E-COMMERCE IN THE GARMENT INDUSTRY IN KENYA

Usage, Obstacles and Policies

by

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1 INTRODUCTION

Information and communication technologies (ICTs) have the potential to make vast amounts of information available to users located in various parts of the world and to facilitate rapid communication between them. One application of these technologies is in the development of 'e-commerce' to support electronic trading. E-commerce can be defined as any form of economic activity conducted over computer-mediated networks. The potential of e-commerce caught public's attention as a result of ventures such as the electronic bookshop, Amazon.com, and the growing number of other Internet-based retailers in the business-to-consumer (B2C) e-commerce area. However, business-to-business (B2B) e-commerce is growing much more quickly than B2C forms of electronic trading.

This study is part of a larger project that is investigating the impact of B2B e-commerce on access to global markets for developing country producers in South Africa, Bangladesh and Kenya.[1] The main aim of project is to build up an empirical basis for examining whether B2B e-commerce enables firms in developing countries to overcome the problems they face in trading on the international market. There have been many claims that B2B e-commerce offers a radically new means of enabling producers and buyers to trade with each other regardless of where they are located geographically (Panagariya 2000; United Nations 2000; Xie 2000). B2B e-commerce is being promoted as a means of enabling producers in developing countries to become more integrated within the global economy on economic terms that are favourable for them. Reductions in transaction costs accompanying B2B e-commerce implementations often using the public Internet are expected to facilitate more efficient international trade. The new Internet-based trading platforms are expected to make it easier for producer firms to find buyers for their products and to complete their sales (Benjamin and Wigand 1995; Leebaert 1998; Malone and Laubacher 1998; Malone *et al.* 1987). There is also an expectation that producer firms based in developing countries will develop direct one-to-one trading relationships with their upstream and downstream trading partners, bypassing traditional intermediaries and potentially enabling them to relocate within traditional sector value chains. The principal barrier to achieving the potential benefits of B2B e-commerce is often regarded as insufficient investment in the telecommunication infrastructure and the high costs of connectivity when a network is available.

[1] The larger study, E-Commerce for Developing Countries: Building an Evidence Base for Impact Assessment' is funded by the Department for International Development in the UK as part of the Globalisation and Poverty Programme and is led by the London School of Economics and Political Science (Media@lse) and the Institute of Development Studies, at the University of Sussex. The homepage of the E-commerce project is http://www.gapresearch.org/production/ecommercemore.html .

It has been suggested that when B2B e-commerce is based on the public Internet and the use of a World Wide Web interface, the primary sites for transacting between firms are 'e-hubs'. Kaplan and Sawhney (1999) define e-hubs as, 'neutral Internet-based intermediaries that focus on specific industry verticals or specific business processes, host electronic marketplaces, and use various market-making mechanisms to mediate any-to-any transactions among businesses'. One expectation is that these hubs will support international trade in a wide variety of products. Another is that they can facilitate access to logistical services, customs clearance services, quality assurance services, etc., thereby reducing the costs and increasing the availability of these services for producers in developing countries. When firms register with e-marketplaces or e-hubs, there is an expectation that they will introduce electronic ordering and invoicing applications so that ultimately all aspects of the trading process are supported by e-commerce.

Although B2B e-commerce is increasing in importance worldwide, particularly in the industrialised countries, there are fears that firms in developing countries may not be able to reap the potential benefits because of their low levels of technological development and the relatively high costs of implementation (including network infrastructure and software, training, production process reorganisation, etc.). Very few empirical studies have been undertaken to examine the experiences of B2B e-commerce in developing countries. The literature which does attempt to explain the difficulties firms in developing countries face when they attempt to implement B2B e-commerce suggests that a combination of factors make it very difficult for most firms to take full advantage of the new electronic means of trading (Paré 2001; Humphrey 2002; Moody 2001; UNCTAD 2001a, 2001b; Hammond and Kohle 2000; Verhoest and Hawkins 2000; Telematica Instituut 2000). In addition, there appear to be a number of external constraints associated with the way B2B e-commerce solutions are being developed by firms in the industrialised countries and with the distinctive characteristics of different products and the organisation of production and delivery to market (Goldstein and O'Connor 2000; Maitland 2001).

In this Kenyan case study, we examine what a small sample of garment producing firms are actually achieving in terms of B2B e-commerce enabled trade once they acquire some form of network connectivity. We examine the types of networks and electronic services that are in use. These may entail little more than access to the Internet via an analogue modem to send email messages or they may involve more sophisticated connection to World Wide Web servers using either the public Internet or private Extranets and Intranets. We also examine the kinds of information firms seek to access, how they choose to communicate with their trading partners, and whether they have conducted any part of the preparation or completion of a sale online. The study is also designed to elicit insights from representative of firms

and key informants about the barriers that firms face to the development of B2B e-commerce and about what they perceive to be the most likely e-commerce developments in the future.

The study is based on case studies of 12 firms and interviews with key informants from internet service providers and public and private agencies concerned with regulating and supporting ICT. Despite the many assertions in the literature on B2B e-commerce about the potential benefits for firms in developing countries, unfortunately, most of these are not supported by the empirical evidence in this study. The results suggest that B2B e-commerce had not become firmly established in the garment sector in Kenya at the time the research was carried out in mid-2002. Although most of the firms in the study were found to be using e-mail and had access to the public Internet, there was little sign of use of the more sophisticated forms of B2B e-commerce. However, there was a considerable amount of variation in both the B2B e-commerce implementations and practices that were being used and in the perceptions of the advantages and disadvantages of B2B e-commerce for the study firms. Surprising, there appeared to be very little pressure or momentum to implement B2B e-commerce applications from buyers in the industrialised countries. There was also evidence of the continuation of the roles of intermediaries and of many of the traditional trading practices that rely on personal contacts.

The paper is structured as follows. Section 2 provides an introduction to the Kenyan context in which B2B e-commerce applications are expected to emerge. Section 3 outlines the methodology for the study, section 4 describes the case study enterprises and section 5 presents the results. The final section summarises the findings and offers suggestions for further research.

2. THE KENYAN CONTEXT FOR B2B E-COMMERCE

Kenya has been involved in trade in global markets for many years. Until recently, primary commodities such as tea and coffee were the main traded commodities. Trade in manufactured products began in the 1980s when a strategy of export-oriented manufacturing was promoted by the government. As in many developing countries, textile products, and especially garments, are important for employment and export growth. For this reason, and because global electronic trading platforms have been established in this industrial sector, the garment industry was expected to provide an interesting case study for an investigation of the extent and forms of Kenyan's firms involvement in B2B e-commerce at the time the study was conducted in the Spring of 2002. Particular emphasis was given to investigating the ways that the implementation of various forms of B2B e-commerce may be influencing Kenyan garment firms' trade prospects in international markets. The following subsections outline the market context in which

the Kenyan garment firms operate and the infrastructure available to support the development of B2B e-commerce.

2.1 The Garment Industry in Kenya

The Kenya garment and textile industry is composed of firms of varying sizes and technologies. The firms produce for local, regional and international markets (McCormick et al 2001). Large firms employ more than 100 employees, medium-sized firms employ between 51 and a 100 employees, and small firms employ between one and 50 employees. Firms producing for international markets are mainly medium and large-sized while those producing for the domestic market are mainly small firms. Larger and smaller enterprises differ in the types of technology that they use. Large firms tend to engage in mass production and utilise industrial machines while small enterprises tend to use manual or electric powered machines. The firms' products in this sector include women's dresses, undergarments, children's clothes, shirts, shorts, trousers and T-shirts. Most of the garment-manufacturing firms are located in Nairobi, Mombasa and Nakuru.

2.1.1 Evolution of the Industry

The garment and textile industry in Kenya dates from the colonial period. As early as 1954, the industry had a total of 74 enterprises employing 2,477 workers (Kinyanjui, 1992). Until recently the garment industry was one of the most important manufacturing activities in Kenya. The industry grew rapidly in the immediate post independence period. It thrived because of the protection offered to firms under the import substitution strategy. It also grew because of government investment in the industry. The government through its parastatal - Industrial and Commercial Development Corporation (ICDC) - invested heavily in the garment and textile industry. Government-owned garment and textile industries were located in major towns in the country. The government had significant shares in textile firms such as KICOMI (Kisumu), Rivatex (Eldoret), Kenya Textile Mills (Thika) and Mountex (Nanyuki). Privately owned garment firms evolved and thrived in the import substitution era. Examples of these private firms were: Yuken, Thika Cloth Mills, United Textile Mills, Sunflag, Spinners and Spinners and Raymonds. Garment firms, like manufacturing in general benefited from the protectionist policies that lasted until the mid 1980s. Like other manufacturing sectors more generally, the garment and textile industry failed to create strong vertical and horizontal linkages with other sectors which, left them vulnerable when the protectionist policies were abandoned (Sharpley and Lewis 1988; McCormick, 1999).

Furthermore, by the late 1980s, the failure of the Kenyan cotton industry and the move toward greater use of synthetic fibres put textile producers at the mercy of fluctuating global markets (Coughlin 1991). Effective rates of protection ranging from 72 to 93%, however, allowed the firms to compete in the domestic market, despite their inefficient cost structure as compared to firms operating in international markets.

