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The Reality of E-commerce with Developing Countries

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The views contained in this report are those of the authors. We accept full responsibility for any errors or omissions.

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Executive Summary

1. Business-to-business (B2B) e-commerce is widely believed to promise a radical change in the way that firms trade with one another. B2B e-commerce applications are being promoted as tools that will enable producer firms in developing countries to reduce their costs substantially, thereby easing their access to global markets. The vision of B2B e-commerce is driven by a simple idea. The Internet provides an open global network and access to this network is relatively cheap. Internet-based B2B e-commerce should help producers in developing countries obtain better information on global markets and give them direct access to new customers.
2. The key question is: *does the implementation of Internet-based B2B e-commerce actually lead to new trading opportunities for producer firms in developing countries?* Some of the hype has gone out of the Internet debate, but policy makers and development assistance organisations continue to have a very optimistic view about the potential of the Internet and information and communication technologies (ICTs), more generally. They are concentrating on removing the obstacles that hold back the use of ICTs by developing country firms. Helping these firms to bridge the 'digital divide' and take advantage of 'digital opportunities' is a very high priority.
3. This project examines the expectations and assumptions behind this drive to invest in ICTs and B2B e-commerce, in particular. We arrive at an alternative set of conclusions about the appropriate priorities for policy and action. These come from investigating what actually happens on the Internet and from talking to producers and other stakeholders in developing countries who are involved in international trade and in some types of B2B e-commerce.
4. Our overall finding is that the main effect of B2B e-commerce is to enhance the relationships between existing trading partners. Its use does little to help forge ongoing relationships with new firms. There is a clear message for policy makers and practitioners – understanding how international trade is organised and how inter-firm relationships are developed is essential if the use of some types of B2B e-commerce is to assist producer firms in gaining more equitable access to international markets.
5. In spite of the optimism about the potential benefits of B2B e-commerce for developing country firms, there is remarkably little evidence about the way that it is actually used by producers in developing countries. This project aimed to fill this gap by addressing three research questions.
 - Is B2B e-commerce opening new and cheaper access to global markets for developing country producer firms or, conversely, is it strengthening existing relationships between producers and global buyers and reinforcing existing power relations?
 - Are developing country producers being marginalised by the spread of B2B e-commerce trading relationships that depend on sophisticated information and communication technologies and on efficient logistics systems, electronic payment systems and new certification procedures?
 - How can government or technical assistance agencies help producers in developing countries to participate in B2B e-commerce on an equitable basis?
6. The project focused on B2B e-commerce applications that can be accessed using the Internet. Two industrial sectors – garments and horticulture – were selected. Both are important for employment and export-led growth in developing countries and both produce a mix of 'difficult to standardise' and more easily standardised products, which rely on a range of services to ensure quality, timeliness of delivery and payment.
7. We examined Internet-based 'e-marketplace' sites that claimed to be supporting exporting firms in the two sectors. More than 180 of these 'many-to-many' e-marketplaces were examined to identify how they were supporting firms seeking to trade in international markets. We also interviewed 74 managers of exporting firms in the garments and horticulture sectors in Bangladesh, Kenya and South Africa about their experiences with B2B e-commerce. A further 37 key informants were interviewed in these countries and several e-marketplace providers in Europe were consulted.
8. The results of our empirical research depart substantially from the predominant vision of B2B e-commerce. Our results show that even when some of the expectations about the benefits of better access to information and reduced communication costs are met, business with new firms is rarely generated by using Internet-based B2B e-commerce in the form of 'many-to-many' e-marketplaces. We found that *very little business with new firms was being generated by using Internet-based B2B e-commerce.*

9. The vast majority of the Web-based e-marketplaces had no applications or services in place to support the completion of transactions on-line. Only a tiny percentage of these sites were providing facilities for payment on-line. The vetting of users was infrequent and buyers and sellers had to rely on information provided at the discretion of their trading partners. The e-marketplace providers were not accepting liability and were doing very little to build trust between potential trading parties.

10. Registration with such e-marketplaces was extensive, but the results were disappointing for most of the firms. Almost one quarter of the firms had registered with Bulletin Boards and seven had bought or sold a product. This does not indicate widespread access to Internet-based trading for developing country producers. Some of these firms were traders who were making contacts on-line to supplement traditional ways of finding customers. The contacts were then followed up 'off-line' using face-to-face meetings, telephone calls and faxes. Overall, sale volumes were low, and a number of firms expressed disappointment at the high level of transaction costs involved in following up contacts made through Bulletin Boards.

11. The low level of on-line transacting is not surprising. In the garments and horticulture sectors, business relationships are forged through personal and inter-firm networks. They depend upon non-contractible commitments involving complex information that cannot be provided easily by using relatively unrestricted access to e-marketplace systems. These exporting firms are integrated within global value chains. Some of them had been invited by their buyers to participate in private, exclusive on-line auctions. This was not resulting in new business partners; it was a means of promoting competition between existing producer firms.

12. In our study, *the primary B2B e-commerce application was e-mail*. E-mail was being used to maintain contacts along the value chain. Its use was extensive, if not universal, in the two sectors to co-ordinate production schedules, provide complex information on shipping (for example, the layout of pallets in air-freighters), and to send digital images to verify the quality of products. The primary perceived benefit of e-mail by producer firms in developing countries was to reduce communication costs.

13. Our results show that *B2B e-commerce applications are used primarily to exchange information and to enhance global supply chain integration*. The use of the Internet to forge new trade relationships is more likely for trade in occasional products. For core products, developing country exporters operate in global value chains that encourage repeat transactions and require high levels

of co-ordination. Supply chain integration using the Internet is likely to expand as information is integrated through the use of multiple Internet-based information channels. However, access to new applications running on the Internet is likely to be by invitation from the e-marketplace operator or buyers.

14. The use of the Web was being limited by inadequate and costly domestic telecommunication infrastructures and slow connection speeds. The use of Web-based applications might increase as ICT costs decline, but the costs of dealing with new suppliers and customers will continue to be high. Most of the B2B e-commerce activities of developing country exporters are not dependent on very sophisticated ICT requirements. However, cost-effective and reliable access to telecommunication and Internet services is required.

15. *The emphasis of B2B e-commerce policy on developing legal frameworks for on-line trading (for example, digital signatures and electronic trust services) is questionable*. However, high priority does need to be given to strengthening logistics and transport infrastructures to support time-sensitive, increasingly tightly integrated, global supply chains. Capacity building for B2B e-commerce is also important, but it needs to focus on the characteristics of specific sectors, countries and firms.

16. For Internet-based B2B e-commerce to become more widespread in a way that benefits producer firms in developing countries, *much greater attention will need to be given to how firms relate to each other within global value chains and to the specific types of transactions they are involved in*. Even though B2B e-commerce is not very effective for finding new trading partners, the ability to access and use Internet-based trading systems is critical for producer firms that need to be effective partners in their existing global value chains.

17. *'Top-down' government policies promoting 'e-readiness' will be unsuccessful unless much greater effort is given to examining how Internet applications are actually being used and to the circumstances around the implementation of new technologies*. Policy makers, firms and development assistance agencies should support 'bottom-up' approaches that are based on realistic assessments of B2B e-commerce opportunities and obstacles, and region- and value chain-specific solutions.

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Acronyms

AGOA	Africa Growth and Opportunity Act
AISI	Africa Information Society Initiative
B2B	Business-to-Business
B2C	Business-to-Consumer
DFID	Department for International Development, UK
E-commerce	Electronic Commerce
ICT	Information and Communication Technology
ISO	International Organisation for Standardisation
IDC	Leading provider of data on providers and users of information technology
ITC	International Trade Centre, UNCTAD/WTO
MRO	Maintenance, Repair and Operations
PC	Personal Computer
SA	Social Accountability standard of Social Accountability International
SGS	Société Générale de Surveillance
SME	Small and Medium-sized Enterprise
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development
WTO	World Trade Organisation

1. Introduction

This report is about the potential offered by Internet-based business-to-business (B2B) e-commerce for improving access to global markets for firms in developing countries. It addresses three questions:

- Is B2B e-commerce opening new and cheaper access to global markets for developing country producer firms or, conversely, is it strengthening existing buyer – producer relationships and reinforcing existing power relations?
- Are developing country producers being marginalised by the spread of B2B e-commerce trading relationships that depend on sophisticated information and communication technologies (ICTs) and on efficient logistics systems, electronic payment systems and new certification procedures?
- How can governments or technical assistance agencies help producers in developing countries to participate in B2B e-commerce developments on an equitable basis?

These questions have been answered by a research project which focused on how Internet-based electronic marketplaces were actually working in 2001-2002 and how firms in developing countries were using Internet applications to support and enhance their business operations. This study does not examine any aspects of business-to-consumer (B2C) e-commerce.

The conclusions of this research call into question many of the more optimistic views about the spread of B2B e-commerce and its potential for integrating developing country firms into the global economy. In this respect, the findings reinforce some of the more pessimistic assessments of the potential of B2B e-commerce in both industrialised and developing countries following the collapse of the *dot.com* boom.

However, the research also shows that firms are using a variety of Internet applications in their businesses. Even if there has been no massive shift to on-line trading, the Internet is increasingly important for firms doing business internationally. Recognition of the excesses of the e-commerce bubble should not blind policy makers to the increasing use of the Internet in the management of inter-firm relationships in the global economy.

At the end of the 1990s, many analysts and policy makers believed that B2B e-commerce would lead to a radical change in the way that enterprises trade with one another. The extent of this change, it was claimed, would pose stark choices for developing country firms. If they did not change their way of doing business and move into the digital age, they could be marginalised from global markets. As

UNCTAD put it, 'enterprises in developing countries that are or plan to be involved in international trade need to start incorporating ICT and the Internet into their business models in order to stay competitive' (UNCTAD 2001: 18). e-competitiveness would become a condition for survival.

The optimistic view was fuelled by the expectation of specific advantages that B2B e-commerce might bring to firms in developing countries. Use of the Internet was expected to reduce the effect of geographical distance, providing better information on final markets and lowering the costs of registering a presence in global markets. Some observers even went so far as to suggest that producer firms in developing countries could 'leap-frog' earlier generations of ICTs and use them to build stronger buyer-seller relationships. This was expected to lead to substantial benefits in the form of improved access to international markets and strengthened competitiveness. The ability of Internet-based B2B e-commerce systems to facilitate business linkages across the world seemed to open up new possibilities even for small and isolated rural enterprises and communities.

The high levels of optimism about the potential benefits of B2B e-commerce were not accompanied by any substantial evidence on whether and how firms were using it. The focus on the 'electronic' in e-commerce – telecommunication infrastructure, Internet penetration and new types of intermediaries – was not accompanied by an equivalent focus on the realities of conducting business. The trading practices of producer firms in developing countries and their use of B2B e-commerce have been largely undocumented.

This report addresses this gap. It focuses specifically on the use of Internet-based B2B e-commerce by developing country exporters. Electronic trading using closed, dedicated systems has been developing for several decades. The Internet, however, offers the potential for establishing low-cost, open, 'many-to-many' trading systems. By the end of the 1990s, international agencies were encouraging the governments of developing countries to formulate ICT Strategies in which Internet-based B2B e-commerce would have a central role. The private sector was investing heavily in infrastructure and electronic services to cash in on the expected B2B e-commerce bonanza.

This study provides empirical evidence about how Internet-based B2B e-commerce operates in practice. It examines how B2B e-commerce enables, or fails to enable, firms in developing countries to do business. It provides a detailed examination of B2B e-commerce activities in two sectors – garments and horticulture. Both are important for employment and export-led growth in developing countries.

This study focuses on Internet-based 'e-marketplaces' and on the ways in which firms may use the opportunities opened up by the Internet to do business. Many analyses of B2B e-commerce mainly examine technology impacts. In contrast, we examine the features and services that were being provided at B2B e-marketplaces on the World Wide Web in 2001-2002. We assess how these trading forums were operating and how firms in developing countries might be able to conduct business using them.

