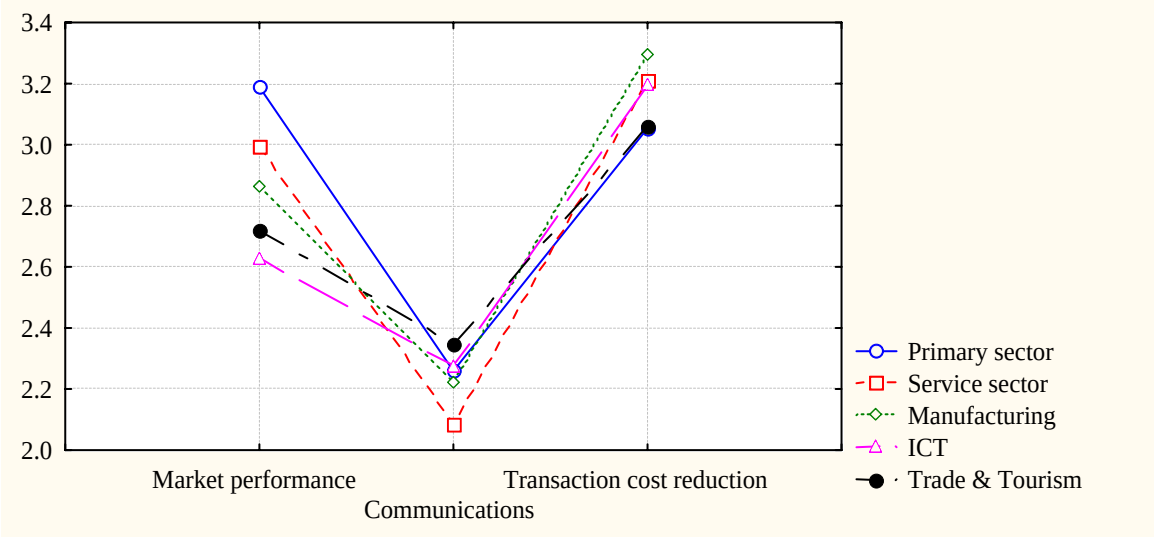
To explore differences of e-commerce benefits in small and medium and large enterprises, the size-wise mean score values of the three factors were plotted (Figure 3). Examination of Figure 3 indicates a more or less consistent pattern across enterprises. In both small and medium and large organisation groups, improvements in internal and external communications were reported by most organisations while cost reduction and market performance benefits remained the least experienced. The graph also indicates relatively better e-commerce benefits for small and medium enterprises in the first two factors, i.e., market performance and communications. The significance of this difference was further tested using a one-way ANOVA. The result (*Wilks lambda=0.967, F(3, 83)=0.9573, p=0.417*) indicates that the difference is not statistically significant.

Figure 3. eCommerce Benefits by Business Size



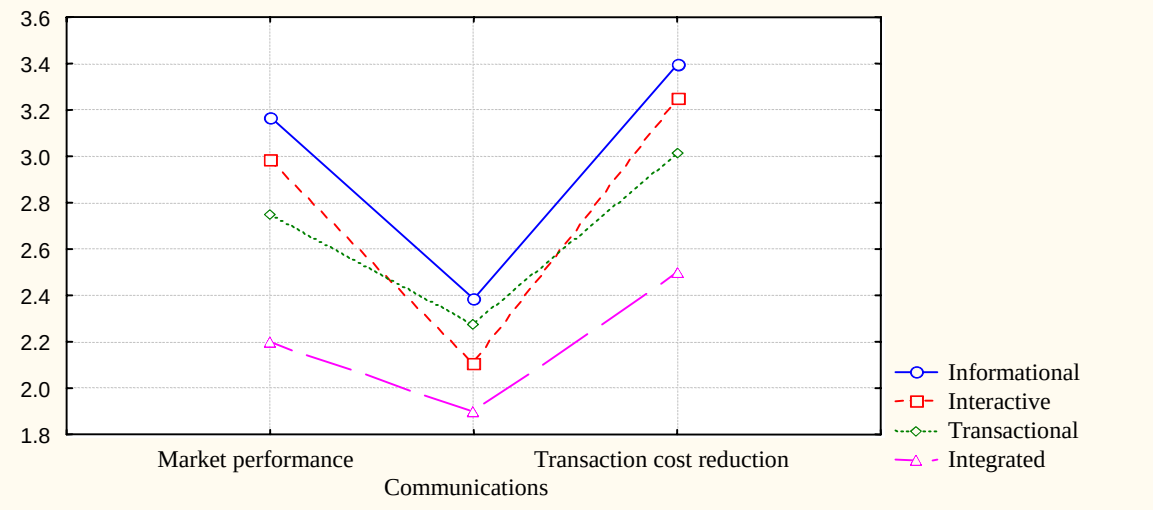
In addition to size, e-commerce benefit variations due to sector differences were tested. The sector-wise mean benefit scores are plotted in Figure 4. The result has not produced a single pattern indicating one particular sector benefiting more from e-commerce than other sectors. The ANOVA test *(Wilks lambda=0.88446, F(12, 211.95)=0.83895, p=0.61022)*, producing no statistically significant result, reinforced this finding.