The development crisis characterised by heavy debt burden, falling income, unemployment and political instability experienced by African countries in the 1980s prompted a rethinking of development concerns. The Bretton Woods Institutions, the World Bank and the International Monetary Fund to which African countries were heavily indebted prescribed reform programmes popularly referred to as Structural Adjustment Programmes (SAPs) which were intended to enable African governments to put in place measures that would help to revive their economies. SAPs embraced various monetary stabilisation and market liberalisation programmes. The stabilisation programmes included civil service reform, foreign exchange deregulation and currency devaluation. Market reforms were aimed at opening up local markets through the reduction of import duties and tariffs. The latter measure had a significant impact on the previously protected firms, which were operating inefficiently, producing sub-standard goods, over-pricing their products and producing below their output capacity.

The opening of markets in the early 1990s had a major impact on the industry. The availability of cheap imports - both new and second hand - drastically reduced demand for Kenya made garments. Retail chains such as Deacons and Njiris chose to import their products from South Africa. Hordes of other small-scale clothing retailers emerged and started retailing their products in what is popularly referred to as exhibitions. These small-scale traders travel to such places as Dubai, South Africa and Britain from where they source ready-made garments and shoes. A large majority of these traders are women.

The garment industry faced competition from a new form of trade in second hand clothes. The garment industry could not cope with the new competitors. For example, a garment making factory based in Nakuru which was making women's garments for a major retail chain in Nairobi closed down when the retail chain stopped sourcing products from it. It laid off its 200 workers, and shifted to making bed sheets for the low income market. Major players in the garment and textile industries such as Kenya Textile Mills, Rivatex, Raymonds and Kisumu Cotton Mills closed down. Kenya's garment production has declined significantly since the 1980s (McCormick et al. 2001).

2.1.2 Export Promotion

As early as the late 1970s, the government of Kenya attempted to promote export oriented manufacturing. The policy incentives initiated to promote manufacturing exports included the development of industries in a wider sub-regional and continental basis. This initiative was accompanied by export promotion measures such as export compensation schemes. According to McCormick (1999), these early attempts to promote export oriented manufacturing did not succeed for two reasons. First, prolonged protectionism made it more profitable for firms to sell their products in the domestic market rather than in global markets. Second, firms were discouraged from taking advantage of export promotion schemes by bureaucratic delays, inefficiencies, and the corruption that surrounded them.

In the mid 1980s the government introduced the Manufacturing Under Bond (MUB) legislation and the green channel system for administrative approvals in order to promote industries manufacturing for export. Firms operating under MUB are exempted from VAT on imported plant machinery, equipment, raw materials and other imported inputs. Firms are also allowed 100 percent investment allowance on plant machinery, equipment and buildings. The first MUB firms were founded in 1988 and, as of 2001, 79 MUB firms had been approved by the Investment Promotion Centre. Of these 79 firms only 15 were operating in mid-2002. The majority of MUB firms closed down after the withdrawal of the Kenya garment quotas in the US market. There is, however, the hope that some firms will become viable with the implementation of the Africa Growth Opportunity Act of 199?.

Export Processing Zones (EPZ) were initiated in the 1989-1993 Development Plan period. By 1994 there were six gazetted EPZs. A government body known as Export Processing Zones Authority manages the EPZs. There are 23 EPZs in the country. Of these, two are developed and managed by the private sector. EPZ firms are involved in many activities of which garment making is the most important. Other activities in the EPZs include dried flowers production and computer software development.

Investors in the EPZ are drawn from Denmark, the US, Taiwan, Belgium, South Africa, Pakistan, Germany, China, India, the Netherlands, the UK, Sri Lanka and Hong Kong. The firms operate in designated areas and produce exclusively for export. Firms in EPZs enjoy several benefits including tax holidays, exemption from VAT and duties on machinery, and lower priced raw materials and intermediate inputs.

Garment firms in Kenya are characterized by differences in production patterns. Some firms engage in the full range production activities. Others, especially some of the large exporters, are "cut-make and trim" (CMT) contractors. One respondent in this study described these firms as "glorified tailors".

These firms are located within global commodity chains, which are characteristic of the global trade in garment production and retailing. Retail chains in developed country markets contract developing country firms to manufacture garments on their behalf. The retail chains provide the designs and raw materials required in production. The local firms cut and stitch the required garments which are then shipped to developed country' markets.

Table 1 shows the performance of firms in the EPZ between 1999 and 2001. In 1999 there were only five firms but the number of firms increased in 2001 to 17. The value of exports also increased from Ksh. 1.9 million in 1999 to 4.2 million in 2001.

Table 1: Exports, Investment, and Employment in EPZ Garment Firms, 1999-2001

	1999	**2000**	**2001**
No. of firms	5	6	17
Exports (Ksh) millions	1.8	2.9	4.3
Investment (Ksh) millions	0.7	1.2	3.8
No. of employees	4,349	5,565	12,002

Source: EPZA 2001

The growth in exports has followed the recent enactment of the US government's Africa Growth and Opportunity Act (AGOA), which allows duty-free imports of many items from qualifying African countries in the American market. Regional exports are also being boosted by Kenya's membership in the East African Community (EAC) and the Common Market of Eastern and Southern Africa (COMESA).

2.2 Information and Communication Technology (ICT)

In Kenya the information and communication technology usage profile has been dominated by the telephone, fax, postal services, television and community radio. Until 1997 this infrastructure was controlled and owned by the government. The government gradually has been reducing its control over this infrastructure by liberalising the market for television and community radio broadcasting. By 2002, there were eight television stations as compared to one a decade ago. Community radio broadcasting has also been liberalised but only FM stations are permitted to broadcast in the liberalised market.

The government still holds a strong grip on the telephone, postal and electronic infrastructure. It has split the telecommunication and postal service organisation into three organisations, namely, the Postal Corporation of Kenya (Posta), Telkom and the Communication Commission of Kenya (CCK). Telkom controls all telecommunication traffic in Kenya. Safaricom and Kencell, providers of cellular mobile telephone services, are, however, challenging Telkom's dominance. In 2002, Telkom had a total of 330,000 telephone connections in urban and rural areas and the ratio of urban to rural connections was 60:40 despite the fact that 80% of the population of Kenya is located in rural areas. About 70% of the telephone connections were based on analogue technology and the remaining connections were based on digital technology. Although the IMF and the World Bank have emphasized the need to privatise Telkom, the Kenyan government has been procrastinating. The current supply of telephone lines is but a drop of water in the ocean in a country with a population of 30 million people. Besides, the existing telephone lines are congested, unreliable and very expensive. Telkom suffers from bureaucratic inertia and the process of obtaining a telephone line is protracted and difficult. According to Kane (2001), the cellular phone industry has managed to connect 70% more subscribers since it began operating in 199? than Telkom had achieved in the past thirty years.

Another key player in the telecommunication sector is the Communications Commission of Kenya (CCK). Its purpose is to licence and regulate the communications sector in Kenya (http://www.cck.go.ke/aboutcck/director.htm. CCK began operating in February 1999. Its role is to promote the development of telecommunication and postal services and to ensure universal access to communication facilities. It also serves as the regulatory body for the communication sector by awarding licences, regulating pricing, establishing interconnection principles and managing the radio frequency spectrum.

Electronic communication using computer networks began to gain ground in Kenya in the 1990s and have expanded rapidly. However, computer-based communication depends on the availability of the

telecommunication infrastructure and on the rate at which Telkom and the regulator, CCK promotes investment in an affordable digital network. Telkom owns and manages Jambonet, a satellite network that is used to transmit data communication services.

Intra-country flows of data communication traffic have been relatively slow and expensive because of the lack of an Internet Exchange Point (IXP), which would serve as a clearinghouse for local Internet traffic between Internet Service Providers (ISP). Until early 2002, all email message traffic and access to locally hosted web sites were routed via North America or Europe (Kane, 2002). An IXP was formed early in 2002 and was providing interconnection for 6 of the main ISPs in Kenya.

ISPs play a key role in handling the flow of data communication traffics between Jambonet and consumers. The ISPs are private organisations that are licensed to download traffic from Jambonet and to distribute it to consumers. There has been a proliferation of ISPs, especially in Nairobi. In 1996 there were nine licensed ISPs and this number had risen to 70 by 2002 (Kane, 2002). Some of the main ISPs operating in Kenya are: Swift Global, Nairobinet, Africa online, Wananchi online, and Kenya Web.

2.3 Potential of E-Commerce in Developing Countries

Many observers have claimed that developing countries' firms can increase and improve their performance in international trade through the use of e-commerce. The argument is that e-commerce will increase the availability of relevant and timely information and reduce transactions times. This, in turn, is expected to greatly improve developing country firms' access to international markets. Given the availability of an adequate infrastructure, firms are expected to invest in e-commerce applications, especially if they intend to trade with distant customers and suppliers.

UNCTAD (2001), for example, argues that the least developed countries (LDCs) can better position themselves to engage in trade as a tool for development if they adopt e-commerce. Firms are expected to benefit for two main reasons. First, the products produced by firms in the LDCs are often uncompetitive because of high transport costs and inefficient trade procedures, the latter of which can be partially overcome by the use of e-commerce. Second, e-commerce may allow firms in the LDCs to diversify into new sectors where they can benefit from their low labour costs. E-commerce is expected to ease the entry of firms from developing countries into global markets by allowing them better access to information and to overcome inefficiencies, thereby enabling them to make more advantageous decisions about their participation in international trade.