The examination of e-marketplaces is supported by research in three developing countries – Bangladesh, Kenya and South Africa. Garments and horticulture firm managers were interviewed about their use of B2B e-marketplaces and about their use of the Internet in their businesses. How were they making use of the Internet to buy or sell products? How were the new opportunities for communication being used to change the way they were doing business with buyers and suppliers in their global supply chains? In spite of the limited empirical reach of this study, the results throw considerable light on the prospects for B2B e-commerce in developing countries.

Our results confirm the crucial importance of empirical investigations of how B2B e-commerce is actually being developed and used. As of 2002, very little B2B e-commerce using 'many-to-many' e-marketplaces was found in our sample of firms. This finding is consistent with OECD country experience which indicates that '... the leading reason cited by businesses for not conducting transactions electronically was a view that electronic commerce was not suited to the nature of their business' (OECD 2002: 70).

However, this negative picture is not the only one. Some forms of B2B e-commerce are opening up opportunities for some types of firms. The Internet is having an impact on the ways that firms do business – particularly on the way firms handle relationships with their existing trading partners. The main effect of the use of the Internet is to make communication with existing trading partners cheaper and quicker. It was not being widely used to forge relationships with new trading partners.

These conclusions have substantial implications for policy makers who are seeking to maximise the benefits of B2B e-commerce for firms in developing countries. The emphasis of most 'e-readiness' strategies is on sophisticated technology, legal infrastructures, and awareness and training. Most of these strategies presume that B2B e-commerce occurs in 'many-to-many' e-marketplaces and that exporting firms are constantly searching for new international trading partners.

Our results show that firms in developing countries are using some types of B2B e-commerce applications, but their primary uses are to strengthen existing business relationships and to deepen integration between suppliers and buyers. This has very important implications for the policy framework needed to realise some of the expected benefits of B2B e-commerce for developing country firms.

In section 2, we set out why the vision of B2B e-commerce is creating issues for producer firms in developing countries and highlight the weakness of the evidence based in this area. The research strategy for the project is set out in section 3. Sections 4 and 5 provide the empirical evidence, first, on the characteristics of B2B e-marketplaces and, second, on the views of respondents from the firms and key informants about the impact of these e-marketplaces and B2B e-commerce. In section 6, our analysis of this evidence emphasises the main features of the nature of B2B e-commerce and the business relationships of firms that are operating within global value chains. Section 7 provides the answers to our three main research questions and emphasises the urgency of changing policy priorities for B2B e-commerce. The objective must be to support producer firms in developing countries to achieve more equitable access to global markets.

2. B2B E-commerce: Issues for Developing Countries

Optimism about the potential of B2B e-commerce depends upon the idea that the major obstacle to increased sales is the cost of making products known to potential buyers in industrialised countries. What is particularly relevant for developing countries is the fact that the transfer of information over the Internet operates largely irrespective of physical location and that the basic hardware and software are widely available and relatively cheap. According to this view, therefore, Internet-based B2B e-commerce should offer particular advantages for firms in developing countries.

Before the *dot.com* shake out in 2000, this vision of the benefits of this new form of transacting was accompanied by the expectation that firms in developing countries would achieve widespread access to ICTs. Growing use of digital technologies as a result of actions to tackle the 'digital divide' was expected to enable much greater access to global markets for smaller and larger firms in developing countries. The spread of the Internet and growing use of the World Wide Web were expected to generate new economic activity through the use of open networks and e-marketplaces.

This section makes explicit some of the expectations and assumptions surrounding the optimistic views of the potential of B2B e-commerce for firms in developing countries. It considers the policy implications that arise from these expectations and assumptions. It also examines the strength of the evidence supporting projections of rapid growth in B2B e-commerce transactions.

2.1 B2B e-commerce: expectations and assumptions

The idea that B2B e-commerce would radically transform the way firms do business can be summed up in four propositions about how this form of e-commerce is expected to work. These are taken from the publications of just two UN organisations concerned with trade and development, UNCTAD and ITC. However, they broadly reflect the general state of the expectations for B2B e-commerce in 2000 and 2001.

Proposition 1: e-commerce works through 'many-to-many' e-marketplaces

B2B e-commerce marketplaces are on-line spaces where many buyers and sellers can come together in one trading community and obtain sufficient information to make decisions about whether to buy or sell. UNCTAD's 2001 *E-commerce and Development Report* suggested that 'many-to-many' e-marketplaces would become the dominant component of e-commerce activity and argued that:

'E-markets involve a large number of buyers and sellers that engage in many-to-many transactions and relationships. They create a trading community in which buyers' orders are matched with sellers' offers and the trading partners benefit from other forms of collaboration' (UNCTAD 2001: 65).

Proposition 2: 'Many-to-many' e-markets will be supported by complementary business functions

If buyers and sellers are to make decisions to transact on-line, then sufficient information must be provided on-line for the transaction to be completed and the systems must be in place to arrange binding contracts and payment:

'B2B e-marketplaces and the implementation of their business models rely to a very large extent on technology infrastructure. The market maker must possess or have access to a technology that is capable of handling the full range of commercial processes from ordering to order fulfilment and settlement. The technology must support transactions involving large numbers of users over the Internet and be capable of handling complex business practices, user relationships and integration with third-party commercial applications' (UNCTAD 2001: 74).

Further, effective on-line business also needs the complementary services required to complete transactions. The types of services that may be offered by the marketplaces include:

'[The] ability to process payments, credit financing, credit validation, tax laws, trade restrictions, integrated business management accounting, on-line exchange of information and transaction-supporting documents, such as invoices and shipping documents; import/export compliance; providing on-line linkage to transportation and logistics and other third-party services linked to purchases, support for multi-currency and multi-language transactions; tariffs and tax data collection and management; automated landed cost calculations, customs compliance and documentation' (UNCTAD 2001: 73).

Proposition 3: B2B e-commerce offers greater returns to firms in developing countries than other trading channels

B2B e-commerce offers two important advantages for developing country firms. First, e-commerce related transaction costs are less sensitive to distance than traditional marketing channels, so access to global markets is made easier. Second, by simplifying and making market channels more efficient, B2B e-commerce should enable developing country firms to retain a larger share of the final consumer price of products. The process is not necessarily one of disintermediation, but rather one of more efficient, Internet-based intermediation:

'Traditional marketing and export channels [for primary products] tend to be inefficient and dominated by multiple intermediaries ... Developing countries, using existing local commodity exchanges and commodity export associations as a foundation, can use B2B on-line trading as a means of transforming existing commodity marketing systems to great advantage' (UNCTAD 2001: XXII).

Proposition 4: B2B e-commerce particularly helps smaller firms to enter global markets

Reductions in the costs of accessing global markets are particularly important for SMEs:

'E-trade opens new commercial opportunities to the export-oriented enterprise. In particular, it empowers the small and medium-sized enterprise (SME), allowing it to participate in international markets where previously market entry and promotion costs were prohibitive. It enables the firm to source production inputs more expeditiously, to streamline (ie. eliminate intermediaries) its own supply- and export-distribution chains and to reduce business transaction costs' (International Trade Centre 2000: 8).

'E-commerce gives small and medium-sized enterprises (SMEs) the ability to access international markets that used to be difficult to enter due to high transaction costs and other market access barriers' (UNCTAD 2002: 4).

Not all analysts and policy makers held the expectations reflected in these propositions. Indeed, even in the publications from which these propositions are taken there are more nuanced views on the different forms that B2B e-commerce might take and the obstacles that might limit its growth.¹ Nevertheless, these nuances were largely submerged in the wave of optimism about the impact of B2B e-commerce. Both analytical and business forces drove this optimism.

Analytically, the surge of enthusiasm for B2B e-commerce reflected a tendency to focus inordinately on the impact of technology. Alternatively, the focus was on the ways that the uses of technology might impact on transaction costs and the role of intermediaries within industry value chains. The complexity of industrial sectors was treated as an issue subsidiary to the technical solutions and to the measurement of transaction costs.

Transaction cost analysis suggests that if ICT use provides a basis for reducing transaction costs, then firms will benefit from reduced barriers to international trade (Wigand 1997). Many of these transaction costs are associated with the need to co-ordinate relationships between distant buyers and sellers – searching for products, services, sellers, and buyers; negotiating and fulfilling contracts; ensuring that contract terms are met; and adapting contracts to changes in circumstances (Milgrom and Roberts 1992). The use of ICTs is also expected to alleviate information asymmetries between buyers and sellers by making it easier to monitor the performance of firms in the value chain.

Towards the end of the 1990s, there were high expectations that B2B e-commerce would encourage substantial changes in the way firms buy and sell products and that this would be associated with major reductions in the costs of transacting on the international market. It was suggested that:²

- buyers and sellers could eliminate the 'middlemen' or intermediaries, establish one-to-one on-line trading and rationalise marketing channels;
- electronic trading would create opportunities for developing country producer firms to enter new markets and to strengthen their position in international trade.

E-marketplaces hosted on World Wide Web were expected to offer advantages to these firms as a result of:

- the rapid, low cost, distance-insensitive transfer of information, reducing the costs of trading across geographical boundaries;
- the spread of open types of Internet-based e-marketplaces; and
- the availability of digital technologies and software applications.

1. See, for example, Mansell (2001) for a review of the many factors that influence B2B e-commerce developments.

2. See, for example, Benjamin and Wigand (1995), Xie (2000), and Goldstein and O'Connor (2000).

The force of this analytical vision was reinforced by business trends. At the end of the 1990s, investments in the Internet and its underlying infrastructure were increasing rapidly and considerable investments were also being made in e-marketplaces as a form of B2B e-commerce. In a scramble for critical mass, first-movers were soon followed by imitators. The competing firms invested heavily in pursuit of the goal of being the leading global or regional provider of e-marketplaces in particular lines of business. As part of the process of attracting a client base, these firms had a vested interest in exaggerating the potential size of the market, playing down the obstacles to trading on-line and over-estimating the growth of their businesses.

At many conferences about B2B e-commerce during this period, multiple presentations by representatives of firms building e-commerce businesses would each claim that they were aiming to be the number one portal or e-marketplace in a particular business area. The firms building e-marketplaces themselves were supported by firms developing support services and by specialist financial investors seeking to build up B2B e-commerce portfolios.

The hype around B2B e-commerce spread to developing countries. The message was that significant parts of global trade would switch to e-commerce and those firms and countries that did not jump on the bandwagon would be marginalised. An article published in the journal of the Fresh Produce Exporters Association of Kenya offers one

example of the message being given to the businesses in Africa:

'As the world switches over to e-commerce as the modern way of transacting businesses [sic], Africa has been urged to join the fray or risk losing out... The solution for Africa to take part in the global market lies in developing "E-markets", electronic meeting places for buyers and sellers with defined rules for e-purchasing, e-bidding and e-selling... A wider global reach opens new markets for African products globally, while elimination of trading inefficiencies will result in better prices... "For Africa to get a slice of this business it will have to commence on-line trading exchanges which create tremendous efficiencies such as reducing processing costs by up to 90%, reducing cycle time by up to 80% and improving staff productivity between 20% and 300%", the Managing Director of Electrade said' (Fresh Produce Exporters Association of Kenya 2000: 14).

The expectations and assumptions about B2B e-commerce seemed to lead to a clear set of policy implications. If B2B e-commerce involves complex on-line transactions requiring sophisticated forms of transaction support, and if these capabilities become a requirement for trading successfully in global markets, then certain policy consequences must follow. The consequences are shown in Box 2.1 and they appeared to be relatively straightforward.³ The next section examines the very limited evidence base upon which these assertions rested.

