



# E-Business Triggers: An Exploratory Study of Ghanaian Nontraditional Exporters (NTEs)

*Robert Hinson, Aalborg University, Denmark*

*Olav Jull Sorensen, Aalborg University, Denmark*

---

## ABSTRACT

*This study sought to ascertain what key international and local triggers accelerated or militated against their e-business adoption process in Ghanaian non-traditional export (NTE) firms. The macro international trigger explored was competition from exporters in other countries as well as an ascertainment of the significance of export direction. The macro level trigger explored hinged on the level of infrastructural support available for e-business adoption and deployment. Study focused on active non-traditional exporters in Accra. 60 firms responded to questionnaires on e-business and exporting. Analysis of the data was mainly by means of descriptive statistics. Competition acts as a trigger for e-business adoption even though its relationship to the level of internationalization could not be clearly established. E-business is important for Ghanaian exporters irrespective of where they are exporting to and they seem prepared to go electronic irrespective of the level of infrastructural sophistication within and without their export firms.*

*Keywords: e-business; exporters; Ghana; internationalization; triggers internationalization*

---

## INTRODUCTION

### ICT for Developing Countries

The emergence of the information age has brought to the fore the important role that information, knowledge, and technology can play in facilitating socio-economic development. The effective use of knowledge is becoming one of the most critical determinants of international

competitiveness and for creating wealth and improving social welfare. There is no doubt that information, knowledge, and technology are increasingly becoming key drivers for socio-economic development worldwide. It is now abundantly clear that a nation's capability and ability to accelerate its socio-economic development process, gain competitive advantage; and improve the well-being of its people

depends very much on the extent to which it can develop and use information, knowledge, and technology in one form or the other

It could be argued that the emerging information age characterized by information and communication technologies (ICTs) and the extraordinary increase in the spread of knowledge has given birth to a new era; that of knowledge and information. These technologies are offering even less developed agricultural countries like Ghana the opportunity to transform their economies and societies. Because of the portable nature of the underlying technologies driving the development of the information society and economy, developing countries like Ghana are equally placed to take advantage of them to facilitate their socio-economic development process. It has now been recognized that in the new emerging economic order, the fundamental basis for poverty reduction, wealth creation, and national prosperity is information and knowledge. Ghana cannot afford to be without either of these.

Poon and Swatman's (1997, 1999) seminal papers on small business Internet commerce posited inter alia, that small business e-commerce issues are increasingly topical and demand attention from applied ICT scholars. Over half a decade later, Rao, Metts, and Monge (2003) are still carrying out research on e-commerce/e-business in small firms and are contending that this type of e-commerce research is important because small firms are the bedrock of several economies. Hinson and Sorensen (2006) have carried the e-business for small firm debate into nontraditional exporting firms in Ghana, and this present study is an extension of a multi-faceted research endeavor on e-business focusing on nontraditional export firms in Ghana.

### The Global Digital Divide

The wide disparities in the diffusion of ICTs globally between mostly developed and developing countries are referred to as the global digital divide. Internet and ICT scholars have opined that increased levels of ICT and Internet diffusion increases knowledge diffusion

through improving communication efficiency and allows developing countries (like Ghana) to leapfrog traditional methods of increasing productivity (Steinmuller, 2003). Other scholars like Fillis, Johannson, and Wagner (2004) have also noted that for internationalizing small and medium-sized enterprises (SMEs), the adoption of e-business and Internet technologies makes it irrelevant for them to internationalize in a stepwise manner since e-business necessarily facilitates leapfrogging. While this thesis might not be wholly sound, e-business still offers firm level benefits for small and medium size firms. The International Telecommunications Union (<http://www.itu.int/wsis/tunis/newsroom/stats/>), with particular respect to Africa for the year 2004 notes that:

- Africa has by far the world's lowest penetration of fixed lines, with a continental average of around three main lines per 100 people.
- Africa has its own digital divide. For example, Egypt has 17 times the fixed-line penetration of Nigeria. While sub-Saharan Africa (excluding South Africa) has an average teledensity of 1%, North Africa (Algeria, Egypt, Mauritania, Morocco, and Tunisia) has a comparable average of 10%. Almost three quarters of all Africa's fixed lines are found in just six of the continent's 55 countries.
- Africa had some 22 million Internet users in 2004, for an Internet penetration of just 3%. Europe's Internet penetration is 11 times higher.

In spite of the obvious setback that countries that sit on the disadvantaged end of the global digital divide might seem to be facing in terms of acquiring greater levels of international business; applications of ICT, the Internet, and e-business still hold promise for transforming the largely agrarian nature of these countries. The development, deployment, and the exploitation of ICTs to support the process of transforming the predominately agricultural economy of Ghana and move it toward an information

and knowledge economy should be regarded as central to efforts directed at addressing the identified developmental challenges facing the country. It could be argued that for poorer, least developed economies exclusion from the digital economy could serve to widen the digital divide even further, and therefore any incremental uses of ICT and e-business will be beneficial in moving developing countries to more socio-economic prosperity.