These arguments have been met with skepticism in some quarters. Paré (2001), for example, argues that the application of, and access to, technologies such as the public Internet and the World Wide Web are unlikely to reduce transaction costs sufficiently to reduce the barriers to the entry into global markets by firms in developing countries. Humphrey (2002) underscores the complexity of the transaction cost issues by showing how different value chains have different transactional patterns and that firms face a variety of challenges within these chains.

These contrasting positions are difficult to reconcile because there has been very little empirical investigation into the operation of e-commerce in developing country settings. In an important study, Moodley (2002) found that in South Africa, B2B e-commerce has yet to come into its own. Rather businesses see it as an extra investment cost with very uncertain returns. Firms mainly to supplement other information and communication systems and trading procedures were using Internet platforms. More generally, the public Internet and e-mail were regarded as a means of supporting existing trade relationships, rather than as an entirely new way of doing business.

This study contributes to the debate about the impact of B2B e-commerce on firms in developing countries by examining its use in the garment industry in Kenya. The study provides a basis for assessing the extent of adoption and the perceptions of the impact of B2B e-commerce in Kenya on firms that are trading in global markets. In this exploratory empirical study, we particularly examined the firms' and key informants' views with respect to the following questions:

1. To what extent do Kenya's garment producers need additional information about existing or potential customers and or suppliers?
2. To what extent do garment producers already use data communication networks?
3. To what extent is the poor ICT infrastructure a barrier to effective use of data communication in accessing supply or product markets?
4. To what extent do weaknesses in the institutional infrastructure (laws, policies, financial system) constitute barriers to effective access to supply or product markets?
5. To what extent do Kenyan garment producers deal with distant customers and suppliers?
6. Does the present use of any form of Internet enabled B2B e-commerce reduces firms' transaction costs?

3. METHODOLOGY

3.1 Research Design and Case Selection

The research was designed as a set of case studies complemented by key informant interviews. The starting point was a sampling frame consisting of established garment firms assembled for a study undertaken by The Institute for Development Studies, University of Nairobi in 2000 (McCormick et al. 2001, 2002). By 2002, when the present study was initiated, respondents from a number of these firms had been interviewed two or more times by the researchers. Twenty firms were selected on the basis of their known market reach and their likely technological know-how with respect to the use of data communication. Of the original sample of 20 firms, 12 agreed to participate in this study.

3.2 Data Collection

The data collection phase of the study involved a short survey (see Appendix 1) and more indepth interviews designed to probe for explanations for the answers given to the structured survey questions. The sample firm profiles are presented in Appendix 2. Data were also gathered using key informant interviews with respondents from Internet Service Providers, government officials and others who were likely to be knowledgeable about the garment industry and/or the use of data communication and e-commerce. Further background information was obtained from interview notes prepared for a related study (Kane, 2002). The sample for the present study included medium and large-sized garment enterprises in Nairobi and the nearby towns of Athi River, Ruiru, Thika, Nakuru and Mombasa.[2]

Basic information was collected about the study firms including date of establishment, employment, turnover, principal markets, sources of inputs and the use of ICT network applications. Data were also collected to provide a basic business profile, a profile of the use of ICTs in the company, and to establish the extent to which any form of B2B e-commerce was in use. An indepth interview guide was used to elicit information about the use of the Internet, whether firms had registered at websites, and the reasons for their use or non-use of B2B e-commerce (See Appendix 2). The firm level interviewees were senior management officers (four were directors, five were managers, one was an accountant, and one was a plant engineer and system analyst).

[2] Data collection involved telephone calls to the sample firms to establish appropriate contacts. A letter of introduction was hand delivered or sent by e-mail to potential respondents, followed by a telephone call to set a date for an interview. Of the 12 firms, two responded to the questionnaire by e-mail.

Key informants were drawn from government ministries, state organizations and Internet Services Providers. Interviews with representatives of government ministries included the Information Technology Director and Ministry of Trade and Industry officials. Key informants from state organizations included representatives of the Investment Promotion Centre (IPC), the Institute of Computer Science at the University of Nairobi and the Export Processing Zone Authority (EPZA). Two individuals from the Internet Service Providers, Wananchi Online and Swift Global (K) Limited, were interviewed. In some cases, these key informants directed the researchers to other organisations that were concerned with B2B e-commerce: *e*-Sokoni, the National Communication Secretariat, AITEC, Central Bank of Kenya and Barclays Bank of Kenya, the Tele-Communication Services Providers Association of Kenya, Yellow Pages and UUNET.

4. THE SAMPLE FIRMS

4.1 Firm Characteristics

The characteristics of the firms in the study are important considerations as these are likely to influence the interviewees' perceptions of the likely impact of B2B e-commerce. As shown in Table 2, the sample included 'young' and 'old' firms, the youngest having been founded in 1997 and the oldest in 1950. The firms were producing a wide range of products (Table 2). Four (A, B, G, and K) were making only one product and the other eight were making two or three products. Since previous studies had suggested that medium and large-sized firms were more likely to be using B2B e-commerce because of their involvement in international and regional trade, the sample was biased towards larger firms in the garment sector. As shown in Table 2, the smallest firm had 40 employees and the largest had 2,500 employees. The annual turnover ranged from between Ksh 40 million and Ksh 800 million (US$ 0.5 to 10 million).

T-shirts were the most common product (see Table 2). One T-shirt firm (Firm A) combined production of its own shirts with providing embroidery services to other firms. Three firms (C, E and J) were producing under contract for export. They were receiving samples from potential customers, which they were duplicating in a bid to win a contract. Most frequently, they appeared to be winning contracts for fairly standard men's or women's sportswear: shirts, shorts, trousers, skirts, and basic dresses. One of the knitting firms (F) was making sweaters and socks. Four firms (D, G, H, and I) were making uniforms and two of these (D and H) were also making safety products. One of the firms (L) was an integrated producer of fabrics and yarn as well as clothing.

Table 2: Year of Founding, Employment Size, Turnover, and Products by Firm

Firm	Year of Founding	Employment Size	Turnover (Kshs millions)	Type of Product
A	1968	100	60	T-shirts, embroidery services
B	1987	120	100	T-shirts
C	1993	1000	n.a.	Various garments, depending on contract
D	1989	40	40	Industrial and security apparel
E	1997	2500	800	Various garments, depending on contract
F	n.a.	350	n.a.	Sweaters, socks
G	1977	200	70	Uniforms
H	n.a.	120	65	Uniforms, footwear, safety products
I	1950	100	160	Tents, canvas goods, uniforms
J	1993	500	50	Various garments, depending on contract
K	1990	60	60	T-shirts
L	1972	700	320	Fabrics, yarns, standard garments

Source: Enterprise level interviews 2002

4.2 Input Sources and Export Destinations

With the exception of firm B, which was operating entirely locally, the garment firms in the sample were heavily involved in international trade to obtain important sources of raw materials and provide markets for their products. The respondents reported that the firms source their inputs from both local and international markets. Only two firms were obtaining their inputs from the local market, the other firms' main input markets were international (see Table 3). The Far East appeared to be the most important source of materials, but European and US markets were almost as important.

The firms in the study were targeting local, regional, and international markets, only one firm was selling exclusively to the local market and the others were selling to regional and international markets. The regional market comprises Uganda and Tanzania, Ethiopia, Burundi, the Democratic Republic of Congo and the Sudan. The main international markets were the US, the UK, the Netherlands and Switzerland.

Table 3: Firms' input sources and export destinations

Firm	Input Source	Export Destinations
A	Malaysia, Thailand, Korea, Indonesia and Germany	Uganda, Tanzania
B	Kenya	None
C	Hong Kong, India	U.S.A
D	South Africa	Uganda, Tanzania
E	China, India, Mauritius, Swaziland	U.S.A
F	Indonesia, India, Malaysia, U.K., Italy	U.K. Uganda, Burundi, Democratic Republic of Congo
G	Britain, Germany, United Arab Emirate,	Tanzania, Uganda, Ethiopia
H	Kenya	Tanzania, Rwanda, Uganda
I	Taiwan, UK, South Africa	Tanzania, Uganda, Sudan
J	India, China, Indonesia	USA
K	Switzerland	UK, Netherlands, Switzerland, USA
L	India, Indonesia, Austria, Korea	USA, UK, COMESA, EAC

Source: Enterprise level interviews 2002

5. B2B E-COMMERCE IN KENYA

The use of computers in Kenya increased greatly during the 1990s. Firms, schools and hospitals within the country generally have one or two computers and the garment firms are no exception. They are using computers to store, process and exchange information and, until recently, the main use has been for data storage of account, stock and payroll information. In recent years, the firms in the sample had begun to intensify their use of computer networks in order to communicate with local, regional and international firms.

Although both analogue and high speed digital connections are available in Kenya, all the firms in the sample were using modem based analogue network connections (see Table 4). None of the interviewees reported the use of high-speed digital connections.

Table 4: Type of connection

Type of connection	Number of firms	
	Yes	NO
Analogue	12	0
ISDN	0	12
SDSL	0	12
ADSL	0	12
Cable	0	12

Source: Enterprise level Interviews 2002; N=12

The main reasons for the lack of use of high-speed digital networks appeared to be lack of awareness about newer technologies and concerns about the higher cost of their use. One respondent attributed his preference for modem-based analogue communication to the fact that his Director, the principal decision maker on ICT adoption, was unaware of the availability of high-speed connections. He said that when the firm was connected four years ago, modem-based analogue communication was the only option available. Another respondent from another firm observed that although the technology was being updated regularly, the system administrator has not advised the Directors about the potential advantages of high-speed connections and the employees were satisfied and comfortable with the use of their modem-based analogue connections.