Box 2.1: Policy implications of the optimistic B2B e-commerce model

1. B2B e-commerce is essential for market access and export growth. Developing country governments must give priority to ensuring that the conditions for the participation of their businesses are met.
2. B2B e-commerce transactions are complex and information-intensive. The ICT infrastructure must be sophisticated enough to handle the data required. A quantum leap in telecommunications capabilities may be required.
3. Governments should ensure that telecommunication services are modern and efficient in order to lower the prices of network usage through effective competition and market liberalisation. Governments should also reduce tariffs to support trade in ICT hardware and software.
4. A legal framework to support electronic transactions has to be in place in order for firms to buy and sell on-line. This framework must include effective authentication and certification mechanisms (ie. digital signatures, secure settlement procedures) and a means of protecting against on-line fraud as well as achieving redress in cases where disputes arise.
5. Significant amounts of business will migrate to B2B e-marketplaces with complex requirements. Governments should support investment in human resources.
6. Governments must ensure that national regimes for taxation, security and privacy protection are compatible with international governance regimes.

2.2 The limited evidence base for B2B e-commerce optimism

The evidence base for the prevailing assessment of B2B e-commerce and the consequent policy priorities was limited. Three types of evidence were marshalled to support the idea that on-line trading was developing rapidly across a diverse range of business sectors:

1. Anecdotes about the development of B2B e-marketplaces. These stories were subject to bias because the providers of e-marketplaces had an interest in talking up their successes as part of the process of attracting new business. Furthermore, the success of one type of e-marketplace would not necessarily indicate that other types of business could be successfully transacted on-line. At the most basic level, data on the development of B2C e-commerce (such as the sale of books, music and airline tickets) were cited as an indication of the potential for B2B e-commerce.⁴
2. Many discussions of the potential of B2B e-commerce for developing countries quoted predictions of its likely growth that were circulating in various reports. Companies such as eMarketer, Forrester Research, ActivMedia and IDC frequently projected growth rates of B2B e-commerce of 100 per cent per annum.⁵ Different bodies projected different numbers, but they all projected rapid growth and the increasing importance of B2B e-commerce relative to B2C e-commerce.
3. In the absence of evidence about B2B e-commerce, data on the spread of telecommunication services and Internet hosts and users were used as proxies for the growth of Internet-based B2B e-commerce. Many reports also relied on indicators of B2C growth or on the availability of Internet Web sites offering products as an indicator of B2B growth prospects (see, for example, UNIDO 2000: 34-35).

By 2002 the optimistic predictions for the growth of B2B e-commerce were giving way to acknowledgements that growth had been much slower than anticipated. The new forms of trading should be expected to have different impacts depending on the business sector and the specific form of B2B e-commerce that is introduced (Standifird and Sandvig 2002; OECD 2002). Independent empirical evidence for the OECD countries was becoming available on the growth of B2B e-commerce, but it was based on aggregate indicators (OECD 2002).

In 2001 when this project started, development programmes and technical assistance agencies were strongly promoting the potential of B2B e-commerce for producer firms in developing countries, but they were doing so in the absence of systematic empirical evidence. More recently, in-depth analysis of B2B e-commerce use by firms in a number of sectors in OECD countries has shown that B2B e-commerce use is limited (OECD 2002). Quite apart from the lack of reliable quantitative data, there is limited understanding of the interaction between B2B e-commerce and the buyer-supplier relationships that are forged between firms in a given industrial sector value chain.

The development of various types of B2B e-commerce is likely to differ depending on the existing structure of an industrial sector and its value chain. Earlier studies of the development of electronic trading networks suggest that there is scope for the elimination of some types of intermediaries, but that there are often new roles for existing and new intermediaries in the value chain. The costs of transacting may increase or decrease depending on how B2B e-commerce is introduced and whether it is developed in open or restricted electronic environments (Kraut *et al.* 1998; Hawkins *et al.* 1999; Mansell *et al.* 1991; Mansell and Jenkins 1992).

Studies that provide empirical evidence on the development of B2B e-commerce suggest that a cautious approach to assessing its benefits and opportunities for firms in developing countries is important.⁶ By providing information about how B2B e-marketplaces actually operate and about how firms are using Internet applications to support their business activities, this report helps to fill a major gap in the evidence base.

4. See, for example, Coppel (2000) and some of the papers in O'Connor and Goldstein (2002).

5. See, for example, UNCTAD (2000: 7), UNCTAD (2001: 71) and Coppel (2000: 7).

6. See, for example, Moodley, Morris and Velia (2002), Tregurtha and Vink (2002), Kinyanjui and McCormick (2002), Moodley, Morris and Barnes (2001) and Maitland (2001) who have undertaken studies that reveal the relationships between B2B e-commerce and commercial practice.

3. The Research Strategy

This study focuses on the commercial aspects of trade between buyers and sellers in their value chains. It examines the issues that developing country producer firms, governments and technical assistance agencies need to consider when promoting B2B e-commerce. Our research strategy differs from that used in many studies of B2B e-commerce which focus on connectivity, network access and security, ICT skills, and e-commerce legislation.⁷

The study was designed to investigate relationships between enterprises and their actual and potential customers and suppliers and the potential for changes when the Internet is used to support B2B e-commerce. The study draws on industrial sector expertise that has been developed through ongoing research initiatives in the United Kingdom and in Bangladesh, Kenya and South Africa (see acknowledgements). This study focuses mainly on the 'commerce' aspects of B2B e-commerce rather than on the 'e' or technology aspect. We focus particularly on the operation of e-marketplaces and on the way firms are using the Internet to support their business activities.

3.1 Diversity in B2B e-commerce

What is e-commerce? Much of the debate on definitions is concerned with quantification – what transactions to include or not to include. This gives rise to broad and narrow definitions, distinguished by whether they focus solely on Internet-generated transactions, or include computer networks more generally:

'An electronic transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over computer mediated networks. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the goods or service may be conducted on or off-line' [broad definition].

'An Internet transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the Internet. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line' [narrow definition] (OECD 2002: 89).

However, one OECD report on e-commerce offers a broader approach, focusing on the use of the Internet and related applications to support business. It emphasises that e-commerce 'is more than a technology or application' and that it has implications for the entire value chain of business processes (OECD 2000: 10). In this study we follow this broader approach, focusing on the use of the Internet to support inter-firm business dealings.

3.2 Distinguishing between types of B2B e-commerce

One consequence of focusing on the business dimensions of B2B e-commerce from the point of view of the users rather than of the service providers or policy makers, is that it is important to distinguish between the different types of Internet applications that are being used. The Internet is a set of protocols that enables communication between computers and a physical infrastructure linking computers across the world.⁸ E-commerce involves the use of applications that run on the Internet and these applications influence the commercial relationships between firms.

The different types of applications are often conflated into the general category of B2B e-commerce. The variety of ways that firms do business with each other on-line tends to be grouped under the generic term 'e-marketplace', concealing the diversity of ways firms relate to each other through Internet-based applications. Most attention focuses on whether or not transactions take place on the Internet or through dedicated channels. The research strategy in this study involved an effort to distinguish between the different kinds of B2B e-commerce applications that might be supported by e-marketplaces.

E-marketplaces based on the Web may include on-line auctions, trade leads, requests-for-quotes and on-line catalogues. Some Web sites offer multiple e-marketplaces, each organised around a particular trading system such as a request for quotes. The companies that host one or more of these trading systems at their Web sites have been called 'e-hubs', 'portals', or 'market makers' (Kaplan and Sawhney 1999). The term 'e-marketplace', applied indiscriminately to all of these types of applications, implies that they all support on-line buying and selling. Frequently they do no such thing. The term 'e-marketplace' is misleading because:

7. These issues are the focus of most studies of developing country 'e-readiness', see Bhatnagar (1999), Braga (2000), Hossain (2000), Mann (2000), McConnell International (2000; 2001), World Information Technology and Services Alliance (2000).

8. 'The Internet, like many networks, has a layered architecture. That is to say, all the tasks necessary to communicating via network are divided among several functional layers, and the programs residing on these layers co-operate in standardised ways. Applications and their associated protocols occupy a layer above the basic Internet protocols that supervise basic data transmission' (Wu 1999: 1164).

- it signifies transactions, obscuring the fact that Internet-based applications may not support on-line trading (in the sense of firms making decisions to buy or sell on-line);
- even if decisions to buy and sell are taken on-line, the 'marketplace' may not support the completion of transactions on-line; and
- it suggests that business is conducted by agents that encounter each other in 'marketplaces', obscuring the importance of the complementary information flows and relationships required to support business transactions.

Nevertheless, given the widespread use of the term 'e-marketplace', we use it in this study to denote any type of application aimed at promoting trade between firms available at a particular Internet site. This study is mainly concerned with the diversity of B2B e-commerce applications and their implications for access by developing country firms to global markets. Given the range of B2B e-marketplaces that were being hosted, it was also important to consider three aspects of their features. The research strategy distinguishes between: (i) information content and services for transaction preparation; (ii) information content and services for transaction completion; and (iii) the means of access to the e-marketplace.

For example, in the case of transaction preparation, information may be available about products and trading partners but it may not be sufficient for firms to decide whether or not to trade. The quality and the timeliness of the information will affect whether it can be used to make decisions about whether to buy or sell. Some e-marketplaces provide only trade leads or classified ads that must be followed up using e-mail, hyper-links, the telephone, fax or the post. Other e-marketplaces provide firms with access to on-line auctions or catalogues that may enable them to make quick decisions about whether to buy or sell.

In the case of transaction completion the services involved might include on-line payment, logistical support and dispute resolution services. E-marketplaces that give potential buyers a good idea of whether they would want to make a purchase may not enable firms to complete the process on-line. Other e-marketplaces offer direct or indirect access to a means of carrying out a transaction and purchases and payments can be made on-line.⁹

The ease with which firms can participate in a B2B e-marketplace varies considerably. Some providers of e-marketplaces may permit completely unrestricted

access by firms, requiring only that firms complete a short, on-line registration procedure. Others may restrict access in various ways. Registration requirements may include trade or bank references or deposits. In other cases, access may only be available to firms that are invited by those who own or control the site. These private e-marketplaces may exist within a Web site located on the public Internet and be protected by firewalls or passwords. Alternatively, they may employ Internet protocols within a network supported by private telecommunication links.

To examine these variations and their implications for producer firms in developing countries, the research strategy included two components. The first was to map attributes of the e-marketplaces that could be accessed via the public Internet. The second was to assess the views of producer firms in developing countries that might be actual or potential users of these e-marketplaces.

Given the focus on real user businesses and operational e-marketplaces, the research had to focus on particular sectors. Two sectors, garments and horticulture, were chosen because of their importance for employment and export growth in poorer developing countries.

3.3 Mapping the attributes of B2B e-marketplaces

The diversity of the e-marketplace attributes contrasts with the expectations and assumptions outlined in Section 2, where B2B e-commerce is portrayed as involving on-line transactions with support services for business conducted mainly or entirely on the Web. This type of B2B e-commerce is expected to offer packages of services such as payment and settlement mechanisms; insurance and logistics systems; inspection services; certification of quality services; and customs clearance services that are attractive to producer firms in developing countries. These expectations are confronted in this study with the reality of the functions and services that are actually provided at 'e-marketplaces'.

In 2001, a large number of e-marketplaces were hosted at Web sites for products in the garments and horticulture sectors. The study examines 117 Web sites or portals that were supporting a total of 184 different e-marketplaces in 2001.¹⁰ The way in which these e-marketplaces support trade was examined using a taxonomy of functions and services that might be needed to trade on-line (see Appendix 1 for an account of how these e-marketplaces were located).