## STUDY OBJECTIVES

The dominant literature in the e-business/internationalization (see Fillis 2001; Fillis et al., 2004) field holds that the adoption of e-business applications will enable SMEs in developing countries to “leapfrog” into the global economy. The thesis is that the massive transfer of new ICT into small firms (especially exporting firms) in developing countries will enhance their capacity to compete favorably with firms operating in the developed nations, such as Denmark, Australia, United States, and Canada. While the authors of this paper do not necessarily subscribe to the “leapfrogging” thesis, we still believe that e-business adoption could lead to the more effective management of small exporting firms in Ghana. E-business is therefore conceptualized more as an organizational management tool than a leapfrogging mechanism. It is the contention of the authors of this paper that improvements in organizational management of export firms in developing countries is a more immediate and realizable step than the increasingly popular leapfrogging thesis. This paper focuses on the factors that seem to pressurize nontraditional exporting (NTE) firms to adopt e-business as a tool for improving their competitiveness.

In a more precise form this study proposes to examine the following:

- To examine international e-business triggers for Ghanaian NTEs
- To examine the impact of an infrastructural base for e-business in Ghanaian NTEs

## DEFINING E-BUSINESS

E-business spans applications of ICTs such as office automation; production processes; coordination with other plants; customer relation management; supply chain management; and management of distribution networks (Lal, 2004). E-business potentially provides small firms with opportunities for radical business changes. McDonald and Burton (2002) note the ability of effective e-business systems to reduce the number of channel intermediaries with which a small firm deals, to reduce search and transaction costs for such firms, and to increase the benefits of network externalities. E-business is however, the use of ICTS in all activities of a firm both internally and in relation to its outside partners. For the specific purposes of this study, e-business is conceptualized to be the application of ICTS (in online and off-line formats) to execute or facilitate the execution of export-related functions like financial management, marketing management, strategy leverage, production management, IS, logistics management, customer relationship management, and human resource management

## THE GHANAIAN ICT CONTEXT

The Ghana ICT for Accelerated Development (ICT4AD) document is Ghana’s blueprint for using ICT as catalyst for industrial and socio-economic development in Ghana. According to the Ghana ICT for Accelerated Development (ICT4AD) document, it is envisaged that a simultaneous focus on developing the ICT industry and the use of ICTs to drive other sectors of the economy can accelerate Ghana’s development. The underlying details of the ICT4AD process are summarized in Table 1.

The important issues to note in Ghana’s ICT development framework shown in Table 1 is that Ghanaian policy makers seem to be coming to terms with the fact that the basic premise for catalyzing Ghana’s development process is the profuse development, deployment, and exploitation of ICTs. The ICT4AD (2003) also notes conclusively that Ghana’s accelerated development within the emerging information and digital age will not be possible

Table 1. The Ghana ICT for accelerated development (ICT4D) process

<b>The Ghana ICT for Accelerated Development (ICT4D) Process</b>	
The ultimate goal	To engineer an ICT-led socio-economic development process with the potential to transform Ghana into a middle income, information-rich, knowledge-based, technology driven economy and society
The objective	To develop for implementation within a given time frame an ICT4AD policy and plan for Ghana set within the wider socio-economic development framework of Ghana
The general question being addressed	How to address Ghana's developmental challenges and accelerate the nation's socio-economic development process to improve the socio-economic well-being of the people
The basic premise	Ghana's development process can be accelerated through the development, deployment, and exploitation of ICTs within the economy and society
The basic motivation	Ghana's accelerated development within the emerging information and digital age will not be possible without an ICT-enabled development agenda
Key process outputs	<ul style="list-style-type: none"> <li>• The ICT framework</li> <li>• Policy (based on a framework)</li> <li>• A number of rolling plans</li> </ul>
Key drivers (Policy + Plans)	<ul style="list-style-type: none"> <li>• ICT as a social-enabler (education, health, poverty reduction, income-distribution, etc.)</li> <li>• ICT as an enabler of rapid economic development</li> <li>• ICT as an enabler of government. Administration and service delivery</li> <li>• ICT as an engine of the service sector</li> <li>• ICT as an enabler of industrial development</li> <li>• ICT as an enabler of the agriculture sector</li> <li>• ICT as a driver of private-sector development</li> <li>• ICT as an agent for wealth creation</li> </ul>

without an ICT-enabled development agenda. In light of the fact that Ghana has identified an export-led growth agenda as its development paradigm, it becomes imperative that the right amounts of ICTs and e-business be adopted in Ghana's export sector.