The Director of another firm indicated that he did not know about high-speed connections and was satisfied with a modem-based analogue connection because it was meeting the firm's needs. The other reason that the respondents seemed to prefer modem-based analogue to high-speed connections was related to the cost of equipment to support high speed networks. One Director indicated that his firm was not willing to invest in the equipment required to obtain high-speed connection to a network. Another believed that such equipment would be more difficult to maintain than the analogue equipment.

5.1 Garment Firms E-commerce Network Access

The firms in the study had several options for obtaining network access. The first and easiest was the public Internet, which provides access to foreign company web -sites and to specialised trading sites. However, other options included the use of Intranets, Extranets, and Wide Area Networks (WANs). Intranets are effectively internal min-webs (Flood 2002) that typically hold directory information, company documentation, and information on employee benefits that may be open to all employees. Parts of a company intranet may be secured and used to transmit financial data and other records from one office to another creating a form of intra-company trade. For example, an integrated textile company may 'sell' fabric from its textile mill to its clothing factory and the company intranet may be used to execute the transaction.

Extranets link company-specific networks enabling business partners and suppliers to share corporate data. This may be a major benefit, especially for small companies upstream in the supply chain, that can participate in electronic trading at low cost (Mansell and Wehn 1998). Business intelligence extranets use query, reporting, and analysis software running on a web server (Whiting 2002), and information may include brochures, annual reports, and various forms. A web interface may be used to retrieve data, which

may be available for free or on a subscription basis. For example, Federal Express Corp. is assembling a business-intelligence extranet that will let shipping companies providing FedEx services in countries outside the US gain access to reports about revenues, shipping volumes, transit-time analysis, and other performance data (Whiting 2002).

Wide area networks (WANs) are data communication networks that span an extended geographical distance. Examples include airline or hotel reservations systems, automated teller machines (ATMs), and networks connecting libraries. Authorised users can search for information and/or carry out transactions using central databases.

Table 5 Garment Firms E-commerce Network Access

Network Access	Yes	No
Direct to Public Internet	12	0
Intranet	1	11
Extranet	2	10
WAN	0	12

Source: Enterprise level Interviews 2002; N=12

All of the respondents reported that they had a direct connection to the public Internet (see Table 5). One firm had an intranet, but was using it for purposes other than B2B e-commerce. Two garment firms were using an extranet to access firms in the global market and none had WAN access. The respondents observed that their firms were connected directly to the public Internet because it is easily and readily available. They appeared to lack information about the potential usefulness of extranets and WANs. Some interviewees said, for example, that they did not want to use extranets or WANs for security reasons and most could not offer any potentially positive benefits of extranet or WAN usage.

5.2 Frequency of Use of Network Applications for B2B E-commerce

Of four network applications that are frequently used in B2B e-commerce (E-mail, the World Wide Web, Extranets and Electronic Data Interchange (EDI)), e-mail and World Wide Web were most commonly used by the firms in the sample. All 12 firms were reported to be using e-mail, while 11 firms were making use of the web (see Table 6). Of the 12 firms using e-mail, four were using it ‘always’ and eight, ‘frequently’. E-mail was being used for initial and follow-up communications with suppliers and customers. According to the interviewees, e-mail is particularly useful because the postal service is very

slow and telephone service is expensive. Nevertheless, we observed that the respondents placed a high priority on face-to-face communications. Several of the firm owners travel extensively in order to maintain contacts with distant customers and suppliers. Some respondents were also concerned that the lack of laws governing the use of e-commerce could cause them difficulties. According to one respondent, the company's management insists that information sent by e-mail must be followed up with a fax copy of the same message in order to verify the authenticity of the document and thus assuage fears of fraud.

One respondent reported using the web 'always', while seven were using it 'frequently', three 'seldom', and one 'never'. The firms that were reported to be using web had their own web sites or they were accessing other firm's web sites to compare product prices or to obtain information on new styles and designs. The respondents were skeptical about any complete reliance on computer-mediated communication suggesting that it is not possible to assess the colour, finishing of products, and quality of goods, using electronic forms of communication.

Table 6: Frequency of Use of Network Applications, by Type

Application	Always	Frequently	Seldom	Never
E-Mail	4	8	0	0
WWW	1	7	3	1
Extranet	0	1	1	10
EDI	0	2	0	10

Source: Enterprise Level Interviews 2002; N=12

Two firms were reported to be making use of extranets and two others were using EDI. One firm was using an Extranet 'frequently' while the other was 'seldom' using it. Both were using EDI 'frequently'.

5.3 The Use of Internet in Purchasing or Selling Products Internationally

The respondents were asked about the extent of their use of the public Internet for purchasing products and/or selling their products internationally. Six firms were reported to be using the public Internet to purchase products and five firms were selling their products internationally using the public Internet (see Table 6). Most firms that were reported to be using the public Internet were doing so as a result of their own initiatives, but one respondent reported that a client had demanded that the firm post its product on a web site. To meet this requirement, the firm registered with e-sokoni, a local e-market place (see Box 1).

The firms that were purchasing using the public Internet were reported to be buying between 5% and 80% of their inputs in this way. The types of inputs acquired included spare parts, rubber, yarn and fabrics and were acquired from Japan, Malaysia, Germany, the UK, Dubai, Hong Kong, India and China. A respondent from the uniform manufacturing firm indicated that there was extensive use of the public Internet in securing fabrics from Europe and Asia. One T-shirt maker was buying specialised inks and dyes using the Internet and other was using the public Internet to identify sources of raw materials. Once the sources had been identified the firm was using non-electronic means of communication to place an order.

Box 1: *e*-sokoni

e-sokoni is a business-to-business trading hub in Eastern Africa that hosts approximately 200 suppliers. The hub provides a facility for businesses to order their non-production supplies, e.g., fuel, stationeries, vehicle spares, etc., through an electronic system securely accessible over the Internet. Several of Kenya's large firms such as Homegrown and British American Tobacco are using *e*-sokoni for their procurement.

Source: www.e-sokoni.com

The respondents who reported that their firms were selling their products using the public Internet estimated that between 5% and 100% of their sales were being supported using this form of B2B e-commerce. The two respondents who reported that their firms were using the Internet for 100% represented an EPZ firm that was selling into the North American market and a firm whose main market was in the African region. The types of products involved were socks, sweaters, uniforms, tents, plastics, and other types of garments and had been sold to buyers in Tanzania, Rwanda, Uganda, the US, the UK, the Netherlands and Switzerland.

Table 7: Firms Using E-Commerce, By Activity

E-commerce Activity	No. of Firms
Purchase inputs only	2
Sell products only	1
Both purchase and sell	4
Neither purchase nor sell	5

Source: Enterprise Level Interviews 2002; N=12

Several firms were reported to be browsing the Internet to search for business contacts. The firms reported to be using the public Internet to purchase or sell products were active in local, regional and international markets.

The evidence indicates that the firms were combining data communication with non-electronic forms of communication, even when they were familiar with each other. For example, the firm that joined e-sokoni now receives orders through the electronic catalogue, but it prepares purchase orders and invoices in the usual way and physically delivers them to the client.

The firms in the sample did not appear to be applying B2B e-commerce in all parts of their business transactions, i.e., ordering, invoicing, and financial transactions. The parts of their transactions that were being supported by electronic forms of communication were mainly peripheral activities. One firm, for example, was using the public Internet to process export documents and other reported uses were for price comparison and obtaining information about markets and suppliers.

In the sample of 12 firms, five firms were not using the public Internet to purchase inputs from global markets or sell products (see Table 7). According to one respondent, websites were regarded as being expensive to install and maintain under the current economic conditions. Besides the high cost, many respondents who also said that firms are unwilling to sponsor workers to acquire training in Internet use because the workers have to learn on the job and this takes time reported lack of information and skills to manage Internet connections as problems. This suggests that these respondents did not consider B2B e-commerce as a core project for their businesses. The lack of information and training were compounded by the fact that the education system in Kenya offers only limited courses in computer use. Most of those graduating from schools, technical institutes, colleges and tertiary institutions are not computer literate. Polytechnics and universities offer computing science degrees, but graduates are few in number and often not oriented towards industry occupations.

The way the firms in the sample were organising their supply, production, and marketing processes appeared to be contributing to the lack of Internet use in their business transactions. One of the non-user firms was sourcing all of its inputs and selling all of its products within Kenya. Another was an exporter operating as a cut-make-and-trim contractor and was not sourcing inputs or marketing its products. This was done by an intermediary or broker, which was taking full responsibility for transactions, including letters of credits with buyers and sellers. One respondent indicated that his firm had 15 regular customers providing enough work so that it did not need to advertise on the Internet. The firm's Director observed that in the garment manufacturing process, many specifications are involved and these cannot be met using e-commerce. In his view, B2B e-commerce is best suited to the needs of retail traders.