9. The B2C equivalent of this would be Amazon.com. The user can decide to make a purchase, pay for it, and expect it to be delivered without further effort. It should be noted, however, that Amazon (i) relies on an array of logistics services (credit card payments, the mail, etc.); (ii) is selling products whose characteristics are widely known; (iii) is retailing products whose manufacturers are often well-known brands; and (iv) acts as a reseller, taking ownership of the products and assuming liability with the purchaser. These characteristics are not found in most B2B e-commerce applications.

10. A single Web site or portal can host a number of distinct e-marketplaces. Therefore, the number of providers of these portals (117) is lower than the number of e-marketplaces (184).

Each of the selected e-marketplaces was examined to assess:

- The type of application used to enable interaction between buyers and sellers.
- The kinds of information about products, buyers and sellers that was available to users.
- Who supplied this information and how (if at all) it was verified.
- The services offered to support transaction completion, arrangements for payment, logistics services, etc., and whether these were offered by the Web site provider or by other agents.

The findings of this analysis were supplemented by some interviews with e-marketplace providers in Europe. The findings of this phase of the research are presented in Section 4.

3.4 Developing country producer firms and key informants

The second component of the research examined whether the development of Internet-based B2B e-commerce is influencing the way producer firms in developing countries engage in international trade in the garments and horticulture sectors. The B2B e-marketplace activities were examined in the context of the integration of these firms within the global markets for their products. Firm-level research was undertaken in Bangladesh, Kenya and South Africa. In Bangladesh, only the garments industry was studied. The number of interviews by sector and by country is shown in Table 3.1.

The 38 key informant interviews were conducted in the three countries with industry experts, business association representatives, chambers of commerce representatives, e-commerce solution providers and government officials. The details of the sample are set out in Appendix 2 (Garments) and Appendix 3 (Horticulture).

The garments sector is by far the most important of all export sectors in Bangladesh. Horticulture (fresh vegetables, fresh fruit and flowers) is a major export industry in Kenya and South Africa. South Africa and Kenya are also exporters of garments to both the United States and the European Union and the potential for growth in exports to the United States has been enhanced by the introduction of the African Growth and Opportunity Act (AGOA) (Gibbon 2002).

These two sectors have some common features in addition to their significance for developing country exports. Although some of the products they produce can be standardised reasonably easily, for the most part, the products are difficult to standardise. Competitiveness strengths are built on product differentiation and this is what both global buyers and producers in developing countries are trying to achieve. Such differentiated products are not the ones which fit most naturally into the world of 'many-to-many' e-marketplaces. However, the study of these sectors can provide a basis for generalisations about the value of these e-marketplaces and the use of e-commerce applications by firms that have relevance to many other sectors.

The more general conclusions about B2B e-commerce and the use of the Internet that we draw in sections 6 and 7 of this report are not specific to garments and horticulture. It would be wrong to believe that there is extensive potential for open, B2B e-marketplaces trading in standardised products that a study of garments and horticulture would fail to capture. Insofar as we find empirical evidence that B2B e-commerce is not developing in line with the dominant vision summarised in section 2, there are grounds for proposing that these findings have broad relevance to other sectors:

- Even products that are relatively standardised in terms of product characteristics often require distinct bundles of services to facilitate trade. Aspects of trade such as reliability of delivery, consistent quality and responsiveness to changes in order requirements cannot be negotiated easily on-line.

Table 3.1: Number of interviews by country

Country	Garments Firms	Horticulture Firms	Key Informants	Total
South Africa	28	12	16	56
Kenya	12	15	14	41
Bangladesh	7	NA	8	15
Total:	47	27	38	112

Note: NA = not applicable.

- Open e-marketplaces for standard products such as steel have been collapsing, and some providers of this type of site have been moving to providing private, exclusive sites for large companies.¹¹
- Apparently, open e-marketplaces may, in fact, deal with small numbers of global firms, trading in excess inventory and facilitating price transparency. Various B2B commodity exchanges bring together firms that know each other well.
- The growth of private trading sites on the Internet indicates the importance of pre-qualification of suppliers and a preference for repeat transactions to generate confidence between buyers and sellers in many lines of business.

The firms in the country samples were selected because they were known to be active on the international market. They were expected to be implementing B2B e-commerce or to be considering implementation in the near future. The firm interviews focused on the ways that firms might use Internet applications to generate or sustain their business relationships. Respondents were asked about their:

- connections to the Internet;
- use of Internet applications for communication and information-seeking;
- transactions that involved any use of the Internet;
- experiences with e-marketplaces.

This focus on firms in the garments and horticulture sectors allowed a broad range of B2B e-commerce experiences to be analysed and the two sectors display a wide variety of business relationships.

In parts of horticulture, for example, production and exports are managed by large firms that supply major retailers on the basis of long-term contracts. Traceability, maintenance of the cool chain, collaboration over product innovation and concerns with safety, quality and reliability of delivery lead to tight and complex linkages along the value chain.¹² In other parts of the business, auctions, spot markets and one-off transactions prevail, particularly for smaller markets and for smaller retailers. Representatives of businesses of different types, and at different stages in the value chain (growers, small traders, large exporters, etc.), were interviewed in order to assess the potential of B2B e-commerce applications for different types of firms in the value chain.

In the garments sector, a majority of the firms studied were global contract manufacturers. They were making finished products according to the specifications of foreign buyers. They were making-to-order rather than making-to-stock. Only one firm, based in South Africa, was adding higher-order services such as styling and design to its garments. These were supplied to small independents and boutiques in the United Kingdom.¹³

The results of this phase of the study are set out in Section 5 of this report. Section 6 provides an analysis of the implications of the two empirical components of the research for producer firms in developing countries and a realistic assessment of the likely impact of B2B e-commerce. Section 7 answers the initial research questions for this study (set out in section 1) and provides the main messages for policy makers. The next section turns to the results of the B2B e-marketplace attribute mapping.

11. See, for example, Connectis, 20 September 2001, <http://specials.ft.com/connectis> accessed 31 January 2003 reporting on e-Steel – 'Large steel customers targeted earlier by exchanges, such as Ford, are not interested in randomly picking up critical steel by an unknown producer on an exchange', says Michael Levin, chief executive of e-Steel. He adds that '90 per cent of steel mills' customers stay on their books year after year after year, because of interests including quality requirements, transportation and demand'.

12. These issues are discussed extensively in Dolan and Humphrey (2000; 2001).

13. A detailed review of the way leading export-oriented garment producers in South Africa are using B2B e-commerce is provided by Moodley *et al.* (2002).

4. The Reality of E-Marketplaces

How do e-marketplaces operate in practice? The answer to this question is based on the mapping of the characteristics or attributes of 184 e-marketplaces in the garments and horticulture (including some sites concerned with a broader range of agricultural products) sectors. Box 4.1 illustrates the types of applications that were present at the e-marketplaces based on the Web which were included in the sample.

4.1 E-marketplaces: transaction- or information-oriented?

The 184 B2B e-marketplaces were classified according to the types of applications they supported. The results shown in Table 4.1 indicate that most sites did not support on-line buying and selling of products.¹⁴

The most common e-marketplace application was the posting of trade leads or classified advertisements by buyers and sellers. This accounted for 45 per cent of the 184 e-marketplaces. Direct buyer and seller links was the second most frequent type of application, accounting for 17 per cent of the 184 e-marketplaces. A third application, requests for quotes, accounted for another 15 per cent of the e-marketplaces. These usually involved firms posting statements about products they wished to purchase from or sell to specific buyers or sellers. Interested parties then made contact with the prospective buyer or seller.

Taken together, trade leads and classified advertising, direct buyer and seller links, and requests for quotes accounted for 77 per cent of the 184 e-marketplaces. For these e-marketplaces, conducting business on-line meant only the provision of applications that enable firms to identify trading partners that they could contact off-line with a view to doing business. The follow-up to an initial contact generally was taking place through other channels such as e-mail, a hyper-link, the telephone, fax, or the post.

These so-called 'e-marketplaces' are not marketplaces at all. Little or no buying or selling was taking place on-line. Rather, the providers were mimicking catalogues and trade directories, etc. The e-marketplaces classified as 'on-line auctions' accounted for 15 per cent of the sample and e-Retail applications accounted for 5 per cent of the sample total. These latter two applications might be expected to provide for on-line transaction preparation and completion. The specific services offered by these e-marketplaces are discussed in greater detail below.

Box 4.1: Types of applications in B2B e-marketplaces

Direct Buyer/Seller Links: Provide a means for sellers to post direct links from a Web site to their own company Web sites. Potential buyers can follow these links to a vendor's Web site. Alternatively, there may be no link and only product and contact information about particular firms (e.g. electronic showrooms, on-line directories, on-line catalogues).

On-line Auctions: Applications may take three forms: (i) Listing-Agent Auctions where the service provider acts as an agent running Web-based auctions on the behalf of independent sellers who list their own auctions; (ii) Merchant Auctions where no independent sellers are identified, and the service provider acts as a retailer which happens to conduct its transactions by auction; (iii) Hybrid Auctions where elements of the first two categories are combined. These auctions may take place instantaneously in much the same way that a product might be sold in a physical auction house, or they may involve buyers placing bids over the period of time (e.g. the model used by eBay for B2C auctions).

Request for Quotes: This consists of a seller or buyer posting a message to a forum within an on-line environment or to individual members, indicating a desire to buy or sell items. Buyers and sellers may be able to select the firms to which their quotes are sent as well as the individual firms from which they receive quotes. Messages may include price information.

Trade Leads/Classifieds: Buyers and/or sellers post messages to an on-line forum or to individual members indicating a desire to buy or sell items. Buyers and sellers do not have control over which user firms can access messages posted to the forum. Messages generally do not include price information.

e-Retail: The service provider sells products directly to users. Visitors take the role of buyers and the site provider takes the role of a seller. These platforms parallel the exchange processes common on B2C Web sites.

14. For a more detailed discussion of these applications, see Paré (2003).

Table 4.1: Types of B2B e-marketplaces

Type of e-marketplace	Horticulture		Garments		All	
	No.	%	No.	%	No.	%
Trade Leads/Classifieds	43	56	39	36	82	45
Direct Buyer/Seller Link (includes link to seller Web page, storefronts, showrooms)	7	9	24	22	31	17
Request for Quotes	10	13	18	17	28	15
On-line Auction	8	10	20	19	28	15
e-Retail	7	9	3	3	10	5
Unknown†	2	3	3	3	5	3
Total	77	100	107	100	184	100

† Type of application not specified

4.2 Support services in e-marketplaces

To what extent were providers of e-marketplaces offering affordable services to support the settlement of transactions on-line? On-line trading might be greatly facilitated by services that:

- enable payments to be made; and
- facilitate the delivery of the product.

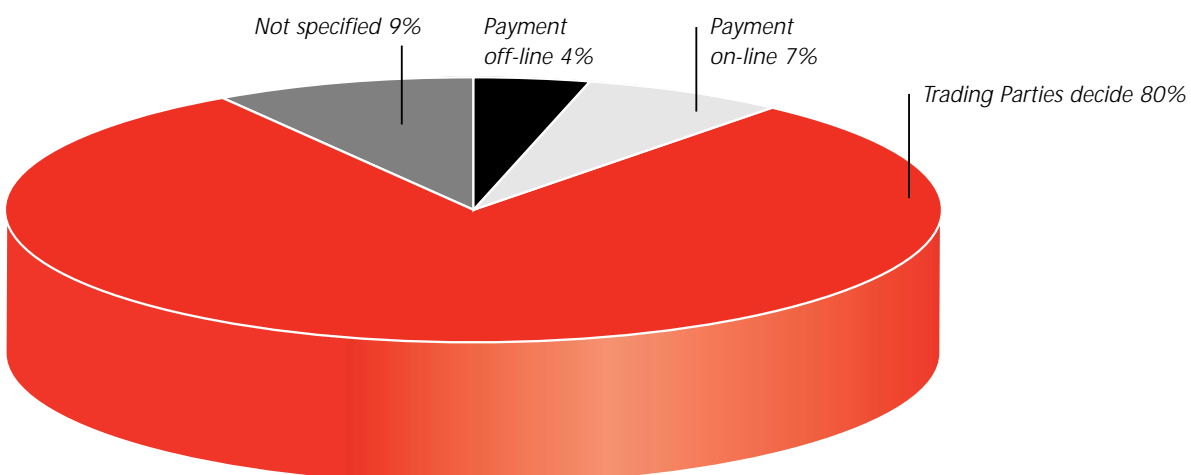
Our examination of the e-marketplaces in the sample showed little or no evidence of these support services. Users of these e-marketplaces had to arrange payment and delivery for themselves (see Figure 4.1). In 80 per cent of the 184 e-marketplaces, users had no access to supplementary applications or support services to facilitate the settlement of transactions on-line. Only seven per cent of the e-marketplaces provided facilities

for payment on-line. A further four per cent of e-marketplaces were facilitating off-line payment.