### THE RESEARCH GAP

ICT and e-business applications for micro firm level and macro national level improvement have been the subject of several scholarly investigations. Pre-millennium research focusing on applied ICT and e-business applications include work carried out by Allen, Crum, and Braunschweig (1992); Angeles, Nath, & Hendon (1998); Aungles and Cook (1994); Baines (1992); Banerjee and Golhar, (1993a, 1993b); Barnard and Von Solms (1998); Bastiaens, Nijhof, Streumer,

and Abma (1997); Bellamy and Taylor (1996); Bytheway and Braganza (1992); Curran (1991); and Fawcett (1990). Post millennium scholars who have made contributions to the e-business literature include Thompson, Rust, and Rhoda (2005); Schlenker and Crocker (2003); Santos (2003); Sands (2003); Rodgers, Yen, and Chou (2002); Raymond (2001); O'Toole (2003); Nguyen, Murphy, and Olaru (2003); Matlay (2004); Jones, Hecker, and Holland (2003); Janssen and Sol (2000); and Javalgi, Martin, and Todd (2004). To illustrate the multi-faceted nature of e-business research, it is worthwhile mentioning that e-business research has been published in a variety of journals. These include IS research, telecommunications policy research, marketing and service management and logistics journals. Table 2 provides a sum-

mary of the last point.

While this is by no means an exhaustive list of journals that have carried e-business research; none of these journals have carried research relating to the external triggers for e-business adoption for small firms situated at the disadvantaged end of the digital divide. This study is therefore positioned to fill that gap.

### CONCEPTUAL FRAMEWORK (SOURCE: HINSON & SORENSEN, 2006)

The conceptual framework (in Figure 1) depicts a small export firm e-business development framework. This framework is developed bearing in mind the fact that small export firms situated on the disadvantaged end of the global digital divide might not have leapfrogging benefits as the more traditional e-business literature suggests, but e-business is conceptualized to be a management tool that can lead to incremental organizational improvement. The exporter e-

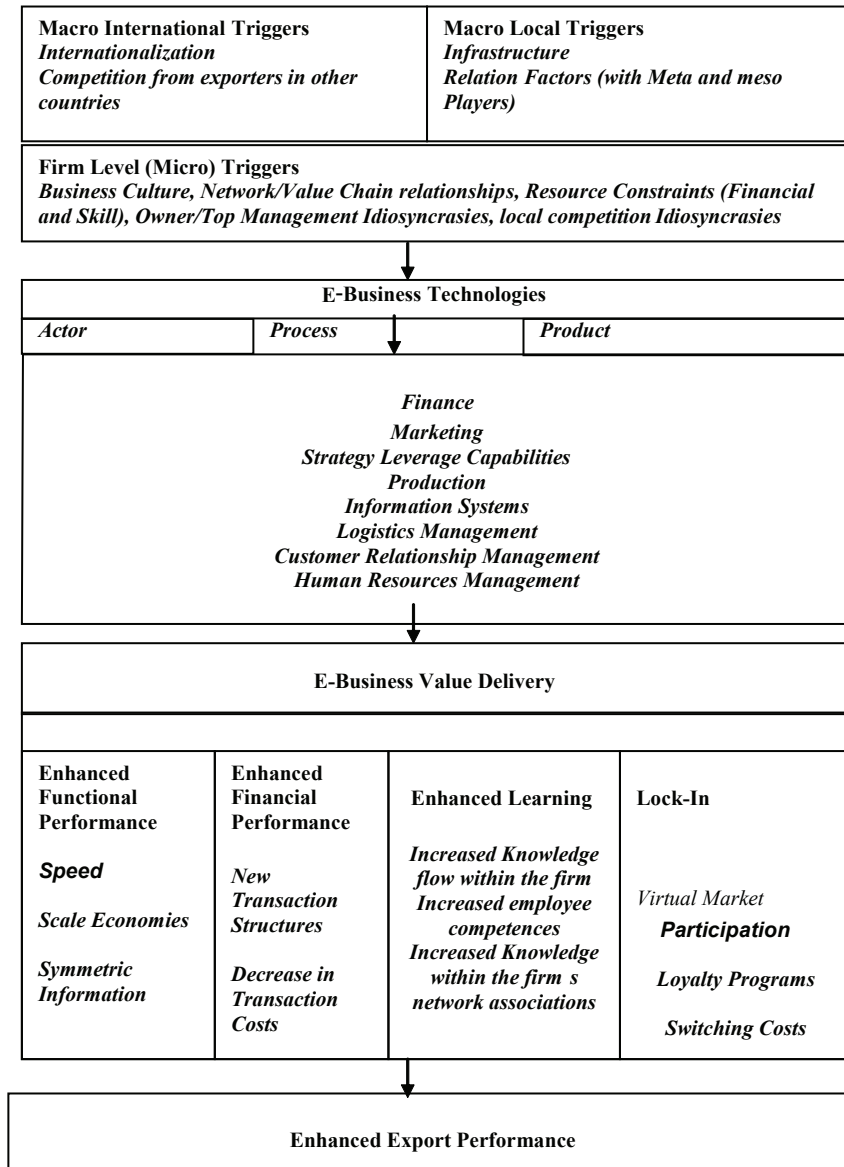
business development framework depicted in Figure 1 also postulates that e-business for a small exporting firm would typically be triggered by macro factors that could impinge on the firm at the local or international levels. In respect of the international macro factors, the level of internationalization or international orientation a small export firm has, and/or the level of international competition the firm faces, might constitute triggers for e-business adoption. Additionally, there are a set of triggers like the level of infrastructural networks and the work of various business associations including Federation of Association of Ghanaian Exporters (FAGE) and export promotion agencies (like the Ghana Export Promotion Council) in creating a favorable climate for small exporter e-business adoption. Some elements of a favorable climate might include for instance, helping to procure affordable PCs for the exporters or setting up a trade IS that the small exporters can connect to.