Some respondents expressed the view that firms serving local markets do not need B2B e-commerce. They argued that transactions between local firms are easily carried out using fax, telephone and face-to-face contacts. Others attributed their non-use of B2B e-commerce to a lack of security. One respondent observed that 'you never know into which hands our firm's secrets will land … Competitors may access such information and use it against our firm'.[3]

Those respondents reporting that their firms were using B2B e-commerce gave a variety of reasons for doing so. Most respondents agreed that the use of B2B e-commerce might save time and reduce communication costs.[2] One respondent indicated that prior to the introduction of B2B e-commerce the firm was communicating with its overseas customers using the DHL courier and that sending a sample to a customer for verification took three to four days. With e-commerce he was able to send digital photographs as e-mail attachments, which take only a few minutes to reach the customer. This firm was unique in the sample. It had a website and was operating 'open' network link with its clients and a closed extranet with its regular customers.

The other reason reported for using B2B e-commerce was to identify sources of raw materials. Since most of the raw materials and other inputs are imported, it is easier to identify suppliers by using the Internet. In the words of a respondent, 'at the click of a mouse one can identify many suppliers from whom to choose'.

5.4 Benefits Gained from the Use of B2B E-Commerce.

The respondents indicated that they had gained from the introduction of B2B e-commerce in several ways (see Table 8). Four firms were reported to have changed suppliers due to the use of B2B e-commerce. Three had increased the number of their international suppliers and business customers. Some reported that they had increased revenues and profits as well as improved their operations. Five firms' respondents reported that B2B e-commerce applications had contributed to an increase in revenues and profits, the latter being realised as a result of a reduction in telephone costs. Improvements in the firms' operations were said to have occurred due to reduction of transaction costs. Three firms using B2B e-commerce were reported to have gained new clients as well as to have increased their sales.

[3] This Director was unwilling to say which transactions are carried out using data communication.
[2] Firms with middle aged adventurous directors and managers were more likely to use B2B e-commerce than older directors and managers.

. **Table 8: Outcomes Attributed to E-Commerce Use**

Outcome	No. of Firms
Changed suppliers	4
Increased international suppliers and customers	3
Increased revenues/profits	5

Source: Enterprise Level Interviews 2002; N=12

5.5 Frequency of Use of Network Applications in B2B E-commerce

The garment firms in the Kenya sample were using e-mail regularly to contact customers and suppliers and to accept product orders. Four firms were 'always' using e-mail to maintain contact with buyers, while eight firms were 'frequently' using e-mail to maintain such contacts. (See table 8). Four firms were 'always' using e-mail to place or accept product orders while five firms were doing so 'frequently'.

Table 9 Frequency of Use of Network Applications in B2B E-commerce

E-mail	Always	Frequently	Seldom	Never
To maintain contact with buyers	5	7	0	0
To place or accept orders	4	5	0	3
WWW				
To get general information about input markets	1	6	3	2
To obtain general information about product market	0	5	5	2
To obtain information about specific customer	0	4	5	3
To obtain information about specific suppliers	0	6	4	2
To accept orders from international business customers	1	3	2	6
To place orders with international suppliers	1	3	2	6
Extranet				
To accept orders from international business customers	0	1	2	7
To place orders from international suppliers	0	1	1	10
Electronic Data Interchange				
To accept orders from domestic business customers	0	0	2	10
To accept orders from international business customers	0	2	0	10
To place orders with domestic suppliers	1	1	0	10
To place orders with international suppliers	1	0	1	10

Source: Enterprise Level Interviews 2002; N=12

Use of the web was somewhat less frequent, but nearly all respondents reported using it at least 'occasionally' or 'seldom' (see table 9). Only two firms had 'never' used the web. The remaining eight

firms were using the web to a greater or lesser extent to obtain information about inputs, product markets, and specific customers. Only half of the firms (6) were reported to be using the web to accept or place orders internationally.

Only two firms were using an extranet (see Table 6) to accept orders from international business customers and to place orders with international suppliers, in one case frequently and in the other, infrequently. EDI was not in widespread use. Of the two firms that reported its use, both respondents said that they frequently used EDI to place orders with domestic and international suppliers, and one always used EDI to place orders with domestic suppliers. In the case of orders with international suppliers, one of these firms was a frequent user of EDI while the other placed orders in this way infrequently.

5.6 Firm Registration with Web-based Trading Sites

The number of firms reported to have registered with international electronic trading sites hosted on the World Wide Web was rather small. Five firms were registered at such e-marketplace sites. One firm was registered at a local e-marketplace, *e*-sokoni (see section 5.3), another at a Dubai based site, and a third at a site in Hong Kong (Two firms did not provide the location of the e-marketplace at which they had registered). These sites were of two types: On-Line Auctions or Requests for Quotes and the products posted at these sites were shirts, shorts, and T-shirts.

None of the respondents reported that their firms had completed a sale at these sites. One, however, was using the site to obtain contacts which he then pursued using e-mail and other means. Two firms were reported to have used the e-marketplace sites to purchase garment accessories such as buttons.

5.7 Supply Chain Management

Only two respondents reported using the public Internet to support supply chain management. In one case, the use of the Internet was very basic and involved managers making decisions about new products, designs, fabric, etc., based on information found on the Internet. The firm was not using the Internet to integrate its operations with those of its suppliers or customers.

The second firm had developed its Internet-based supply chain management capability more fully so that its suppliers and customers had access to real-time information about its sales and stock levels and its

internal operations were electronically integrated with those of its customers and suppliers. This firm was not, however, requiring its suppliers to implement B2B e-commerce.

6. CONCLUSION

In this study the extent and the form of involvement with B2B e-commerce by 12 Kenyan firms in the garment industry has been examined. All but one of these firms was found to be selling their products in external markets and all but two were sourcing inputs from outside Kenya. Most of these firms might be expected to be prime candidates for developing applications of computer-mediated trade. The findings indicated that there was only limited use of B2B e-commerce by the sample firms at the time the research was undertaken in mid-2002. The substantial differences in usage patterns among firms in the sample suggest that these patterns are influenced by many factors in addition to the characteristics of the physical or institutional infrastructure, which is in place to support B2B e-commerce. These include the awareness levels of managers, the preferences for traditional forms of communication, the difficulties of establishing the quality standards of projects using electronic means of communication, the capacity of Kenya-based firms to increase their output, and the extent to which relationships with upstream and downstream firms and other organisations outside Kenya are moving towards the implementation of B2B e-commerce. The results of this study based on a small sample of firms and key informant interviews are indicative of a range of issues that influence the scope for the introduction of B2B e-commerce in the garment sector.

The garment firms in the sample were using electronic networks to conduct international trade to some extent. All the firms had access to modem-based analogue connectivity to reach the public Internet and there was limited use of extranets and EDI. Extranets were being used to accept orders from international customers and to place orders with international suppliers. EDI was being used to accept from and place orders with both domestic and international customers and suppliers.

The firms were participating in B2B e-commerce if the use of e-mail and the web Web is included in the definition of B2B e-commerce. The predominant use of these applications was as tools for messaging and posting information or for obtaining information about other firms in the local, regional and international markets. E-mail was being used mainly for maintaining contacts with buyers and to accept product orders while the web was being used to obtain general information about inputs, product markets, and specific customers and suppliers as well as for accepting orders from domestic customers and for placing orders with international suppliers.

Some of the firms were using the public Internet to purchase inputs and to sell products in global markets, but there was no clear pattern of use. Although it would be expected that firms exporting to the US and Europe would be making relatively extensive use of the public Internet, of the five firms with considerable involvement in US and European markets, three were neither purchasing inputs nor selling their products using the Internet. One of the others was making some modest use of the Internet to support sales and purchasing and the other was substantially involved in B2B e-commerce applications. Of the two heaviest Internet users, one was selling its products in the global market, while the other was selling to neighbouring African countries.

In addition, the firms in the sample that were trading in global markets tended to prefer face-to-face contacts and the use of fax and the telephone to communicate with their customers and suppliers and they were infrequent users of e-marketplaces, preferring instead to communicate directly with buyers and suppliers using e-mail.

The results of this study suggest that electronic forms of communication were mainly being used for informational purposes rather than to support the preparation or completion of business transactions. Only a very few firms in the sample appeared to be using the full potential of B2B e-commerce to support invoicing, ordering and financial transactions and, for the most part these core trading activities were conducted using other means of communication.

The garment firms in the sample appeared to be juggling with various options in terms of their current and prospective use of ICTs. The respondents indicated that they were taking the initiative to experiment in some cases as a result of a desire to keep up with new technologies that may enhance their firms' trading prospects and improve capacity to handle business transactions. The firms were in different phases of the development of B2B e-commerce applications. Some of the more aggressive firms with entrepreneurial directors and managers were taking the lead. In these cases the firms had their own web sites, had registered with e-marketplaces or had leased lines to support their connectivity to global networks and their internal operations. Other firms were participating in B2B e-commerce only the extent that they were using e-mail and accessing web sites via the public Internet.

While it might be expected that the extent of B2B e-commerce usage would be related to the extent of the firms' involvement in international markets, the results of this study do not suggest that there is a clear association of this kind. Some firms in the sample that buy and sell in distant markets make very limited use of, for example, the web, while others that are more active in domestic markets use it frequently. The

nature of existing supply and product market relations may be a stronger determinant of the development of B2B e-commerce than the geographical focus of the firms' operations. For instance, some of the garment firms producing for export markets operate as "Cut-Make-and-Trim" contractors and in these cases the buyers in Europe and the US set the designs and arrange for the procurement of inputs from suppliers. The Kenyan producers source only minor inputs such as packaging materials, usually from local markets. In addition, many of the firms deal with a limited number of customers and have little need to find new suppliers or customers by searching the Internet.