Figure 4. eCommerce Benefits by Sector



We anticipated that the e-commerce capability of businesses – captured in terms of the informational or interactive or transactional or integrated status attained – would have some impact on e-commerce benefits. The mean plot (Figure 5) appears to indicate a clear distinction in terms of benefits between businesses with informational e-commerce capability and those that have developed integrated e-commerce capability. As anticipated, businesses that have developed integrated e-commerce capability seem to have reaped greater benefit from their e-commerce investment in all the three areas. However, the ANOVA and discriminant function analysis tests did not produce statistically significant results.

Figure 5. eCommerce Benefit by eCommerce Capability



D. Discussion And Conclusion

Our findings about the benefits of e-commerce for businesses in South Africa appear to contradict most of the benefit themes outlined in the theoretical background section. They also appear to contradict the buoyant optimism surrounding e-commerce's potential for developing countries. The majority of the businesses do not appear to have obtained e-commerce benefits in terms of expanding their market reach, improving their competitive position, and improving relationships with customers and suppliers. Cost reductions due to savings from improved internal processes and operations have not been as widely achieved as the standard model of e-commerce would have made us believe.

The results of the study thus reinforce many of the empirical findings of previous research on e-commerce in developing countries. For instance, Moodley et al (2003), based on a study of garment exporting firms in South Africa, found that e-commerce had neither allowed those firms to bypass intermediaries nor to reduce trade coordination and transaction costs. Pare's (2003) analysis of 117 B2B e-hubs discovered that neither are the e-hubs providing services that contribute towards transaction cost reduction nor are the businesses participating in those hubs reaping such benefits. Humphrey et al's (2003) findings on the garment and horticulture industries of selected developing countries also suggest that many potential benefits relating to transaction facilitation and reach did not apply to the businesses they interviewed. Hence, Odedra-Straub (2003) considers the real benefits and impacts of ICTs (including e-commerce) in developing countries to be disappointing, while Gurstein (2003) questions the entire assumption of e-commerce benefits for developing countries. He further argues that this assumption has proven in the majority of regions to be "a little spin-off effect with minimum distribution of benefits outside the core".

One explanation that affects our results (including the effect of demographic variables) and perhaps the results of many other developing country specific e-commerce studies is the embryonic nature of e-commerce there. Zhu and Kraemer's (2002) study of Western businesses have found a strong and significant relationship between the richness of e-commerce – as it develops in terms of information, transaction, interaction and customisation

and supplier connection capability – and its value and impact on business performance. The majority of the businesses in our survey (68%) could be categorised as having an entry-level (informational and interactive) e-commerce capability with only 26% and 6% achieving a transactional and integrated e-commerce status respectively. This is consistent with other findings from Brazil (Tigre, 2003), China (Tan and Ouyang, 2004), Malaysia (Le and Koh, 2002), Mexico (Palacios, 2003) and South Africa (Moodley, 2003). Such capabilities would most likely support the conduct of basic communicational and informational but not transactional activities, hence limiting the extent of real benefits of e-commerce.

Further, the experience of industrialised countries suggests that at the early stage of e-commerce there was a significant gap between its anticipated and actual achievements (Marshall et al, 2000). NNI (1999) supports this and suggests that expecting cost savings from e-commerce instantly is not realistic because such benefits might take a long time before they actually materialise. In developing countries in particular, the marginal cost of adopting e-commerce tends to be much higher than in other environments. This is because adopting e-commerce requires additional investments to put in place basic automation and informatisation systems and business networks. Hence, in the short term, e-commerce might add to transaction costs, further delaying the realisation of cost saving benefits.

In addition, Mansell (2001) and Patterson and Wilson (2000) argue that the capacity of DC businesses to achieve perceived benefits of e-commerce is dependent on their ability to reduce many facets of technological divides and improve the institutional arrangements that support the conduct of business. Likewise, elsewhere, we also found the e-readiness of developing countries' businesses to have significant impact on e-commerce success (Molla, 2004). In particular, we showed that the e-commerce governance model organisations put in place, senior management commitment, and human, business and technological resources all influence marketplace and cost saving benefits.