Micro triggers for e-business adoption are hypothesized to include the business culture

Table 2. Published e-business research

Journal Type	Journal Title	Scholarly reference
Information systems	<i>Internet Research: Electronic Networking Applications</i>	Anguila, Del Padilla, Serarols, and Veciana (2003) Folinas, Manthou, Sigala, and Vlachopoulou (2004)
Telecommunications	<i>Information Management and Computer Security</i>	Barnard and Von Solms (1998)
Marketing	<i>The Journal of Business and Industrial Marketing</i> <i>Marketing Intelligence &amp; Planning</i>	Harridge-March (2004) Czuchry, Yasin, and Sallmann (2004)
Service management	<i>Managing Service Quality</i>	Javalgi et al. (2004)
Logistics	<i>Logistics Information Management</i>	Angeles et al. (1998)
Public sector	<i>International Journal of Public Sector Management</i>	Bellamy and Taylor (1996)

Figure 1. Small firm exporter e-business development framework



(measured by organization resistance/acceptance to technological change and the type of export organization; it is hypothesized that a handicraft exporting firm might find the Web strategy component of e-business more exciting than a tomato exporter and might therefore be incentivised to adopt e-business faster). Other

e-business adoption triggers might include resource (financial and skill) constraints, and age of exporting firm. Owners/top management of small firms wield a lot of power in organizational direction, so in instances where such owner/managers tend to be technology averse, then e-business might be delayed or might even



remain a perpetual mirage for the small firm in question. This point is especially important in the light of the fact that it would seem that higher levels of education might lead to a faster understanding and adoption of e-business. Local competition could also act as an e-business trigger in cases where small export firms find themselves being out-competed because the local industry competitors are adopting e-business and gaining business efficiencies and a sharper competitive edge.

It is proposed that to capture the effects of these e-business prompts, e-business will be analyzed along the actor, process, and product dimensions. The actor refers to the exporter, the process to the processes involved in exporting, and product to the product being exported. These three dimensions focus on how e-business can be used to improve the functional performance of small exporting firms. The improvement parameters for the small firms are hypothesized to be in the areas of finance, marketing, production, IS management, supply chain management, customer relationship management, human resources management, and strategy leveraging.

After e-business helps in improving the organizational efficiencies, then the e-business value proposition kicks in: where small firms benefit from e-business efficiencies (increased speed of operation, reduction in customer search, and symmetric information), novelty, learning, and lock-in (where small firms can participate in virtual communities and attain increased levels of customer loyalty). Symmetric information is achieved in cases where the level of information available for the conduct of export business is about the same for both small and large exporting firms. Ultimately e-business benefits could lead to enhanced export performance for the small firm.

This study focuses specifically on understanding international e-business triggers for Ghanaian NTEs, examining the quality of infrastructural support for e-business in Ghana's nontraditional export sector.

## METHODOLOGY

The study focused on a sample of Ghanaian NTEs chosen from the three highest performing NTE sectors in Ghana. Specifically, the convenience sampling technique was employed in selecting the sample for this study. Out of a list of 176 active NTEs located within the Accra Tema metropolis, 120 could be contacted by phone, fax, or e-mail. Of the 120 firms contacted, 90 expressed their willingness to participate in the study and questionnaires were therefore sent to them. However, 60 responses were received representing a response rate of almost 67%. The study employed a firm level of analysis for measuring its major constructs. These major constructs are internationalization and e-business use. The study population was defined as comprising Ghanaian-based firms which met a range of criteria.

- Located in Accra, the capital of Ghana either physically or by virtue of having headquarters in Accra.
- Had reliable phone numbers, fax, and/or e-mail addresses.
- Listed in the recent editions of the FAGE Directory. (FAGE is a private, nongovernmental organization of Ghanaian exporters and exporter associations. Membership comprises of exporting firms in a range of sectors, including processed and semi-processed products, agriculture and handicrafts. The primary goal of FAGE is to provide technical and information services to facilitate transactions between Ghanaian firms and their global partners).

The decision to limit the study to exporting firms in Accra was aimed at managing the logistics nightmares associated with a Ghana-wide survey. The decision to develop the study frame from the FAGE directory served to ensure a wider coverage of the population of interest. Efforts were made to mitigate some of the well-cataloged limitations associated with the use of directories (incomplete, out-of-date, and inflexible—Churchill, 1995) by verifying and editing the generated study frame at the

headquarters of the Ghana Export Promotion Council in Accra using their list of active NTEs in Ghana.