Another factor that appears to influence the degree of interest in B2B e-commerce is the degree of comfort of key personnel with the technology. Most of the firms' managers lacked the skills and know how required to use ICT applications and there was some indication of fears about posting their firm's information on the web sites because of the lack of network security. In Kenya laws and financial systems within the institutional framework are also not yet in place to support B2B e-commerce and there is uncertainty with respect to policies that may affect the use of ICT applications.

The high cost and limited available of a network infrastructure were also cited as barriers to the implementation of B2B e-commerce. Nevertheless, although telephone links to the Internet are slow, unreliable, and costly in Kenya, this has not prevented a few firms from entering significantly into e-commerce supported trade. It seems that the state of the physical infrastructure is not an insurmountable barrier to the use of B2B e-commerce, at least in some cases. Some firms were reported to have more work than they can handle and were not looking for additional customers. Those that were looking for customers tended to use e-mail and public Internet in a cautious way and most of the respondents did not consider these means of communication to be a good way of establishing a first contact.

This study leaves many important questions unanswered. With the advent of the Africa Growth and Opportunity Act (AGOA), Kenya is attracting new garment firms and their B2B e-commerce practices may differ from that of the existing firms. Given the potential for considerable change in the domestic and international marketplace, future research is need to examine the changes in the institutional infrastructure in Kenya, the availability of a relevant skills-base, changes in the way firms do business in the garment sector, and the changing needs of suppliers and customers of Kenyan firms.

The institutional infrastructure comprising the legal and regulatory framework for B2B e-commerce was a major concern of the key informants, but of much less concern to the firm respondents. The key informants may have been more knowledgeable about the implications of a lack of an appropriate

institutional infrastructure than the firm-based respondents, but the latter did raise concerns about the security of Internet transactions and their companies' data. 'Guidelines' were published in December 2001, but further work on the legal and regulatory framework needs to be informed by research on the measures that are most likely to help businesses to access markets quickly and efficiently.

The training and availability of skilled personnel was perceived as an important issue by several firms in the sample. As Kenya has programmes at various levels for training computer technicians, information specialists, programmers, and other technical personnel, research is needed to determine the nature of the gaps between supply and demand in this area, especially with respect to nature and size of existing courses and the effective demand for graduates.

This study has confirmed the results of earlier research that showed that firms in the Kenya garment industry do business very differently as some are full manufacturers that design their products, source all of their inputs, and produce and market their outputs, while others are "cut-make-and-trim" contractors. Some firms source a large proportion of their raw materials locally; others obtain their inputs from the global market. Some firms have close relations with a few customers and/or suppliers; while others deal with many different customers and suppliers. These differences appear to influence both the form and extent of a firm's likely involvement in computer-mediated trading. The variety of involvement with B2B e-commerce observed in this study may be typical of the situation in Kenya or it may suggest that this industry sector has developed or is developing a preferred way of doing business. These possibilities deserve further investigation.

The fourth issue that deserves further investigation is the extent to which firms in the Kenya garment sector will face external demands to implement some form of B2B e-commerce that goes beyond the use of e-mail and web searching. One firm in the sample had been strongly encouraged to join an e-marketplace by one of its customers. This may become an important issue if firms in Europe or the US begin to require firms in Kenya to participate in B2B e-commerce, because firms that are willing or able to comply could risk losing their positions in the marketplace.

Overall, the results of this study suggest that Kenyan garment firms are becoming involved in B2B e-commerce to varying degrees and that the applications in use range from minimal 'e-mail only' to sophisticated supply chain management. These empirical results are a major contribution to the discussion about the potential of B2B e-commerce for firms in developing countries since most of the discussion to date is theoretical rather than empirically grounded. To provide guidance to industry on future e-

commerce opportunities and requirements and to the government on appropriate policy directions, much more research is needed to enable researchers to develop a more comprehensive understanding of the institutional environment in which e-commerce is expected to develop, the changing business practices of the firms, and the likely requirements that may be placed on the firms by their suppliers and customers in the international marketplace.

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APPENDEX 1 QUESTIONNAIRE

UNIVERSITY OF NAIROBI

Institute for Development Studies

E-commerce for Developing Countries: Impact, Obstacles, and Policies

Questionnaire

This questionnaire is part of a larger study on e-commerce being carried out by the Institute for Development Studies, University of Nairobi in conjunction with the Institute of Development Studies, UK and the London School of Economics and Political Science. We would be most grateful if you and/or the appropriate person(s) in your firm would take time to complete it for us. A research assistant will return to collect it on _____.

Date of Interview:	_____
Company Name:	_____
Company Address:	P.O.Box_____E.0.
	City/Town_____
Name of Respondent:	_____
Position:	_____
Telephone Number:	_____
Email:	_____
Year Established:	E1._____
Type of Company:	E2. **[ ]** Producer **[ ]** Broker **[ ]** Other: _____
What are the main product(s) and/or services provided to customers by your company?	E3.1_____ E3.2_____ E3.3_____
Which products and/or services are your company's most significant sources of revenue?	E4.1_____ E4.2_____ E4.3_____

No. of employees at business unit: E5._____

Is this business unit part of a larger company? E6. **[ ]**Yes **[ ]** No

No. Employees overall: E7._____

Annual turn-over at business unit: E8._____

Most important countries to which the firm's products are exported:	**Most important countries from which the firm buys inputs:**
E9.1._____	**E10.1.**_____
E9.2._____	**E10.2.**_____
E9.3._____	**E10.3.**_____
E9.4._____	**E10.4.**_____
E9.5._____	**E10.5.**_____

How does your company connect to networks for the purpose of conducting international trade using B2B e-commerce? *(Please tick the box(es) that corresponds with your response).*

E11.1. Type of Connection:

Modem-Based		**High Speed Connection**			**Other** (please specify)	**None**
Analogue	ISDN	SDSL	ADSL	Cable	_____	
[ ]	**[ ]**	**[ ]**	**[ ]**	**[ ]**	**[ ]**	**[ ]**

E11.2. Network Access:

Direct to Public Internet	**Intranet**	**Extranet**	**WAN**	**Other** (please specify) _____	**None**
[ ]	**[ ]**	**[ ]**	**[ ]**	**[ ]**	**[ ]**

How frequently does your company use the following network applications to participate in some form of B2B e-commerce? *(For each application and the purpose of use, please tick the box that corresponds with your usage level).*

	Frequency of Use			
	Always	**Frequently**	**Seldom**	**Never**
E12.1.Email	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.2. To maintain contact with buyers/suppliers?	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.3. To place or accept product orders?	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.4. **Other** *(please specify)*: _____	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.5. **World Wide Web**	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.6.To get general information about	**[ ]**	**[ ]**	**[ ]**	**[ ]**

input markets.				
	Frequency of Use			
	Always	**Frequently**	**Seldom**	**Never**
E12.7.To obtain general information about product markets.	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.8.To obtain information about specific customers.	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.9.To obtain information about specific suppliers.	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.10.To accept orders from international business customers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.11.To place orders with international suppliers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.12**.Other** *(please specify)*: _____ ___	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.13. Extranet	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.14. To accept orders from international business customers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.15. To place orders with from international suppliers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.16**. Other** *(please specify)*: _____ ___	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.17.**Electronic Data Interchange (EDI)**	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.18.To accept orders from domestic business customers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.19.To accept orders from international business customers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.20.To place orders with domestic suppliers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.21.To place orders with from international suppliers	**[ ]**	**[ ]**	**[ ]**	**[ ]**
E12.22.Other *(please specify)*: _____ ___	**[ ]**	**[ ]**	**[ ]**	**[ ]**

E13. Has your company ever used the Internet to purchase or sell any of its products and/or services internationally? **[ ] Yes [ ] No**

If no, please elaborate on the reasons. Is the cost of using the internet a major factor? What about other factors? (i.e. (i) the domestic legal and regulatory environment; (ii) the domestic telecommunication infrastructure; (iii) banking and financial environment; (iv) skills; (v) problems related to transportation/shipping)

If yes, please explain how this transaction (or different parts of it) was conducted (ie via email contact, web-based B2B trading sites, etc) and how your firm identified this trading partner?

E14. Has your company ever registered with any web-based international trading site or e-marketplace? **[ ] Yes [ ] No**

If no, please elaborate on the reasons.
If yes;

1. **Please provide the URL of the trading site: _____**
2. **How would you classify this trading site (eg e-Retailer, Online Auction, Request for Quotes, Trade Leads, Online showrooms): _____**
3. **Has your company ever posted a product(s) for sale at this site? [ ] Yes [ ] No**
4. **If yes, what kind of product(s) has your company tried to sell at this site? _____**
5. **Has your company ever completed a sale by using this site? [ ] Yes [ ] No**
6. **Has your company ever attempted to buy any products at this site? [ ] Yes [ ] No**
7. **If yes, what kind of product(s) has your company tried to buy at this site? _____**
8. **Was the transaction completed successfully? [ ] Yes [ ]No**

E15. Does your firm use the Internet for supply chain management? [ ] Yes [ ] No

A. Do your suppliers have access to real-time information of your company's sales and stock levels? [ ] Yes [ ] No
B. Do your customers have access to real-time information of your company's stock levels [ ] Yes [ ] No
C. Are your firm's internal operations electronically integrated with those of your customers? [ ] Yes [ ] No
D. Are your firm's internal operations electronically integrated with those of your suppliers? [ ] Yes [ ] No
E. Does your company require suppliers to make use of B2B e-commerce technologies? [ ] Yes [ ] No

E16. Did your firm start using B2B e-commerce to: (i) increase short-term profits; (ii) gain experience through learning leading to long-term benefit; or (iii) keep up with other firms (buyers/suppliers or competing producer firms) that are using B2B e-commerce?