Product delivery was equally unsupported. The companies hosting e-marketplaces rarely played a direct role in arranging for the delivery of products. For 80 per cent of the e-marketplaces, the buyers were left to take responsibility for arranging for the delivery of the products once they had been purchased. This was facilitated by links from some of these e-marketplaces to third party service providers.

For an additional cost, e-marketplace users could access logistic services including shipping and delivery services, financial services, customs brokering, insurance services and travel services. Shipping and/or delivery support services were accessible to users in 34 per cent of the 77 horticulture and 53 per cent of

Figure 4.1: Payment arrangements for 184 e-marketplaces



the 107 garments e-marketplaces. It was not possible to assess the effectiveness of these services using the method employed in this study, but in many cases the Web site provider merely provided a link to the Web site of the provider of these services.

4.3 Trust services in e-marketplaces

A crucial issue for the use of e-marketplaces is how to establish trust. Firms purchasing products on-line need assurances about the companies they are dealing with and about the products they are buying. Firms selling products on-line need to be confident that payment will be made. Trust-enhancing processes to support the use of e-marketplaces are very important and these were very weakly developed in the e-marketplaces included in this study.

An extremely limited amount of product and partner information was available to users of the e-marketplaces. 'Buyer and seller beware' was the norm. Of the 117 e-marketplace providers, 46 per cent noted on their Web sites that they did not mediate between firms using their sites. It was the user's responsibility to evaluate whether to enter into an exchange agreement with another firm.

For potential trading partners with no prior relationship with each other, the registration requirements and the screening procedures applied by the providers of these e-marketplaces were unlikely to generate trust between 'strangers'. Before entering into a commercial arrangement with a 'stranger', access to information about credit history, annual turnover and previous trading associates would be desirable. Firms could then evaluate the legitimacy and credibility of a potential trading partner.

Information about trading partners was available only to a very limited extent from the e-marketplaces, as shown in Table 4.2. Most sites required some form of registration, but this by itself would provide very little assurance to users. Key informants suggested that registration has to be kept as simple as possible. Complex registration requirements tend to reduce the number of firms registering. It seems likely that many e-marketplace providers do little more than weed out obviously fraudulent firms. Some type of additional participant screening was offered by slightly more than 50 per cent of the e-marketplaces, but the effectiveness of the screening was not assessed.

The provision of further, firm-specific information on firms was even more limited (see Table 4.2). Credit rating information on participating firms was available in only 17 per cent of the e-marketplaces. In these instances, the information was available only for an unspecified fee by contacting a third party or a 'strategic partner' linked to the site, e.g. Dun and Bradstreet, The CIT Group, etc. Reputation statements about buyers or sellers were available in only 6 per cent of the e-marketplaces.

Assessment of quality or product characteristics either via the Internet or by following up contacts off-line could, in principle, be managed in a variety of ways. These include the use of digital photographs, the provision of product samples, laboratory reports on products, inspection of facilities and provision of information about certification to international standards such as the ISO 9000 quality standard and the SA 8000 social accountability standard.¹⁵ Such information was generally not made available for the products being offered for sale in the e-marketplaces studied (see Table 4.3). In more than three-quarters of the 184 e-marketplaces, it was left to the buyers and sellers to decide the amount and type of product

Table 4.2: Availability of on-line information about trading partners

Type of e-marketplace (N=184)	Availability of Buyer/Seller Assurance [†]			
	Registration Required	Participant Screening	Credit Rating Info	Buyer/Seller Reputation Statements
Trade Leads (N=82)	63	34	11	6
Request For Quotes (N=28)	27	19	8	3
Auction (N=28)	25	18	8	3
e-Retail (N=10)	9	4	1	0
Direct Buyer / Seller Link (N=31)	30	16	3	0
Unknown (N=5)	4	4	0	0
Total	158	95	31	12
% of all marketplaces	86%	52%	17%	6%

[†] The data indicate the number of times specific mention was made of users having access to quality assurance applications. In some instances more than one was mentioned.

Table 4.3: Availability of product information

Type of e-marketplace (N=184)	Availability of Product Quality Assurance [†]				
	Product Photos	Sample Offered	Lab Reports	Facilities Inspection	Certification
Trade Leads (N=82)	32	5	3	17	3
Direct Buyer / Seller Link (N=31)	26	3	2	8	1
Request For Quotes (N=28)	10	7	5	11	5
Auction (N=28)	12	3	1	12	2
e-Retail (N=10)	6	1	1	1	1
Unknown (N=5)	3	0	1	0	0
Total	89	19	13	49	12
% of all e-marketplaces	48	10	7	27	6

[†] The data indicate the number of trade forums where specific mention was made of users having access to quality assurance applications. In some instances more than one was mentioned.

information provided. The providers of e-marketplaces did little to assist buyers and sellers to assess a priori the quality of the products.

The results of the e-marketplace analysis presented in Table 4.3 clearly demonstrate that e-marketplace users had very limited access directly or indirectly to product information. Even when facilities inspection services and information about product certification were promoted on a Web site, it almost always required users to contact third parties or 'strategic partners' such as the Swiss company, Société Générale de Surveillance (SGS). When these services were mentioned, or offered, it was often unclear whether they were provided at prices that would be affordable for developing country producer firms. Key informants who are involved in e-marketplace development suggested that the take-up of these services has been very limited. Initial expectations of widespread use of trust services do not seem to have been realised.

Finally, there was little evidence that mechanisms for redress were directly available to users of e-marketplaces. Most e-marketplace providers were avoiding this responsibility claiming that although they were facilitating trade, they were not legally party to it. Of the 117 e-marketplace providers, only six indicated that they would assist firms in the event of a dispute. The site providers stated explicitly in their contractual terms and conditions that all deals were to be made directly between the trading parties.

4.4 The operation of open e-marketplaces

The providers of e-marketplaces in the sample were not directly facilitating the provision of affordable services that would support the settlement of transactions on-line. These e-marketplaces were all 'open' in the sense that any firm could visit the e-marketplace and decide whether to provide registration information to the site provider. The users of these e-marketplaces had the responsibility for deciding:

- the payment settlement mechanism;
- whether to employ third parties to help in assessing the creditability and legitimacy of trading partners;
- whether to employ third parties to arrange for delivery of the product;
- the channels for redress in the case of a dispute.

Given that many of these kinds of open e-marketplaces were promoted in the period up to 2000 as being transaction-based and offering support services to make on-line transactions a reality, why were these sites so limited in their scope and functionality?

The e-marketplace operators in the sample appeared to be mainly concerned with reducing the cost of searching for products, services, sellers and buyers. They wanted to attract as many buyers and sellers to their sites as possible in order to gain visibility, market liquidity, or critical mass. Interviews with providers of Bulletin Board services suggested that increasing the costs of running the 'marketplace' by using sophisticated systems would drive firms to other sites.

Box 4.2: Assurances to buyers and sellers from an e-marketplace provider

How does [Company A] qualify members?

Customers are screened in several ways:

- Personal contacts and visits with suppliers and buyers through country representative networks and trade shows.
- Upon registration buyers and sellers enter contact information for two trade references and banking references. We will verify these references before the members can post products or place bids
- National and international organizations and government entities are consulted as needed

How does [Company A] make sure products will be high quality?

- Personal contacts and visits with suppliers at trade shows allow us to develop relationships with, and knowledge of, our suppliers and their products
- When we enter a market we target the leaders in each industry to ensure that the quality of products offered is high
- In addition, country representatives assess suppliers through their local networks
- In-house traders can usually obtain samples for potential buyers upon request
- All buyers are advised to require certificates from Société Générale de Surveillance or other creditable inspection agencies

How am I assured of the credibility of the buyers/sellers?

[Company A] aims to deal with buyers who can take a position on, or have possession of, goods. Users are pre-screened by the company in order to assess their legitimacy, however, we cannot guarantee their credibility. To minimise risk, it is strongly recommended that all contracts contain the necessary provisions to ensure both parties are covered in the case of a problem. A clause should be included in the contract specifically stating that the quality of the final product should meet those of the sample or of standards otherwise noted. In addition, performance bonds are highly recommended, as are inspections at the time of delivery.

What is [Company A's] responsibility (shipment is not received, payment is not made, product is not good quality, etc.)?

[Company A] is a neutral party in all transactions. [Company A] does not assume legal responsibility for items lost, damaged, not delivered, etc., nor does it assume responsibility for items not paid for. Contracts are between buyer and seller only.

How do I know the quality of the product if I do not know the seller?

We suggest that the contract contain all quality provisions required by the buyer. We strongly recommend that buyers and sellers use secure contracts and payment terms to ensure that both parties fulfil their end of the agreement. For example, performance bonds are highly recommended, as are inspections at the time of delivery. It is, however, up to the buyer and the seller to settle any disputes that may result from a trade.

Source: Company A's Web site.

Most e-marketplace providers explicitly avoided taking any responsibility for the activities of firms trading through their e-marketplaces as indicated in section 4.3. They were assuming that such responsibilities would open them up to potentially large legal liabilities. As market intermediaries, they appear to have three options:

- **To act as resellers:** Resellers take ownership of the product, and buyers and sellers have a legal contract with the reseller, not with each other. They only have to establish trust with the reseller whose reputation is at stake. However, this places the onus on the reseller to obtain assurances about the trading parties and their products. This strategy is most likely when products are easily valued and assessed and in very specialised product areas in which the reseller has extensive knowledge.
- **To act as brokers:** Brokers bring the trading parties together, but the legal contracts are between the parties. The broker's own specialised knowledge may provide some assurances to the parties, but the broker accepts no legal liability.
- **To act as pure e-marketplace providers:** Offering a Web site and related applications that enables potential trading parties simply to come together.

The more open or unrestricted the access to an e-marketplace, the less likely it is that the providers will risk acting as a reseller or providing assurances about participating firms.

Information from an e-marketplace in the food sector is shown in Box 4.2 to illustrate the steps taken by the provider to assess participating firms. The site provider claims that the parties are carefully screened. However, this type of screening is expensive and, if implemented extensively, would reduce the number of participating firms. The assurances about participant screening are followed by clear statements about the non-acceptance of liability by the provider and a clear warning that firms using the e-marketplace are responsible for protecting themselves against risk. In fact, the so-called 'marketplace' only helps firms to identify potential trading partners.

Identifying potential trading partners is a key element in the trading process, but partner identification is not sufficient to achieve an overall lowering of the barriers to international trade. Direct access to affordable services that could help to reduce the costs of negotiating and fulfilling contracts and to ensure the fulfilment of contract obligations was rarely available in this sample of e-marketplaces. The strategy of writing complex contracts, recommended

in Box 4.2, is unrealistic and ineffective. Complete contracts (foreseeing all contingencies) are impossible to write and expensive or impossible to enforce.