### Sample

Data for this research was collected through direct contacts with export firm representatives in 2005 using a text-based questionnaire and in-depth interview methods. In Ghana because of the unreliability of the postal system and cultural idiosyncrasies, which dictate that people are more comfortable filling a questionnaire that has been personally delivered and sometimes thoroughly explained by the interviewer, we decided against the use of the postal questionnaire survey method.

### Data Instrument

A six-section questionnaire with a total of 90 items was administered to assess respondents' agreements to the item statements about certain aspects of their job in relation to the e-business triggers for the sampled NTEs. (Please refer to the appendix for full questionnaire.) The research questionnaire was predominantly constructed using a five-point Likert scale. The responses for a majority of the questions ranged from strongly disagree to strongly agree. The questionnaire used for the pilot study was scored on a seven-point Likert scale in the form of:

*Strongly disagree; disagree; somewhat disagree; neutral; somewhat agree; agree; and strongly agree.*

One major advantage in the use of a scale with a wider response range is that such a scale yields a wider range of possible scores, which increases the statistical analyses available for use (DeVellis, 1991). The macro international trigger explored was competition from exporters in other countries while the macro level triggers explored included the level of infrastructural support available for e-business adoption and deployment, as well as the pressure from meta- and meso-level export players. Internationalization was measured as percentage of products exported by volume.

In order to test the reliability and construct validity of this scale, 20 exporters were pilot tested with the items on the scale. The rationale for the pilot study was to determine the clarity and reliability of the questionnaire, to test the internal consistency (reliability) of the measures used in this study and to discover any issues relating to the wording and administration of the instrument, which were peculiar to the Ghanaian culture. Respondents were also asked to describe any difficulties experienced in completing the questionnaires. Respondents generally found the questionnaire simple to answer. Their only complaint was that it was too long to complete. Tests of internal consistency (Cronbach's alpha), which were computed on all the measures, included in the research questionnaire showed a higher level of internal consistency and reliability (0.794 for the factors measuring the triggers of e-business). In the current study, computation of the internal consistency shows a Cronbach's alpha coefficient of 0.760 for the factors measuring the triggers of e-business. These figures are significant and show that each item on the scale differentiates among respondents in the same direction, as does the entire scale. The significance of these figures is indicative of the fact that the items on the scale measure the same underlining construct.

### Data Collection Technique

The lead researcher (working with a group of research assistants) collected the data for this study. To facilitate accurate and objective responses from respondents, the research assistants were trained on interviewing skills and data collection techniques. The objectives of the research as well as items in the questionnaire were thoroughly explained to the research assistants. The lead researcher had considerable contacts in Ghanaian industries and therefore could access the required management personnel in the exporting firms for objective responses to be given to the questions on the e-business data instrument. This was critical to ensure the quality of the data that was collected even though this was only an exploratory study.



Data collection was done through structured face-to-face interviews with participating organizations. Attached to the front page of each questionnaire was an introductory letter (see Appendix), providing potential respondents with the motivation to fill the data instrument. Some of the respondents sought certain clarifications, and their concerns were addressed. All interviews were done consistently and in the same fashion.

## DISCUSSION

This study sought to investigate the macro and micro triggers for e-business adoption in respect of small Ghanaian NTEs. It was hypothesized that there are key macro international triggers and local triggers as well, that impinge on the adoption of e-business for small Ghanaian exporters. To test the stated hypothesis, the study examined the relationships that may exist between international e-business triggers on internationalizing exporters on the one hand; and local e-business triggers and internationalizing Ghanaian exporters on the other hand.

In the light of the conceptual framework adopted for this study, international e-business triggers were seen in the light of competition from exporters in other countries; while local e-business triggers was seen in the light of level of infrastructural development to support e-business use by small Ghanaian exporters and small exporter firm relations with meta and meso actors in Ghana's export industry. The presentation of the findings is done by means of both descriptive and inferential statistics. Internationalization was measured by the percentage of products/services exported by volume.

### A: Macro Trigger For E-Business Adoption

*A1: International Trigger:* measured by competition being a factor in the exporting firm's decision to adopt e-business.

The mean and standard deviation presented in Table 3 shows the role competition plays in Ghanaian exporting firms' decision to adopt e-business. It is inferred that competition

greatly influences firms categorized at the level 2 internationalization (mean = 4.78) than the others, while level 3 internationalization (mean = 2.5) came across least. Summarized in Table 4 is the one-way ANOVA computations used to test for significant differences among the mean values obtained.

Results presented in Table 4 indicate that competition is a factor influencing Ghanaian export firms' decision to adopt e-business [ $F(4, 59) = 2.94, p < 0.05$ ]. By implication, the impact of competition on the firm's decision to adopt e-business is dependent on the level of internationalization of the firm in question. The multiple comparison/post-hoc tests (presented in Table 5) were computed to determine the mean values that vary significantly from each other.