E17 Have any of the B2B e-commerce applications in which your company is engaged been developed or promoted by imported suppliers or customers of your company?

E18. Has your company changed suppliers and/or buyers since the introduction of B2B e-commerce? Would you say that having access to the internet has played a role in increasing the number of international suppliers and/or business customers your company now deals with on a regular basis?

E19. Has any of your company's B2B e-commerce applications helped to increase revenues and/or profits in existing business areas (i.e. areas that already operational in an off-line environment)? If so, which ones?

E20. Have any of your company's B2B e-commerce applications helped to enable it to engage in areas of on-line business that were not pursued in an off-line environment? Please specify and describe briefly how revenues in these new areas are generated.

E21. Would your firm use B2B e-commerce more often if it was cheaper, quicker and/or more reliable than other means of trading internationally? If not, why?

E22. Approximately what percentage of your input acquisitions are supported through the use of B2B e-commerce? _____%

E23. Please indicate the three main products your firm purchases using B2B e-commerce and what country the supplier is based in

1._____
2. _____
3. _____

E24. Approximately what percentage of your international sales to business customers is supported through the use of B2B e-commerce? _____%

E25. Please indicate the three main products your firm sells internationally to business customers using B2B e-commerce and what country the buyers are based in.

1. **_____**
2. **_____**
3. **_____**

E26. Of all the issues discussed today, which one would you say "holds your company back" the most? Which offers the most promise for the future health of your business?

THANK YOU VERY MUCH

Would you like to receive a brief summary of the results? [ ] Yes [ ] No

APPENDIX 2 FIRM PROFILES

FIRM A

Firm A is a manufacturing firm located in Nairobi and was founded in 1968. It produces garments and has 100 employees. The firm's turnover is about Ksh.60 million. The most important countries to which its products are exported are Uganda and Tanzania. The most important countries from which it's input are bought are Malaysia, South Korea, Indonesia, Thailand and Germany. The firm connects to networks using modem-based analogue technology and its network access is used to maintain contact with buyers and suppliers. E-mail is used to place or accept product orders. The web is 'seldom' used to obtain general information about input markets, to obtain general information about product markets, specific customers and suppliers. It never uses the web to accept orders from international customers but frequently uses the web to place orders with international suppliers. The firm never uses an Extranet or Electronic Data Interchange.

The respondent expressed frustrations with e-commerce applications. He had tried to use B2B e-commerce but had not succeeded, stating that accessing websites requires money, which, adds to the cost of purchasing products. He also observed that it takes time to download information and that the Internet is cumbersome and expensive to use to penetrate global markets. He suggested that most people do not take e-mail messages seriously, e.g. when companies are identified that are seeking products that the firm produces, these potential purchasers do not respond to his emails.

Another frustrating experience resulted from the respondent's lack of knowledge about how to use e-bank services and the bank's unwillingness to educate people about e-bank services. The respondent said that the use of B2B e-commerce is curtailed by the fact that most people have no skills for its use. He feared that the potential benefits of e-commerce cannot be realized in Kenya because of numerous problems. Without existing contacts the use of B2B e-commerce is not useful. The respondent had approached the embassies for help with information on markets in their countries, but this had not been successful and his email requests had been ignored. He wondered how firms would take advantage of the AGOA if the embassies continue to give negative responses.

FIRM B

Firm B is a garment manufacturing company that was started in 1987 and specialises in making T-shirts, caps and banners. T-shirt making is the most significant source of revenue. The firm employs 120 workers and has an annual turnover of Kshs. 100 million. It manufactures products for the domestic market and it also obtains its inputs locally. The firm is linked to networks using modem-based analogue technology to directly access the public Internet. The firm makes frequent use of e-mail to download art works for printing and embroidery. It is not a regular user of the web and uses it to obtain general information about product markets. The firm does not use an Extranet or Electronic Data Interchange.

The firm had never used the Internet to purchase or sell any of its products internationally and local buyers do not use Internet. The firm had never registered with an e-marketplace, but was in the process of registering a web site although it was not in a hurry to register because it mainly serves the local market. The firm was not using the Internet for supply chain management. It had started using B2B e-commerce to source raw materials and its suppliers or customers had not promoted this initiative. The firm had yet to receive any benefits from using B2B e-commerce and it was observed that greater use would be made if the applications were cheaper, quicker or more reliable than other means of trading internationally. The firm was experiencing some pressure from corporate clients to register with a website.

FIRM C

Firm C is a large company with one thousand employees and is a MUB situated in Mombasa. It produces a variety of products including shirts, shorts, trousers, and tops. All the firms' products are exported to a single intermediary in the US and it sources its inputs from Hong Kong and India. The firm is connected to networks for international trading using B2B e-commerce through modem-based analogue links and has a direct connection to the public Internet. The firm frequently uses e-mail to maintain contact with buyers and suppliers, but makes no use the web, an Extranet or Electronic Data Interchange. The firm does not need to use B2B e-commerce applications because its market consists of only one buyer in US and its products are in demand to the extent that the firm cannot meet this demand. The firm does not need to use a network to purchase products because its buyer provides inputs or recommends input suppliers. It was also not using the Internet for supply chain management.

It started using B2B e-commerce to keep up with buyers and suppliers and it was indicated that the applications were developed or promoted by suppliers or customers. The firm normally communicates with buyers through e-mail. The use of B2B e-commerce had not led to a change in its suppliers or buyers or to an increase in the numbers of international suppliers or customers and the firm had not engaged in business on line that was not pursued off-line.

In a previous interview, the owner had said that the poor state of telecommunications was his most serious problem. He could not give the percentage of inputs supported by B2B e-commerce because the buyer provides its own supplies such as buttons and brings samples to the firm. He noted the importance of B2B e-commerce but also it has had no impact on Kenyan firms.

FIRM D

Firm D was founded in 1989 and engages in the production of industrial uniforms and security apparel, the former constituting its most significant source of revenue. The firm employs 40 workers and has a turnover of Kshs 40 million, selling most of its products to Uganda and Tanzania. Inputs are obtained from South Africa. The firm is connected via modem-based analogue technology and access the public Internet directly. It is a frequent user of e-mail to maintain contact with buyers/suppliers and to place or accept product orders. It is a regular user of the web which it uses to obtain general information about input markets, to obtain information about product markets, to obtain information about specific suppliers, to accept orders from international business customer and to place orders with international suppliers. The firm does not use an Extranet or Electronic Data Interchange. The respondent had used the Internet to purchase or sell products internationally and the Internet had been used to obtain e-mail contacts. The firm had never registered with an e-marketplace and the respondent indicated that this was because the firm's customers did not require B2B e-commerce applications.

FIRM E

Firm E has 2,500 workers. It is mainly involved in garment production and was founded in 1997. It is a business unit of a multinational company, which produces for export only. The main destination of the products is the US, though it had tried to move into the European market. It sources its inputs locally and internationally with fabric obtained from China, India, Mauritius, and Swaziland. Other inputs such as buttons, polythene bags, and corrugated paper cartons are purchased locally and the firm had been trying to work with local thread manufacturers. The firm is connected using modem-based analogue links and has direct access to the Public Internet. It is a frequent user of e-mail to maintain contact with buyers and suppliers and frequently uses it to place or accept product orders. The firm is a frequent user of the web.

It had never used the Internet to purchase or sell its products internationally and had not registered with an e-market place. The firm was not using the Internet for supply chain management. Selecting and purchasing fabric is believed to require face-to-face contact to ensure the quality of the fabric.

The firm started to use B2B e-commerce to increase the speed of its operation and to gain experience, which might lead to learning and long-term benefits. It was indicated that the B2B e-commerce application in which the company is engaged were developed or promoted by suppliers or customers and that the company had not changed suppliers or buyers due to its use. Use of B2B e-commerce has made operations easier and greater use was expected. It was cheaper, quicker or more reliable. It was pointed out that a weakness of using B2B e-commerce lies in the fact that one cannot negotiate deals through e-mail, but this did not detract from the view that e-commerce will gain in importance in the future. B2B e-commerce was being used to inform customers about the status of shipments.

FIRM F

The firm employs 350 workers and its main products are sweaters, socks and woven products. Woven products are the most significant sources of revenue sweaters with socks next in importance. The firm exports its products to the UK, Uganda, Burundi and the Democratic Republic of Congo. Its inputs are sourced from Indonesia, India, Malaysia, the UK and Italy. The firm is connected to networks using modem-based analogue technology and has access directly to the public Internet. The firm frequently uses e-mail in its business transactions to maintain contact with buyers or suppliers and to place or accept product orders. The firm is a frequent user of the web to obtain general information about input markets and about specific suppliers. The firm seldom makes use of the web to obtain general information about product markets, to obtain information about specific customers, to accept orders from international customers, or to place orders with international suppliers. It also has no Extranet and Electronic Data Interchange usage.