Do these characteristics make these e-marketplaces completely unviable? Not necessarily. Participating firms may be able to follow up initial contacts made on-line and obtain the necessary assurances through direct contact with the potential trading partner. This can be managed most easily if at least one of the trading partners is an intermediary.

There is some evidence to suggest that intermediaries are major users of open e-marketplaces. For example, a survey of users conducted by ECeurope.com Limited (Electronic Commerce Europe),¹⁶ a leading global public Bulletin Board service provider, suggests that more than half of its registered users classified themselves as trading houses, importers, exporters agents or distributors. This result supported the company's own perception of the types of firms that were using the e-marketplace. If other Bulletin Board services have similar user demographics this could suggest that the costs of completing transactions may be reduced because of an intermediary's capacity to offer logistics services, information about trade regulations and a means of payment. This might enable producers from developing and transition economies to gain easier access to a wider range of intermediaries, thus achieving the goal of widening access to global markets.

The next section considers the perceived value of e-marketplaces and various forms of B2B e-commerce from the vantage point of firms and key informants in the garments and horticulture sectors in Bangladesh, Kenya and South Africa.

16. The user survey was sent to 2000 registered users by ECeurope.com Limited (Electronic Commerce Europe), from whom 254 responses were received. The results of this survey are Copyright 2001 ECeurope.com Limited (Electronic Commerce Europe). All Rights Reserved. The authors thank ECeurope.com Limited and its Chairman, Jonathan Cutting, for permission to cite this material.

5. The Experience of Firms in Developing Countries

A more complete understanding of the potential for B2B e-commerce to facilitate the access of developing country firms to global markets requires information from the firms and other key informants. Section 3 and Appendices 2 and 3 provide details of the method used in this component of the research. Managers from a total of 74 firms in the garments and horticulture sectors were interviewed in 2002 (see section 3, Table 3.1), together with 38 key informants. Because of the relatively small sample sizes for each sector in Bangladesh, Kenya and South Africa, we have not provided cross-country comparisons of the use of Internet applications to support B2B e-commerce activities.

The respondents were asked about their experiences with B2B e-commerce and the open kinds of e-marketplaces and, more generally, about their use of Internet applications in their businesses. The results of these interviews confirm the observations in the previous section. There were limited opportunities for on-line trading using 'many-to-many' e-marketplaces. Relatively few firms were finding new customers through these e-marketplaces. Nevertheless, the Internet was seen as becoming more important for firms in developing countries. The firms were using Internet applications in a variety of ways to support their external business operations.

5.1 Firm use of open e-marketplaces

The use of B2B e-marketplaces appeared to be marginal, on the basis of the interviews for this study. The respondents' use of e-marketplaces is summarised in Table 5.1 which shows that:

- 57 firms or 77 per cent of the respondents had not registered with an e-marketplace.
- Of the remaining 23 per cent (17 firms) that had registered with one or more e-marketplace, only seven had completed at least one sale as a result of having posted trade leads or having been identified by a buyer using another type of application at the site, e.g. a direct buyer/seller link.

The majority of respondents in the two sectors suggested that 'many-to-many' e-marketplaces did not offer many benefits to their businesses (see Box 5.1). Their main concerns were a perceived incompatibility between the use of e-marketplaces and the formation of trusted relationships; support for product quality assurance; support for trade involving 'significant' volumes of product; and, the need to use logistics and marketing services provided by intermediaries.

Box 5.1: Perceptions of open e-marketplaces

'Users [garment producers and buyers] of e-marketplaces are on the margins of the industry – basically the lunatic fringe. The garments sector just isn't set up to deal with e-markets'.

'If the volume is not sufficient, the hassles of B2B e-marketplaces are not worthwhile'.

'There is a general lack of interest in B2B trading portals. As far as actual commercial transactions taking place over the Internet ... we are a long way from it. There is also the question of how appropriate e-commerce is for the clothing industry. At the moment its relevance is debatable'.

'On the vegetable side this would be very difficult unless we move into ready-to-eat meals or something like that ... I can't see going to the Web and saying 'I want to buy ten tonnes of beans'.

Table 5.1: Registration with open e-marketplaces

	Garments	Horticulture	Total	
	Firms	Firms	Number	%
Have not registered	41 [†]	16	57	77
Have registered, but no sales have materialised	3	7	10	14
Have registered, and sales have materialised	3	4	7	9
Total	47	27	74	100

[†] In this group, two firms had been registered with closed private e-marketplaces. These firms had not registered with any 'many-to-many' e-marketplaces.

Table 5.2: Registration at open e-marketplaces by size of firm

Number of Employees	Have Registered with an e-marketplace	Have not Registered with an e-marketplace	Total
≤ 500	13	21	34
≥ 501	4	36	40
Total	17	57	74

Table 5.3: Firms using the Internet to buy or sell products internationally

Number of Employees	Have Used Internet to Buy or Sell	Have not Used Internet to Buy or Sell	Total
≤ 500	8	26	34
≥ 501	8	32	40
Total	16	41	74

In the garments sector, six firms had experienced some involvement with an e-marketplace but only three had managed to conclude a sale. One Bangladesh firm had sold a small number of sweaters after its Web site was identified by an international buyer who had visited the Alibaba.com Bulletin Board service. This supplier did not have long-term established customers.

The other two firms making sales were from Kenya. The first firm produced tents, canvas goods, plastic containers and uniforms. It had sold some of its products internationally via an e-marketplace with which it was registered. The second firm manufactured ladies' garments and shirts. It had registered with a Web-based international trading site located in Dubai and had successfully sold its garments via this site on numerous occasions. It had also bought garment accessories such as buttons, linings and lace using the site.

Of the four horticulture firms that had sold their products via an e-marketplace, one was selling cut flowers and the other three had sold small quantities of fruits and vegetables.

Interest by firms in e-marketplaces is associated with firm size. Table 5.2 compares the firms registering with open e-marketplaces by firm size. While only 10 per cent of the larger firms had registered with an e-marketplace, 40 per cent of the smaller firms had registered, which is statistically significant.¹⁷

The significance of firm size does not extend more generally to the use of Internet applications for

finding buyers and sellers internationally. This is shown in Table 5.3, which indicates that for firms completing purchases or sales using any Internet application (including e-marketplaces and firm Web sites), the likelihood of reporting that products had been bought or sold using the Internet is unrelated to the size of the firm.¹⁸

The way in which these sales took place was far-removed from the prevailing view of e-marketplaces and B2B e-commerce. The e-marketplaces enabled an initial contact to be made. This contact was followed up using other channels such as telephone calls, e-mails and personal visits. An example of the way in which one fruit and vegetable exporter was involved in such activities is given in Box 5.2.

Similarly, in the garments sector the firms that had successfully completed sales as a result of their use of e-marketplaces had identified 'small deals', negotiated with buyers using e-mail, the telephone, fax and personal visits. Payments were made using letters of credit. The importance of off-line negotiations is emphasised again in Box 5.3 which shows the consequences of joining an on-line showroom for a firm in the garments sector.

Some of the firms were able to generate business through e-marketplaces without offering a product for sale. For example, one small food and beverage trading house was scanning large numbers of food and beverage e-marketplaces to identify potential trade leads and to source requested products from local suppliers. This respondent claimed that between

17. Spearman rank order correlation coefficient, $r = 0.350$, significant at the $p < .05$ level.

18. Test of independence of ordinal variables - buying and/or selling products using the Internet and firm size - using Goodman-Kruskal Gamma = 1.458, $p > .05$; Kendalls tau-b = 1.352, $p > .05$; and Stuart's tau-c = 1.332, $p > .05$.

Box 5.2: Using e-marketplaces to find buyers for fruits and vegetables

The firm was a small trading company in Nairobi selling fruit and vegetables. It had increased the amount of business it was generating by registering with an open e-marketplace and was deriving about one-third of its business through this channel. The company had registered with a number of e-marketplaces, including (at various times) arabsites.com and ecEurope.com. The company only registered with sites that did not charge a registration fee.

The firm was dealing with various e-mail-originated inquiries, including ones for Macadamia nuts from an agent in Switzerland, carrots from Romania, and oranges from the Ukraine. The owner of the firm outlined his procedures for dealing with an e-mail inquiry:

- Discard any inquiry from a firm with a hotmail or Yahoo e-mail address.
- Check to see if the company making the inquiry has a Web site, and possibly consult Web-based 'Yellow Page' business directories.
- Consider the product requested. It is better to deal with robust products (for example, fruit rather than vegetables), as the logistical requirements are simpler.
- Check the quantities, decide on sea or air transport and then contact a local shipping agent to find out about freight rates, timing, etc.
- Check on the Internet to see who the competitors are in the market being supplied, and in particular to see when there are supply gaps in the market.
- Follow up the inquiry with a quote based on the cost of local sourcing, packaging, freight costs and the exporter's mark-up. Contact with the customer is predominantly by e-mail.

From this point onwards, the process depended upon the particular customer's requirements. The customer might require a physical sample to be sent or a particular type of packaging to be used. If a contract was agreed, payment terms would be set. Dealing with these e-mail inquiries raised the same challenges as with orders coming through more traditional means. After some unfortunate experiences of non-payment both with both e-marketplaces and traditional customers, the exporter was demanding a 50 per cent down payment and the remainder on proof of shipment.

The values involved in these trades were generally low. The company's overall turnover was less than US\$30,000 per annum, and so the 30 per cent of business generated through bulletin board leads was less than \$10,000.

1-in-50 and 1-in-100 inquiries resulted in the successful completion of a deal. He felt that this success rate compared favourably with the use of off-line services such as trade directories.

The information provided by the interviews with firms indicated that there is some scope, albeit very limited, for the use of 'many-to-many' e-marketplaces to seek new business opportunities. These open e-marketplaces can be made to generate business with new buyers and suppliers in spite of their limitations with respect to the verifiability of the information provided and their lack of support services. They seemed to be most attractive to firms that already specialise in small, one-off sales and those that operate in highly fragmented markets.

5.2 Using the Web for information purposes

In addition to information about their experiences with e-marketplaces, the firms also provided information about their use of the Internet more

generally. All 74 firms in the sample could access and use the Internet and the Web but the respondents all said they preferred to rely primarily on interpersonal networks and face-to-face meetings to share certain types of information. More than 75 per cent of the 74 respondents indicated that their firms 'seldom' or 'never' used Web-based applications to obtain general information about input and product markets or information about specific customers or suppliers.

Of 62 firms in the sample that were asked about their Web sites, 66 per cent did not have one. Of those with a Web site, there was a positive correlation between firm size and the presence of a Web site based on a test of significance of the data in Table 5.4.¹⁹

In both the garments and horticulture sectors the Web sites were mainly 'static' sites. They were serving as marketing tools to promote production capabilities and to provide product and contact information. The firms with Web sites had received varying numbers of queries. Not all of these were product related or

19. Spearman rank order correlation coefficient, $r = 0.255$, significant at the $p < .05$ level.

Box 5.3: The on-line showroom

A firm had registered with an on-line trading service providing an on-line showroom. In the 12 months following registration, the firm received about 20 product inquiries via e-mail. Negotiations were entered into with three potential clients. After personally visiting all three companies, a successful transaction was negotiated with one of them.

This buyer became a regular client and accounted for six per cent of the exporter's sales. The respondent was satisfied with the business that had been generated, but he was not prepared to renew the subscription for the on-line showroom service because of the additional costs incurred in assessing the credibility of potential buyers.

directed specifically to their firms. Some respondents said these inquiries were along the lines of, 'you're in the garment business, do you know where I can get my hands on some yarn'. Only one firm, advertising product over-runs on its Web site, reported having recorded 'a few sales of very limited value'.

A relatively small number of firms were using Web applications. About 33 per cent of the 27 firms in the horticulture sample were obtaining information regularly about their product markets via the Web. The perceived benefits of Web use are suggested by the case in Box 5.4. While many firms supplied customers on the basis of long-term contracts and fixed prices, for those dependent upon auctions and spot prices, and those working through intermediaries, market price information could be valuable.