The post-hoc tests (presented in Table 5) indicate that the mean differences for level 2 internationalization and level 3 internationalization vary significantly (mean difference = 2.28,  $p < 0.05$ ). It is confirmed that competition is not a major factor influencing decision to adopt e-business for level 3 internationalized firms as compared to their counterparts in at level 2 internationalization, who reported a very high impact of competition on the decision to adopt e-business.

This finding generally indicates that internationalizing exporters in Ghana are adopting e-business as a result of competitive pressures. E-business adoption does not have a clear link however with the level of internationalization of these Ghanaian exporters. It might be fair to surmise from a managerial implication standpoint that the adoption of e-commerce/e-business practices helps improve the competitiveness of Ghanaian exporters irrespective of their level of internationalization.

The study also sought to explore whether the direction of exports has a role to play in Ghanaian exporters' decision to adopt e-business. This was important because we felt that those exporters who were exporting to the developed North (e.g. Denmark, U.S., Canada, etc.) might be more pressured to adopt e-practices into their export businesses because of the perceived technological sophistication of their export partners.

Table 3. Means and standard deviation table showing competition as a factor influencing exporting firms' decision to adopt e-business

Levels of internationalization	N	Mean	Std. Deviation	Std. Error
0-19%	12	3.5000	2.19504	.63365
20-39%	19	4.7895	1.61861	.37133
40-59%	10	2.5000	1.64992	.52175
60-79%	11	3.8182	1.53741	.46355
80-100%	8	3.5000	1.92725	.68139
<b>Total</b>	60	3.8000	1.89379	.24449

Table 4. Summary of one-way ANOVA showing competition as a factor influencing export firms' decision to adopt e-business

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between groups</b>	37.306	4	9.326	2.943	< 0.05
<b>Within groups</b>	174.294	55	3.169		
<b>Total</b>	211.600	59			

Results of the export direction investigation are presented in Tables 6 and 7.

One interesting finding from the study was that the direction of exports does not have a bearing on the extent to which competition influences Ghanaian exporting firms' decision to adopt e-business [ $F(4, 59) = 1.153, p = ns$ ]. Thus, the decision to adopt e-business as a result of competition is almost the same for all Ghanaian NTEs irrespective of the direction of exports. It would seem that the introduction of ICT/e-business seems to be desirable for exporters conducting business with all parts of the world. They may lend credence to the fact that e-business adoption is necessary for operating on a global scale irrespective of which part of the globe the exporters might be dealing with.

## B: Micro Triggers for E-Business Adoption

B1: This section explores the relationship between level of infrastructural development and e-business adoption by Ghanaian exporters.

Inferring from Table 9, the infrastructural development plays no role in Ghanaian exporters' decision to adopt e-business [ $F(4, 59) = .499, p = ns$ ]. This implies that the decision to adopt e-practices across exporting firms is independent of the level of infrastructural development of these firms. However, it is important to note that all the small exporting firms interviewed had basic ICT facilities like computers and computer peripherals. For instance, it came up that about 70% of the sampled export firms had a local area network facility, while 80% also had an e-mail facility. About 60% of firms operate a Web site.

In the same way, exporting firms reported a significant level of infrastructural development as presented in Table 8. Going back to our

Table 5. Multiple comparisons showing competition as a factor influencing decision to adopt e-business among Ghanaian exporting firms

Levels of internationalization	0-19%	20-39%	40-59%	60-79%	80-100%
<b>0-19%</b>	-	-1.28	1.00	-.318	.00
20-39%		-	2.28(*)	.971	1.28
40-59%			-	-1.31	-1.00
60-79%				-	.318
80-100%					-

\* The mean difference is significant at the .05 level

Table 6. Means and standard deviation indicating pressure by competitors to adopt e-business in relation to direction of exports of Ghanaian exporting firms

Direction of exports	N	Mean	Std. Deviation	Std. Error
<b>Export to Africa</b>	17	4.4118	1.76985	.42925
<b>Export to Europe</b>	12	4.0000	1.65145	.47673
<b>Others</b>	16	3.3125	2.08866	.52216
<b>Export to all destinations</b>	15	3.4667	1.95911	.50584
<b>Total</b>	60	3.8000	1.89379	.24449

Table 7. Summary of one-way ANOVA indicating pressure to adopt e-business in relation to direction of exports

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between groups</b>	12.312	3	4.104	1.153	ns
<b>Within groups</b>	199.288	56	3.559		
<b>Total</b>	211.600	59			

initial conceptualization of e-business therefore (which the application was of online and off-line technologies for the conduct of export business) all levels of internationalizing small exporters have adopted some level of e-business within the last 2 years.