The findings documented above have some further implications. Many businesses in developing countries are encouraged to adopt e-commerce in order to take full advantage of this new business platform. The result of this current study provides researchers and practitioners with initial guidance that can be used to manage expectations of returns on e-commerce investments. It also extends previous findings that caution against the over-optimistic view of e-commerce both in terms of organisation-specific gains and contribution to socio-economic development. Particularly, it indicates that entry-level e-commerce applications are unlikely to generate the potential benefits hypothesised in the literature. Rather, what is implied here is that the capacity of developing country businesses to achieve the perceived benefits of e-commerce requires a building up of their internal organisational capabilities. It also requires improvements in the richness of e-commerce sites on all informational, transactional and interactive dimensions, and in the institutional arrangements that affect its conduct.

Finally, the study provides researchers with an initial set of factors and items that could be used in future research. This would facilitate an understanding of the antecedents and outcomes of e-commerce in developing countries.

To summarise, our results show significant shortfall in one developing country from the optimistic view of e-commerce. Of course one must avoid being too sweeping in the generalisations of these results to either e-commerce benefits in South Africa or to all developing countries as the study reported here is limited in its sample coverage in both

geographic and size terms. In addition, the results we observed here are likely to change in the future as businesses in developing countries accumulate experience and improve their organisational and e-commerce capability. Hence, in order to better understand the e-commerce phenomenon in developing countries, further research that expands both the geographic and sample size coverage of our research is recommended. Research is also recommended that not only assesses the benefits but also the antecedents that affect those benefits.

References

Bakos, Y. (1998) The emerging role of electronic market places on the Internet. *Communications of the ACM*, 41(8), pp.35-42.

Benjamin, R. & Wigand, R. (1995) Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review*, 36 (2), pp. 62-73.

Cronbach, L.J. (1979) Test validation. In. Thorndike, R. L., (ed.), *Educational Measurement*, 2nd ed, Washington DC: American Council on Education, pp.443-507.

Delone, W.H. & Maclean, E.R. (2003) The Delone and McLean model of information systems success: A 10 year update. *Journal of Management Information Systems*, 19 (4), pp. 9-30.

Dolan, C. & Humphrey, J. (2001) Governance and Trade in Fresh Vegetables: The impact of UK supermarkets on the African horticultural Industry. *Journal of Development Studies*, 37 (2), pp. 147-76.

Evans, P. & Wurster, T.S. (2000) *Blown to Bits: How the New Economics of Information Transforms Strategy*, Boston, MA: Harvard Business School.

Fruhling, A.L. & Digman, L.A. (2000) The impact of electronic commerce on business-level strategies. *Journal of Electronic Commerce Research*, 1(1), pp 15-22.

Gereffi, G. (2001) Shifting governance structures in global commodity chains with special reference to the Internet. *American Behavioral Scientist*, 44 (10), pp.1616-1637.

Goldstein, A. & O'Connor, D. (2000) *E-commerce for Development*. Available from: <www.oecd.org/dev> [Accessed October 5, 2000].

Grover, V. Teng, J. Segars, A.H. Fiedler, K. (1998) The influence of information technology diffusion and business process change on perceived productivity: The IS executive's perspective. *Information & Management*, 34, pp. 141-159.

Gurstein, M. (2003) Default: Check this box if you don't want this message to appear again, *Electronic Journal of Information Systems in Developing Countries*, 11(2), pp.1-5.

Han, K.S. & Noh, M.H. (1999) Critical failure factors that discourage the growth of electronic commerce. *International Journal of Electronic Commerce*, 4(2), pp. 25-43.

Hartman, A. Sifonis, J. & Kador, J. (2000) *Net Ready: Strategies for Success in the E-conomy*. New York: McGraw-Hill.

Heeks, R. (2000) Analysing e-commerce for development, Available from <http://idpm.man.ac.uk/publications/wp/di/short/di_sp04.doc> [Accessed July 4, 2004].

Hempel, P.S. & Kwong, Y.K. (2001) B2B e-commerce in emerging economies: I-metal.com's non-ferrous metals exchange in China. *Journal of Strategic Information Systems*, 10, pp. 335-355.

Ho, C. & Chen, J. (1999) The prospects of B2B e-commerce in China's Internet industry. *Business Forum*, 24 (3/4), pp. 62-69.

Humphrey, J. Mansell, R. Pare, D. & Schmitz, H. (2003) *The Reality of E-commerce with Developing Countries*. United Kingdom: Media @LSE and IDS.