Only four firms in the horticulture sector indicated that they were using the Web regularly to obtain information about specific customers. One of these four firms was also using the Web to obtain information about specific suppliers. Yet another firm in the horticulture sample was also using the Web to obtain information about specific suppliers. A third way in which the Web was used, albeit only by two additional firms in the sector, was to obtain information about product input markets.

Respondents from four firms indicated that access to the Web had played a role in increasing the number of international buyers with which they traded. In three cases, there had been only a marginal increase. In one instance, Web use had led to a firm being

identified by an international buyer who was interested in one of its secondary products (see Box 5.5).

In one case, a single trader indicated that his use of the Web had 'revolutionised' the way that he did business. One other firm referred more generally to its use of the Internet (rather than specifically the Web) in this context. Another firm was obtaining seeds, irrigation equipment, agri-chemicals, fertilisers, packaging and boxes from a larger number of suppliers as a result of its use of the Internet. Overall, the Web was having minimal influence on the buying or selling of core products.

5.3 Supply chain integration: e-mail

The use of open e-marketplaces for buying and selling products was limited in this study. Nevertheless, it was clear that the Internet was having a considerable impact on the way that the firms were doing business. Use of the Internet appeared to be changing the way that firms involved in repeat transactions were co-ordinating their activities. The use of e-mail, in particular, was changing inter-firm communication patterns. E-mail was by far the most important Internet application for facilitating international trade for the firms in this study. It was used in the garments and horticulture sectors to facilitate communication with existing customers and suppliers. It was particularly important for conveying most of the information for generating repeat orders, including inquiries about production schedules and the progress of orders, prices from international and domestic clients, and delivery dates and related information.

Table 5.4: Frequency of firm Web sites

Number of Employees Web Site	Have Firm Web Site	Do not have Firm Web Site	Total †
*500	7	18	25
≥ 501	20	17	37
Total	27	35	62

† Note: Total sample is 62 firms due to missing data for Kenyan garments firms on this indicator.

Box 5.4: Use of the Web for information purposes

One company had directly benefited from using the Web as a resource for obtaining price information. This respondent was the proprietor of a small flower exporting firm that operated through a flower exporter in Nairobi. He frequently visited the floraHolland Web site to check average prices for specific periods of sale and for the types of flowers that his company exported to the auction. This was done in order to compare the prices listed at the auction site with those received from the local broker for his product.

He noted that 'truth is, you lose quite a bit. ... Not really sure the prices they tell you are sure'. He described how Web-based information had enabled him to challenge his broker about differences between what the broker was paying him and the prices paid for his products at the auction. The discussions with his broker often proceeded along the lines of, 'the average this day was 10 Ksh, so why are they giving only 3 Ksh!' He was planning to work with a new export agent because large discrepancies between the auction price and the prices paid by the local broker were being identified with increasing regularity and frequency.

E-mail also was providing a means of exchanging information about waybills and other invoices, logistics and shipping dates, and dates for meetings with clients.

Buyers were using e-mail to request quotes, exchange cost and price details, disclose supplier appraisals, communicate business forecasts and to plan for new capacity, as can be seen in Table 5.5. All but three of the 47 respondents or 95 per cent of the firms in the garments sector were using e-mail to place or accept orders with existing international trading partners. In general, these were generally followed up with paper invoices and related documents. E-mail was seen as offering a means of substantially reducing communication costs. Respondents stated that 'e-mail has substantially replaced the telephone for us – the result is miraculous for us in terms of cost' and 'one of our main expenses has always been at the level of communication and e-mail has been a blessing'.

In the horticulture sector, e-mail was regularly used for co-ordinating schedules. In many instances, it was serving as a substitute for more expensive alternatives, such as the telephone and the fax. However, it was also being used for new purposes. For example, marketing agents emphasised that e-mail was increasingly being used to send and receive digital photographs of unloaded produce to assess quality. One respondent observed that 'for our business, the most significant e-commerce innovation was the introduction of digital cameras'. The use of e-mail was not necessarily present throughout the value chain. As the example in Box 5.6 suggests, farmers in South Africa have been relatively slow to use e-mail. There

were very real constraints on e-mail use especially in the rural areas of Kenya as shown in Box 5.7.

The interviews with firm respondents and key informants suggest that there had been an extensive switch to e-mail communication among intermediaries, particularly importers and exporters. E-mail was contributing to considerable cost reductions and to greater ease in the transfer of complex information, although growing reliance on e-mail also was leading to the inconvenience of screening out junk mail or spam.

5.4 Extent of technological advance

The penetration of the public Internet and the development of the telecommunication infrastructure in Bangladesh, Kenya and South Africa are very different. In Bangladesh around the time of this study, there were 0.34 main telephone lines per 100 inhabitants, there were 0.25 Internet hosts per 10,000 inhabitants, 0.09 PCs per 100 inhabitants and about 2.3 per cent of those PCs were connected to the Internet. In 2001, Internet usage costs were among the highest in the world.

In South Africa, there were 11.4 main telephone lines per 100 inhabitants, there were 43.0 Internet hosts per 10,000 inhabitants, 6.18 PCs per 100 inhabitants and approximately 7.0 per cent of these were connected to the Internet. These country averages do not indicate the very great rural/urban disparities and those between different socio-economic groups. The cost of Internet usage was higher than the average for 77 countries surveyed (World Economic Forum 2002).

Box 5.5: Random identification via a Web site

The proprietor of a large family-owned avocado farming operation had developed a Web site that had led indirectly to the successful completion of a commercial transaction. An international buyer based in Chile identified the site by chance when conducting an Internet search. The buyer made an inquiry about one of the farm's secondary crops – nursery trees – via e-mail. This was followed by telephone negotiations and e-mail exchanges. Once the producer received payment for the trees, they were dispatched to Chile.

Kenya was not included in the Forum report, but it had about 1.0 main telephone lines per 100 inhabitants in 1995, and although the mobile subscription rates are growing, network expansion and costs of usage remain very high. Dialup Internet usage costs for 20 hours are approximately US\$ 123 per month, and there were only 34 Internet Access providers in 2000 (See AISI 2000 and USAID 2000).

Of the 47 firms in the garments sector, 63 per cent were using an analogue modem to access the Internet, 29 per cent were using Integrated Services Digital Network (ISDN) connections.²⁰ Only four per cent or two firms had access to a Digital Subscriber Line (DSL) or a cable modem. Similarly, in the horticulture sector, of the 27 firms, 52 per cent were using analogue modems and 33 per cent were using ISDN connections. In this case, two firms were using faster Digital Subscriber Lines and one was using a cable modem (see Tables A2.3 and A3.3 in the appendices). In the garments sector, 34 per cent or 16 of the 47 firms were using an Intranet and seven were connected to an extranet. Most of these connections were in South Africa and mainly for links

within the domestic market (Moodley *et al.* 2001). In the horticulture sector, two firms were using an Intranet, but none had access to an extranet (see Tables A2.4 and A3.4 in the appendices). Despite their predominant use of older ICTs, none of the firms felt directly pressured by their buyers to introduce more advanced technology. Those respondents who were enthusiastic about technology tended to regard their buyers in the industrialised countries as being somewhat 'behind the curve' in terms of their willingness to rely on e-mail exchanges in place of the fax and face-to-face communication for monitoring the production cycle.

5.5 The use of private, exclusive e-marketplaces

Respondents from two Bangladesh and two South African garment firms had received informal requests to participate in private, or closed, electronic trading environments. Some of their buyers were planning to implement auction trading. Two South African respondents had used the Internet to link into the e-procurement systems of large retailers in the United

Table 5.5: Use of e-mail to place or accept product orders

	Garments Firms	Horticulture Firms	Total
Always	24	11	35 (47%)
Frequently	20	5	25 (34%)
Seldom	0	7	7 (9%)
Never	2	3	5 (7%)
No response	1	1	2 (3%)
Total	47	27	74

Box 5.6: E-mail in the South African horticulture sector

Only a third of the South African firms were using e-mail to accept orders from buyers. Orders generally were being negotiated face-to-face or by telephone. E-mail was being used in the same way as the fax machine to follow up with 'routine' information on orders. For placing orders, communication with suppliers (the farmers) involved the use of the fax, telephone, and personal visits. The marketing agents indicated that their firms frequently sent out reports, newsletters and related information to growers via e-mail.

South African farmers were said to be relatively slow to use e-mail. There was a 'lack of sophistication on the growers side ... they are not tuned into technology'. In line with long established business practice, these firms relied strongly on personal contacts. 'Personal contact is the only way to get a feel of the market and farmers appreciate it ... they need to hear your voice once a week ... this makes them feel more involved'.

20. ISDN supports data transfer rates of 64 Kbps (64 000 bits per second). ISDN uses a modified Public Switched Telecommunication Network (PSTN) creating a basic 'call' rate of 64 kbits second and an all-digital end-to-end channels.

States in order to bid for contracts. One had participated in a private Internet-based 'auction'²¹ organised by a large discount retailer in the United States. The bid was successful and an order of 200,000 pieces was received. The other firm had participated in a closed, forward auction through another US retailer's Web site. Despite having offered the lowest auction price, the contract had been awarded to one of this retailer's existing suppliers.

In Bangladesh in the ready made garments sector, the participation of some firms in on-line auctions and the electronic entry of packing lists was mainly driven by buyer firms. This suggests that in this area buyers were playing a significant role in the way e-commerce is likely to develop. One Bangladesh firm had been invited to participate in a closed Web-based bidding process by an international buyer. The buyer invited a limited number of firms to participate in a bidding process. The firm had participated in two of these events for the same buyer – one in which it won a contract and one in which it did not.

A second firm in Bangladesh had participated in a similar closed bidding process established by one of its French buyers. After having received product samples from the supplier, the French company invited the supplier to participate in its on-line auction. A local buying agent based in Dhaka hosted the auction. Although some of the bidders had access to the Web they were not able to participate in these events from their offices. Instead, all local bidders had to be physically present at the local buying agent's offices at an appointed time to submit their tenders electronically. This firm had been informed by Walmart, one of its major clients, that it would be introducing a similar

on-line bidding procedure for its suppliers. Although participating in on-line bidding had become a regular occurrence for the firm, this respondent did not appreciate these events because he said that they had a tendency to push prices down to very low levels.

In this study, the firm sampling strategy was aimed at eliciting information about the use of Internet-based open e-marketplaces and it may therefore under-represent the prevalence of these private, exclusive Internet-based e-marketplaces.

5.6 B2B e-commerce or 'business as usual'?

The findings of this research are in line with those of an OECD study on the impact of B2B e-commerce on various types of supply chains. It concluded that 'at the level of market systems, the "new economy" is in fact not very different from "business as usual" ' (Desruelle *et al.* 2001: 6). In the present study, there were few signs of radical changes in the way that the firms were trading even when some forms of B2B e-commerce had been introduced.

In spite of the ability of garments firms in Bangladesh, Kenya and South Africa to access and use the Internet, most commercial practices were being conducted in the conventional manner. There was a preference for using existing personal networks and for face-to-face meetings to share certain types of information. E-mail was being used to support some kinds of information exchange. These included collecting and evaluating information about suppliers, customers, and products; negotiating the terms of a sale such as price, delivery date, etc.; ordering

Box 5.7: E-mail in the Kenyan horticulture sector

In Kenya, telecommunication penetration in rural areas is extremely low,²² but the mobile telephone market was experiencing explosive growth. Much of this growth was concentrated in Nairobi and Mombassa at the time of this study.²³ The rapid growth of mobile telephone subscriptions was providing Kenyan horticulture firms with a new means of maintaining contact with their growers. Slightly more than half of the 15 Kenyan respondents reported using cellular phones and text messaging.