In conclusion, it is encouraging to note that in the Ghana ICT for Accelerated Development document (page 77) a narrow export base domi-

nated by traditional exports; underdeveloped physical infrastructure; and poor and limited communications infrastructure are identified as key developmental challenges confronting Ghana in the context of the emerging information age. Some efforts is therefore being expended by the Ministry of Trade and Industry and the Ministry of Agriculture to improve the infrastructural base in Ghana so that the NTE

Table 8. Mean and standard deviation indicating infrastructural development and e-business adoption by Ghanaian exporters

Levels of internationalisation	N	Mean	Std. Deviation	Std. Error
0-19%	12	3.0000	1.27920	.36927
20-39%	19	3.0526	1.12909	.25903
40-59%	10	2.9000	1.19722	.37859
60-79%	11	2.5455	.82020	.24730
80-100%	8	2.6250	1.06066	.37500
<b>Total</b>	60	2.8667	1.09648	.14155

Table 9. Summary of one-way ANOVA indicating impact of infrastructural development on e-business adoption by exporting firms

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between Groups</b>	2.484	4	.621	.499	ns
<b>Within Groups</b>	68.450	55	1.245		
<b>Total</b>	70.933	59			

sector can be better poised to take advantage of e-business opportunities.

## CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

Ghanaian NTEs are beginning to adopt e-practices in their export operations and this is being necessitated by competition from competing exporters from other countries. Ghanaian NTEs are beginning to adopt e-practices irrespective of the level of infrastructural development both within and without their export firm. However, in the entire sample we used, the discernible effects of level on internationalization and e-business adoption was almost nonexistent. These findings give us only initial indicators of the e-business adoption propensities of Ghanaian exporters, and the authors of this paper intend to run focused case studies to investigate in more detail the e-business phenomenon in relation to

Ghanaian exporting firms. Issues that will be investigated in a more focused manner would include the importance of the Ghana Export Promotion Council in promoting e-business. The Ghana Export Promotion Council, for instance, set up a Web portal ([www.gepcghana.com](http://www.gepcghana.com)) where they have listed exporters as a first step in their ecommerce/e-business progression effort, and the case study phase of this research endeavor will investigate inter alia, the usefulness of this Web portal to Ghanaian exporters. Other research issues that will be dwelt upon in the case study phase of this research endeavor will include drivers and barriers to e-business adoption in Ghanaian NTE firms; a qualitative investigation of e-business and export firm performance in Ghana's NTE sector; financing and upscaling Ghanaian NTEs to adopt e-business; and Ghanaian exporter representation on the World Wide Web.

## REFERENCES

- Allen, B. J., Crum, M. R., & Braunschweig, C. D. (1992). The U.S. motor carrier industry: The extent and nature of EDI use. *International Journal of Physical Distribution and Logistics Management*, 22(8).
- Angeles, R., Nath, R., & Hendon, D. W. (1998). An empirical investigation of the level of electronic data interchange (EDI) implementation and its ability to predict EDI system success measures and EDI implementation factors. *International Journal of Physical Distribution and Logistics Management*, 28(9).
- Anguila, A. R., Del Padilla, A., Serarols, C., & Veciana, J. M. (2003). Digital economy and management in Spain. *Internet Research: Electronic Networking Applications and Policy*, 13(1), 6-16.
- Aungles, A., & Cook, D. (1994). Information technology and the family: Electronic surveillance and home imprisonment. *Information Technology and People*, 7(1).
- Baines, A. (1992). Electronic mail. *Work Study*, 41(5).
- Banerjee, S., & Golhar, D. Y. (1993a). EDI implementation: A comparative study of JIT and non-JIT manufacturing firms. *International Journal of Physical Distribution and Logistics Management*, 23(7).
- Banerjee, S., & Golhar, D. Y. (1993b). EDI implementation in JIT and not-JIT manufacturing firms: A comparative study. *International Journal of Operations and Production Management*, 13(3).
- Barnard, L., & Von Solms, R. (1998). The evaluation and certification of information security against BS 7799. *Information Management and Computer Security*, 6(2).
- Bastiaens, T. J., Nijhof, W. J., Streumer, J. N., & Abma, H. J. (1997). Working and learning with electronic performance support systems: An effectiveness study. *Training for Quality*, 5(1).
- Bellamy, C., & Taylor, J. (1996). New information and communications technologies and institutional change: The case of the UK criminal justice system. *International Journal of Public Sector Management*, 9(4).
- Bytheway, A., & Braganza, A. (1992). Corporate information, EDI and logistics. *Logistics Information Management*, 5(4).
- Churchill, G. A. (1995). *Marketing research: Methodological foundations* (6th ed.). London.
- Curran, C. (1991). Integrated supply chain information systems: The next phase after EDI? *Logistics Information Management*, 4(1).
- Czuchry, A. J., Yasin, M. M., & Sallmann, F. (2004). An applied e-business approach for reinsurance services. *Marketing Intelligence & Planning*, 22(7), 716-731.
- DeVellis, R. F. (1991). *Scale development: Theory and applications*. Newbury, CA: Sage.
- Fawcett, R. (1990). EDI in Europe. *European Business Review*, 90(3).
- Fillis, I. (2001). Small firm internationalization: An investigative survey and future research directions. *Management Decision*, 39(9), 767-783.
- Fillis, I., Johannson, U., & Wagner, B. (2004). Factors impacting on e-business adoption and development in the smaller firm. *International Journal of Entrepreneurial Behaviour and Research*, 10(3).
- Folinas, D., Manthou, V., Sigala, M., & Vlachopoulou, M. (2004). E-evolution of a supply chain: Cases and best practices. *Internet Research: Electronic Networking Applications and Policy*, 14(4), 274-283.
- Harridge-March, S. (2004). Electronic marketing, the new kid on the block. *Marketing Intelligence & Planning*, 22(3), 297-309.
- Hinson, R., & Sorensen, O. (2006). E-business and small Ghanaian exporters: Preliminary micro firm explorations in the light of a digital divide. *Online Information Review*, 30(2), 116-138.
- Janssen, M., & Sol, H. G. (2000). Evaluating the role of intermediaries in the electronic value chain. *Internet Research*, 10(5).
- Javalgi, R. G., Martin, C. L., & Todd, P. R. (2004). The export of e-services in the age of technology