Kalakota, R. & Whinston, A.B. (1996) *Electronic Commerce: A Manager's Guid*e. London, UK: Addison Wesley Publishing.

Kebede, T. (2001) The potentials of electronic commerce. In: *Proceedings of Ethiopia in the Knowledge Age: a Conference on Information and Communications Technology and Development*. Available from: <www.ethiopiaknowledge.org/index.htm> [Accessed September 14, 2001].

Kuan, K.K.Y. & Chau, P.Y.K. (2001) A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework. *Information & Management*, 38, pp. 507-521.

Le, T.T. & Koh, A.C. (2002) A managerial perspective on electronic commerce development in Malaysia. *Electronic Commerce Research*, 2 (1-2), pp. 7-29.

Malone, T. Yates, J. & Benjamin, R. (1989) The logic of electronic markets. *Harvard Business Review*, May-June, pp. 166-172.

Mann, C.L. (2001) *Global E-commerce: Issues and Policy for Developing Countries*. New York: Institute for International Economics.

Mansell, R. (2001) Digital opportunities and the missing link for developing countries. *Oxford Review of Economic Policy*, Volume 17, pp. 282–295.

Marshall, P. Sor, R. & McKay, J. (2000) An industry case study of the impacts of electronic commerce on car dealership in western Australia. *Journal of Electronic Commerce Research*, 1(1), pp.1-16.

Mirani, R. & Lederer, A.L. (1998) An instrument for assessing the organisational benefits of IS projects. *Decision Sciences*¸ 29(4), pp. 803-838.

Moodley, S. Morris, M. & Velia, M. (2003) E-commerce for exporting garments from South Africa: "digital dividend" or leap of faith? *IDS Working Paper 182*, Institute of Development Studies. Available from: <http://www.gapresearch.org/production> [Accessed January 5, 2004].

Moodley, S. (2003) Whither business-to-business electronic commerce in developing economies? The case of the South African manufacturing sector. *Information Technology for Development*, 10 (1), pp. 25-40.

NNI-Nolan Norton Institute (1999) Electronic commerce: The future is here. *Research Report*. Available from: <www.kpmg.com.au> [Accessed September 2, 2000].

Ntoko, A. (1999) Addressing the challenges and opportunities through partnerships, Electronic commerce for developing countries. *Telecommunications Development Bureau*, Geneva: ITU.

Odedra-Straub, M (2003) E-commerce and development: Whose development? *Electronic Journal of Information Systems in Developing Countries*, 11(2), pp. 1-5.

Palacios, J.J. (2003) The development of e-commerce in Mexico: A business-led boom or a step toward the emergence of a digital economy?. *The Information Society*, 19 (1), pp. 69-80.

Palvia, P.C. Palvia, S.C. & Roche, E.M. (1996) *Global Information Technology and Systems Management: Key Issues and Trends.* West Ford, MA: Ivy League Publishing.

Pare, D. (2002). B2B e-Commerce services and developing countries: Disentangling myth from reality. *Association of Internet Researchers International Conference*, October 13-16, Netherlands.

Pare, D.J. (2003) Does this site deliver? B2B e-commerce services for developing countries. *The Information Society*, 19(2), pp. 123-135.

Patterson, R. & Wilson, E.J. (2000) New IT and social inequality: Resting the research and policy agenda. *The Information Society*, 16 (1) pp. 77-86.

Saarinen, T. (1996) An expanded instrument for evaluating information system success. *Information & Management*, 31, pp.103-118.

Sarkar, M.B. Butler, B. & Steinfield, C. (1995) Intermediaries and cybermediaries: A continuing role for mediating players in the electronic marketplace. *Journal of Computer Mediated Communication*, 1 (3), pp. 1-13.

Seddon, P.B. (1997) A respecification and extension of the Delone and McLean model of IS success. *Information Systems Research*, 8(3), pp.240-252.

Singh, A. & Tanburn, J. (2001) ICTs and enterprises in developing countries: Hype or opportunity? *Seed Working Paper*, Number 17, Geneva: International Labour Office.

Straub, D.W. (1989) Validating instruments in MIS research. *MIS Quarterly*, (June), pp.147-165.

Tan, Z. & Ouyang, W. (2004) Diffusion and impacts of the Internet and e-commerce in China. *Electronic Markets*, 14 (1), pp. 25-36.

Tigre, P.B. (2003) Brazil in the age of electronic commerce. *The Information Society*, 19, pp.33–43.