When the firm uses the Internet, it browses the Internet via the web. The firm has not registered with an e-marketplace due to the fact that the market the firm serves is not believed to require the use of the Internet or B2B e-commerce. The firm started using B2B e-commerce to keep up with other firms but its customers or suppliers have not developed or promoted its use. The firm has not changed suppliers or buyers since the introduction of B2B e-commerce and its use are believed to have helped to increase revenues and profits because of the reduced cost of mail. B2B e-commerce is seen as fast and time-saving and would be used more if it were cheaper, quicker and or more reliable. Spare parts are the main inputs the firm purchases using B2B e-commerce from Japan and the main products the firm sells in this way are woven products, sweaters and socks sold to neighbouring countries – Uganda and Tanzania. The future of business is thought to lie in B2B e-commerce, but there is a need to improve down loading time.

FIRM G

Firm G is based in Nairobi, employs 200 workers, and specialises in making uniforms. All production is to order, so regular buyers are very important. Among its domestic customers are hotels, security firms, oil companies, parastatals and the military. The annual turnover of the firm is Kshs. 70 million. The firm's products are exported to Tanzania, Uganda and Ethiopia. Its inputs are obtained from the UK, Germany, the United Arab Emirates, and the Czech Republic, Slovakia and India. The firm is connected using modem-based analogue technology and has access directly to the public Internet. The firm frequently uses e-mail to maintain contact with buyers and suppliers and to place or accept product orders. The firm makes use of the web frequently to obtain general information about input markets, to obtain information about product markets, to obtain information about specific suppliers and to place orders with international suppliers. The web is seldom used to obtain information about specific

customers or to accept orders form international customers. The firm does not make use of an Extranet or Electronic Data Interchange.

The firm had never used the Internet to purchase or sell any products internationally. It is registered with an e-marketplace. but does not use the Internet for supply chain management. The firm's web site is used for request for quotations and uniforms are the main product posted on the site. The use of e-mail is important because it reduces the costs of communication. The firm started using B2B e-commerce because it wanted to keep up with other firms, but although the Internet is important to its future business, it is expensive and takes time to download information.

FIRM H

Firm H is based in Nairobi and produces uniforms, footwear, and safety products. Uniforms are the most important products followed by footwear and safety products. Firm H employs 120 employees and has an annual turnover is Kshs 65 million. Its market is local and its inputs are locally obtained, though many items are manufactured abroad. The firm purchases inputs through a local intermediary. The firm is connected using modem-based analogue links and accesses the Internet through an ISP. The company has never completed a sale or purchase on the internet, but it is registered with e-sokoni, a local web-based trading site or e-marketplace. It was forced to do so by one of its client. It posts its catalogue on the web site. It prepares LPO and sends them by e-mail, but invoices are physically delivered to the client. E-sokoni offered training on how to use the web site. The firm started using B2B e-commerce to keep up with other firms and the applications have been developed or promoted by customers. The company has changed suppliers since it started using B2B e-commerce and the applications have helped to increase revenues or profits in existing business areas. B2B e-commerce has led to time-savings and reduced costs of communication. It would make greater use of B2B e-commerce if it were cheaper, quicker and or more reliable. Consumables such as spare parts from Taiwan are the main products purchased using B2B e-commerce. Uniforms are the only products sold using B2B e-commerce.

FIRM I

Firm I was founded in 1950 and produces tents, canvas goods, plastic containers and uniforms. The most important products are tents followed by plastic cool boxes and PVC protective capes. The firm employs 100 workers and its turnover is Kshs. 160m. Its products are exported to Tanzania, Uganda and Sudan and its main inputs are obtained from Taiwan, the UK and South Africa. The firm is connected using modem-based analogue technology and accesses the Internet though an ISP. The firm frequently uses e-mail in its business transactions to maintain contact with buyers and suppliers and to place or accept product orders. The firm frequently uses the web to get general information about input markets, but seldom uses it to obtain general information about product markets, specific customers and suppliers. The firm never uses an Extranet or Electronic Data Interchange. It has used the Internet to purchase or sell products internationally and is registered with an e-marketplace. The firm started using B2B e-commerce to increase short-term profits and keep up with other firms. It has changed suppliers since the introduction of B2B e-commerce and believes that this has helped to increase revenues since the firm is now involved in exporting. The firm would use B2B e-commerce more often if it were cheaper, quicker and/or more reliable. About 20% of its input applications are supported using of B2B e-commerce.

FIRM J

Firm J was founded in 1993 and is a manufacturer of ladies' garments and shirts. Garment products are the company's most significant source of revenues. The firm employs 500 workers and its annual turnover is approximately Kshs 50 million. The firm produces products for export only to the US and its

inputs are sourced from India, Far East, China and Indonesia. The firm is connected by a modem based analogue link to access the Internet. To maintain contact with buyers or suppliers, the firm always uses e-mail to place or accept product orders. The firm always or frequently uses the web to get general information about input markets, about product markets, customers, suppliers, and to accept international customers orders as well as to place orders with international suppliers. The company never uses an Extranet or Electronic Data Interchange but makes extensive use of the Internet to purchase or sell products internationally. Export documents are the main items sent through the Internet while payments are made through telegraphic transfer.

The company has registered with a web-based international trading site located in Dubai. The company's site is registered as "Request for Quotes" and the firm posts its garment products for sale on the trading site and the company has completed many sales in this way. It has attempted to buy products at the site; mainly garment accessories such as buttons, linings and lace and most of the transactions carried out on the site have been successful.

The company does not use the Internet for supply chain management as its suppliers and customers do not have access to its real-time information on sales and stock levels. The firm's internal operations are not electronically integrated with those of their customers or with those of its suppliers. The firm does not require suppliers to use B2B e-commerce technologies and the firm started using them to keep up with other firms (buyers/ suppliers or competing producer firms). Its B2B e-commerce applications have been developed or promoted by its import suppliers or by its customers.

Since the introduction of B2B e-commerce, the firm has changed buyers and suppliers many times which is attributed to its access to the Internet and an increasing number of international suppliers and customers with whom it deals regularly. B2B e-commerce applications have contributed to an increase in revenues and profits and orders have increased beyond what can be handled. The fact that they have registered with trading sites in Dubai means that many people approach the firm to use its factory as a manufacturing base. The firm has been online since it started in 1993, but would use e-commerce more often if it was cheaper, more reliable and quicker. About 80% of the firm's input acquisitions (accessories and fabrics) are supported by the use of B2B e-commerce. The accessories were obtained from Dubai and Hong Kong and the fabrics from China and India. Nearly 100% of international sales are supported using B2B e-commerce with garments as the main product that is sold internationally, mainly in the US.

FIRM K

Firm K was founded in 1990. It produces T-shirts and other assorted garments. T-shirts are the main product and it employs 60 workers with an annual turnover of approximately Kshs 60 million. Products are exported to the UK, the Netherlands, Switzerland and the US. It buys its inputs and fabrics mainly from Switzerland. The firm is connected via a modem-based analogue link and always uses e-mail to maintain contact with buyers and suppliers and to place or accept product orders. The web is frequently used to obtain information about input markets, product markets, and about suppliers. Information about customers is seldom obtained through the web. The firm always accepts orders from international customers through the web and places orders with international suppliers in this way.

The firm has never used the Internet to purchase or sell products internationally. It is registered with a web-based international trading site to access trade leads and it posts products for sale at the trading sites. T-shirts are the main products sold on the site. The company has not completed a sale using the trade site or attempted to buy products at the site. This firm manages its supply chain using the Internet but its suppliers have no access to real time information about the firm's sales and stock levels and its internal

operations are not electronically integrated with those of its customers or suppliers. The firm does not require suppliers to make use of B2B e-commerce technologies.

Firm K started using B2B e-commerce in order to keep up with other firms and the applications have been developed and promoted by its suppliers and customers. Since the introduction of B2B e-commerce the firm has changed suppliers, but this has not helped to increase revenues or profits. The firm would use B2B e-commerce more often if it was cheaper or more reliable. Seventy percent of the firm's inputs are acquired through the use of B2B e-commerce. The main products purchased are inks (Switzerland) and accessories and fabrics (Hong Kong). A quarter of the firm's international sales are supported by B2B e-commerce and the main products sold internationally to business customers are clothing in the UK, the Netherlands and Switzerland.

FIRM L

Firm L was founded in 1972 in Nakuru[4] and is involved in manufacturing yarn, fabrics and apparel. Fabrics are the company's most significant source of revenue, followed by apparel. The firm employs 700 workers and has an annual turnover of $ 4.0 million. The firm's products are exported to the US, the UK, East Africa Community and COMESA. Its inputs are obtained from India, Indonesia, Austria and South Korea. The firm is connected using modem-based analogue equipment and has access to an Intranet. The firm always uses e-mail to maintain contact with buyers and suppliers and frequently to place or accept product orders. The firm seldom uses the web except occasionally to get general information about input markets or product markets, to obtain information about specific customers, to obtain information about specific suppliers, to accept orders from international business customers and to place orders with international suppliers. The firm frequently uses an Extranet to accept orders from international businesses customers and to place orders with international suppliers. It also It seldom uses Electronic Data Interchange to accept orders from domestic business customers or from international business customers, but frequently uses EDI to place orders with domestic and international suppliers. The firm has never used the Internet to purchase or sell products internationally, even though it has registered with web-based international trading sites. It also does not use the Internet for supply chain management.

[4] The firm's Executive Director, the son of the founder, is very comfortable with computer technology. He gives Power point presentations at business meetings, uses e-mail regularly, and appears to be personally involved in upgrading the firm's ICTs. He does not rely exclusively on electronic communication but travels extensively to meet customers and suppliers face- to- face.