- transformation: Challenges and implications for international service providers. *Journal of Services Marketing*, 18(7).
- Jones, C., Hecker, R., & Holland, P. (2003). Small firm Internet adoption: Opportunities forgone, a journey not begun. *Journal of Small Business and Enterprise Development*, 10(3).
- Lal, K. (2004). E-business and export behaviour: Evidence from Indian firms. *World Development*, 32, 505-517.
- Matlay, H. (2004). E-entrepreneurship and small e-business development: Towards a comparative research agenda. *Journal of Small Business and Enterprise Development*, 11(3).
- McDonald, F., & Burton, F. (2002). *International business*. London.
- Nguyen, D. T. H. C., Murphy, J., & Olaru, D. (2003). Investigating the adoption of electronic customer service by Australian businesses. *Managing Service Quality*, 13(6).
- O'Toole, T. (2003). E-relationships—Emergence and small firm. *Marketing Intelligence & Planning*, 21(2).
- Poon, S., & Swatman, P. (1997). Small business use of the Internet, Findings from Australian Case studies. *International Marketing Review*, 14(5), 385-482.
- Poon, S., & Swatman, P. (1999). An exploratory study of small business Internet commerce issues. *Information and Management*, 35, 9-18.
- Rao, S., Metts, G., & Monge, C. M. (2003). Electronic commerce development in small and medium sized enterprises: A stage model and implications. *Business Process Management Journal*, 9(1), 11-32.
- Raymond, L. (2001). Determinants of Web site implementation in small businesses. *Internet Research: Electronic Networking Applications and Policy*, 11(5).
- Rodgers, J., Yen, D., & Chou, D. (2002). Developing e-business, A strategic approach. *Information Management and Computer Security*, 10(4).
- Sands, M. (2003). Integrating the Web and e-mail into a push-pull strategy. *Qualitative Market Research: An International Journal*, 6(1).
- Santos, J. (2003). E-service quality: A model of virtual service quality dimensions. *Managing Service Quality*, 13(3).
- Schlenker, L., & Crucker, N. (2003). Building an e-business scenario for small business: The IBM SME Gateway project. *Qualitative Market Research: An International Journal*, 6(1).
- Steinmuller, W. E. (2001). ICTs and the possibilities of leapfrogging by developing countries. *International Labour Review*, 140(2), 193-210.
- Thompson, D. V., Rust, R. T., & Rhoda, J. (2005). The business value of e-government for small firms. *International Journal of Service Industry Management*, 16(4).
- The Ghana ICT for Accelerated Development (ICT4AD) Process. (2003). Institute for Scientific and Technological Information and Council for Scientific and Industrial Research, Accra, Ghana. Retrieved January 13, 2005, from <http://www.itu.int/wsis/tunis/newsroom/stats/>

## ENDNOTES

- <sup>1</sup> Centre for International Business Studies, Aalborg University, Denmark & University of Ghana Business School
- <sup>2</sup> Centre for International Business Studies, Aalborg University, Denmark



*Robert Hinson is a lecturer in marketing at the University of Ghana Business School. He is also studying for a doctoral degree at the Center for International Business Studies in Aalborg University in Denmark where he is researching e-business practices of Ghanaian exporters. He has published over two dozen peer reviewed journal articles and has had papers accepted for publications in journals like the Journal of Business and Industrial Marketing and the Place Branding Journal.*

*Olav Sorensen is a professor of international business at the Center for International Business Studies in Aalborg University in Denmark. He is widely published in prestigious journals like the Journal of Business and Industrial Marketing and Electronic Markets. Sorensen is also the author and editor of several seminal texts on internationalization, marketing, and international business studies. Sorensen's current research interests encompass small firm internationalization, foreign direct investment, and e-business.*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.