UNCTAD (2001) UNCTAD (2001) *E-commerce and Development*. Available from: <www.unctad.org/eCommerce> [Accessed on January 13, 2002].

UNCTAD (2003). *E-commerce and Development*. Available from: <www.unctad.org/eCommerce> [Accessed on January 6, 2004].

Warrington, T.B. Abgrab, N.J. & Caldwell, H.M. (2000) Building trust to develop competitive advantages in e-business relationships. *Competitiveness Review*, 10(2), pp.160-168.

Wigand, R.T. (1997) Electronic Commerce: Definition, theory and context. *The Information Society*, 13, pp.1-16.

Wigand, R.T. & Benjamin, R.I. (1995) Electronic commerce: Effects on electronic markets. *Journal of Computer Mediated Communication*, 1(3). Available from <http://www.ascusc.org/jcmc/vol1/issue3/wigand.html> [Accessed on January 13, 2002].

Wigand, R. Picot, A. & Reichwald, R. (1997) *Information, Organization and Management: Expanding Markets and Corporate Boundaries*. Chichester, England: John Wiley & Sons.

Wigand R.T. (1995) Electronic commerce and reduced transaction costs: Firms' migration into highly interconnected electronic markets. *Electronic Markets*, 16/17, pp. 1-5.

Zhu, K. & Kraemer, K.L. (2002) e-Commerce metrics for net-enhanced organisations: Assessing the value of e-commerce to firm performance in the manufacturing sector. *Information Systems Research*, 13(3), pp. 275-296.

Appendices

Appendix A: Survey items used to collect e-commerce benefits data

The following statements indicate possible benefits of e-commerce. Please indicate the extent to which **your organisation has experienced these benefits** by expressing your degree of agreement or disagreement.

	Strongly Agree				**Strongly Disagree**
	1	**2**	**3**	**4**	**5**
1. Reduced operation costs (personnel, rent, order and payment processing)	○	○	○	○	○
2. Reduced marketing costs (communications, interactions and managing customer information and bypassing intermediaries)	○	○	○	○	○
3. Reduced costs of maintaining up-to-date company information	○	○	○	○	○
4. Reduced costs through Web based purchasing and procurement	○	○	○	○	○
5. Extending firms' reach (market)	○	○	○	○	○
6. Product/service differentiation	○	○	○	○	○
7. Increased customer loyalty and retention	○	○	○	○	○
8. Improved process speed	○	○	○	○	○
9. Improved customer relationship	○	○	○	○	○
10. Improved supplier relationship	○	○	○	○	○
11. Improved company image	○	○	○	○	○
12. Improved internal communication	○	○	○	○	○
13. Improved inter-organisational communication	○	○	○	○	○
14. Increased revenue	○	○	○	○	○
15. Improved competitive position	○	○	○	○	○
16. We are satisfied with the performance of our e-commerce application	○	○	○	○	○

Appendix B: Correlation matrix of survey items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Reduced operation cost	1.00															
Reduced marketing cost	0.52	1.00														
Reduced information cost	0.48	0.66	1.00													
Reduced procurement cost	0.50	0.39	0.44	1.00												
Extend firm's reach	-0.01	0.33	0.34	0.26	1.00											
Product/service differentiation	0.29	0.33	0.32	0.36	0.70	1.00										
Increased loyalty & retention	0.23	0.29	0.19	0.42	0.54	0.67	1.00									
Improve process speed	0.53	0.37	0.40	0.53	0.29	0.40	0.41	1.00								
Improve customer relation	0.29	0.42	0.23	0.27	0.50	0.57	0.68	0.45	1.00							
Improve supplier relation	0.41	0.25	0.40	0.60	0.18	0.23	0.29	0.35	0.32	1.00						
Improve company image	0.44	0.39	0.37	0.23	0.36	0.43	0.31	0.50	0.50	0.36	1.00					
Improve internal communication	0.34	0.28	0.45	0.19	0.12	0.18	0.05	0.29	0.25	0.25	0.36	1.00				
Improve external communication	0.33	0.35	0.42	0.14	0.09	0.12	0.10	0.38	0.36	0.16	0.35	0.66	1.00			
Increase revenue	0.31	0.36	0.36	0.42	0.42	0.48	0.51	0.40	0.47	0.33	0.35	0.30	0.35	1.00		
Improve competitive position	0.43	0.46	0.43	0.50	0.44	0.61	0.51	0.53	0.52	0.37	0.47	0.24	0.28	0.66	1.00	
Overall satisfaction	0.21	0.11	0.08	0.15	-0.02	0.14	0.14	0.25	0.12	0.07	0.24	0.11	0.27	0.08	0.16	1.00