All 15 indicated that their firms 'frequently' or 'always' accepted orders via e-mail from their established buyers. In Kenya international buyers place weekly orders for products throughout the growing season and international buyers frequently fax and e-mail their orders simultaneously.

Three Kenyan respondents were critical of a perceived unwillingness from their European buyers to make greater use of ICTs: 'They are dumb ... we couldn't believe it. We had to push them ... because telecom is so easy in Europe, they're used to calling someone. For us e-mail was a blessing'.

21. Although the respondents informally referred to these procurement systems as 'auctions', they were not involved in competitive bidding. They provided a means for existing suppliers to submit tenders for production runs. The suppliers did not have access to any information about the prices that their competitors were quoting to the buyer. Once the tenders were evaluated by the buyer, the successful supplier was notified, usually via e-mail and fax.

22. In late 2001, Kenya's fixed network capacity was about 480 000 lines, of which only 340 000 to 350 000 were connected to end users. There were only about 120 000 fixed lines serving more than 5.2 million households and offices in Kenya's rural areas. Outside urban centres, the basic infrastructure requirements for e-mail were virtually non-existent, see Mureithi (2001)

23. Mobile telephones exceeded half a million subscribers by October 2001 (Kane 2002). The cost of this service and of acquiring a mobile telephone, as well as the activation fees charged by the two mobile telephone operators, Kencell and SafariCom, were beyond the means of most rural Kenyans.

products; and after-sales services. Network connectivity was seen as a valuable tool, but generally it was thought to have a minimal impact on sales and purchasing efficiency. Its key benefit was a reduction in communication costs.

For horticulture firms in Kenya and South Africa, the use of the Internet was primarily associated with messaging and, to a lesser extent, with marketing. Few export sales with new clients were being generated through the use of the Internet. Industry-specific factors were clearly limiting the spread of the B2B e-commerce applications available to the firms in the sample. In this sector, as in the garments sector, trade depended on personal contacts and networks. Similarly, network connectivity was seen as an important tool, but was believed to be having little influence on sales prospects or the firms' efficiency.

This study shows that in 2001-2002 there was very little evidence of Internet-based transactions. The firms in the sample were responding to changes in their international supply chains by using a combination of on-line and off-line services. There were many different ways of implementing 'B2B e-commerce'. These depended upon a variety of firm, sector and country-specific factors. Within each sector there was differentiation between product categories and in the problems created by the high costs of telecommunication infrastructure development. In this study, 'B2B e-commerce' is best described as the use of:

- exchanges of business information via e-mail to support communication associated with negotiating and completing transactions;
- on-line Bulletin Boards serving as on-line 'dating' agencies for firms seeking new trading partners by facilitating initial introductions, but leaving the negotiation and completion to conventional methods; and,
- some limited use of closed or exclusive on-line auctions.

In the garments and horticulture sectors, trading relationships tend to be fostered over extended time periods and personal networks are strong. These business relationships are difficult to transfer to Internet-based e-marketplace systems. Establishing trust and maintaining direct contacts between buyers and sellers, as well as the structure and governance of the sector value chains, are the key determinants of B2B e-commerce developments. In addition, although some types of B2B e-commerce are being used, there was little evidence of a decline in the importance of intermediaries in these sectors.

Business relationships in the garments and horticulture sectors depend on many non-contractual activities and the information requirements are complex. The importance of the relationships among firms in the global value chains suggests that there is considerable potential for closed, private e-marketplace development.

The next section provides a discussion and interpretation of the empirical results presented in this section and in Section 4.

6. Business Relationships and B2B E-commerce

The term 'B2B e-commerce' encompasses many different applications, and this study illustrates the variety of the applications supported by open e-marketplaces. A limited number of these applications were actually used by firms in the garments and horticulture sectors in Bangladesh, Kenya and South Africa. The main use of the Internet was for e-mail communication and there was limited Web searching and information posting.

This study of e-marketplaces and firms in developing countries suggests that there is very limited use of B2B e-commerce applications to support commercial activities in these sectors. On-line trading activities have been identified, i.e. the limited use of Bulletin Boards to identify contacts and the use of other Internet applications such as e-mail to support supply chain integration. But these are not those envisaged in much of the analytical and policy-oriented literature on B2B e-commerce.

This result is not surprising. The potential for B2B e-commerce needs to be evaluated in the context of complex buyer-seller relationships. It also depends on the limited extent to which ICTs can be used to enable greater market transparency and lower transaction costs.

This section discusses the limitations of various types of B2B e-commerce in supporting arm's-length transactions between firms (section 6.1) and the ways in which inter-firm networks involving repeat transactions might benefit from the use of Internet applications (section 6.2). It then considers the issue of technological innovation and learning in the ICT area as it applies to B2B e-commerce developments (section 6.3).

6.1 B2B E-commerce and arm's-length transactions

This study has focused principally on Internet-based, open e-marketplaces. The popular view is that B2B e-commerce takes place in 'many-to-many' transaction-oriented e-marketplaces, sometimes in the form of 'screen to screen trading'. This is most likely when the products involved are standardised and easily valued. The availability of B2B e-marketplaces is expected by many analysts and policy makers to reduce trade-related transaction costs, to increase market transparency, and to reduce barriers to entry for developing country producer firms.

This expectation does not withstand empirical scrutiny. Can the findings presented in sections 4 and 5 be generalised to other sectors and countries? Horticultural products vary substantially in quality and trade presents many complex logistical challenges. Garments trading can also present problems of

description and valuation. Nevertheless, there are good reasons for suggesting that our findings have much broader applicability. We have been able to highlight important limitations to on-line trading in open e-marketplaces and the limitations more generally of various types of B2B e-commerce as a facilitator of global market access for developing country firms.

The key issue for B2B e-marketplaces is trust. If firms are to trade with 'strangers', they must be confident about both the reliability of the trading partner and the product information. The vast majority of e-marketplaces that we examined provided no assurances in these respects. Buyers were almost entirely dependent upon sellers for information about the products. The e-marketplace providers were not employing two possible means of resolving this problem.

First, they were not willing to assume the role of resellers or guarantors of either product or payment. The more open the e-marketplace, the more risky these roles become. Second, the development of third party trust services as guarantors of payment and providers of independent checks on product quality was incipient, at best. Further development of trust services seems likely to be expensive, thus undermining one of the key supposed advantages of this type of B2B e-commerce. Firms that opt to use most e-marketplaces have little if any means of assessing the risk of trading on the basis of the services provided directly by the provider.

One way of avoiding this problem is to trade on the basis of brands. A brand is a way of providing a signal to the market about a product. The product or company name provides an indication of certain characteristics of importance to the buyer. However, developing a brand is expensive and requires considerable economies of scale. Branding also reinforces the market power of large firms and is most effective when a producer is selling to many buyers. Developing country firms generally do not have the resources for branding in global markets, and they are more likely to be in a situation of 'many-to-many' or 'many-to-few' trading. Even if firms have access to the Internet for various types of B2B e-commerce applications that are tailored to their types of trading, this alone cannot be expected to provide greater access to international markets.

Firms frequently deal with information asymmetries in arm's-length transactions by using them mainly or solely for purchasing products that: (i) are easily valued; (ii) are not critical for the performance of the buying firm; (iii) are potentially recognised brands; and, (iv) are handled by resellers. This is the case,

for example, with MRO (maintenance, repair and operations) products. These products have the advantages of common standards and ease of description, and non-criticality for the reliability and continuity of the purchasers' core operations. MRO goods are low value, non-strategic items with limited impact on the products being manufactured by the buyer. A 2001 survey of European procurement managers found that:

'Most of the [e-commerce procurement] activity is within the maintenance, repair, operation supplies (MRO) sector, which includes items used in daily operations, such as pens and chairs, but not material used to manufacture goods. More than one-half the respondents who buy on-line have purchased MRO goods, while about one-quarter have bought materials used in manufacturing products' (IDC 2001).

Another strategy is to avoid using 'many-to-many' e-marketplaces and this is what we have found in our study. In B2B e-marketplaces, the processes of product valuation and risk management tend to proceed in a way that is similar to that which occurs in following up a conventional trade lead. Firms follow up trade leads using the trade press or at trade fairs. When buyers and sellers are accustomed to trading with firms that are not previously known to them, there may not be a need to follow up off-line. However, in most cases, experienced traders will have significant advantages over newcomers to the market. B2B e-marketplaces do not level the playing field.

B2B e-marketplaces may also be based on restricted participation, with the right of access determined by those involved in operating a site on the Internet or by firms using private extranet/intranet configurations. In this study, we focused on open B2B e-marketplaces, but we found a few instances of closed, exclusive e-marketplaces. These forms of on-line trading were being promoted by single large buyers within their supply chains to facilitate the streamlining of their sourcing activities.

The private, closed B2B e-marketplaces may not focus exclusively on facilitating transactions since they can support greater integration of their supply chains as well. Supply chain management software packages are being used to integrate the activities of buyers and key suppliers without necessarily including price discovery or supplier selection functions. Private e-marketplaces are also being designed to include both supplier selection and price determination mechanisms (auctions, request for quotes, catalogues) as well as supply chain management.²⁴

The limited evidence in this study about these closed types of B2B e-marketplaces suggests their use will grow as some buyers develop them for integrating their existing supply chains.²⁵ The closed types of e-marketplaces are likely to provide product quality information to suppliers and shipment tracking services, etc., but they are unlikely to promote purchasing of products from new suppliers.

In the horticulture sector, products have to be traceable and conform to quality standards and food safety regulations. The further development of these e-marketplaces is unlikely to open up markets and sales contacts for producer firms in developing countries unless they are already integrated within a supply chain for buying and selling complex and difficult to standardise products. In the garments sector, product safety and traceability are not as important, but reliability, quality and being able to work with customer designs, are salient factors. These features all favour repeat transactions between trading partners that know each other.²⁶ Arm's-length relationships and 'many-to-many' trading is not the norm in these and other sectors with similar characteristics.

6.2 Inter-firm networks and supply chain integration

Open B2B e-marketplace providers have rarely been able to resolve trust issues as established in section 6.1. This reduces their value for firms in developing countries. However, there is a second reason why open B2B e-marketplaces may not facilitate trade for these firms. This relates to the nature of inter-firm relationships and the impact of B2B e-commerce on transaction costs.

Mariotti and Sgobbi (2001) have argued that the use of ICTs does not necessarily promote anonymous arm's-length trading. The use of ICTs is expected to reduce the cost of inter-firm co-ordination more than the cost of intra-firm co-ordination. As a result, firms may favour outsourcing as the cost of co-ordinating activities with other firms falls. However, outsourcing does not necessarily mean relying on spot markets or establishing arm's-length relationships between firms in the supply chain. It can also lead to strong inter-firm networks and to closely tied relationships. Mariotti and Sgobbi make this point for the specific case of e-commerce:

24. Personal communication with Jan Stenger of eFoodmanager, interviewed December 2001.

25. Interviews with three fresh fruit and vegetable importers in the United Kingdom in 2001.

26. For an example of supply chain co-ordination using the Internet and involving a Vietnamese firm and a European supplier, see UNIDO (2000: 45).

'Yet, [the] market is not the sole co-ordination mechanism of on-line transactions. A quick surf across corporate Web sites shows that diffusion of e-commerce has been sided [sic] by an impressive growth of equity and not-equity technological and commercial agreements among firms. This evidence suggests that not negligible 'imperfections' exist in electronic markets too. Agreements between firms emerge as an intermediate solution to optimise the trade-off between market and hierarchy via e-commerce' (Mariotti and Sgobbi 2001: 114).

The importance of inter-firm networks and co-ordination for international trade has been emphasised by researchers working with the concept of global value chains.²⁷ This work has noted the increasing complexity of inter-firm networks in the global economy, particularly in sectors where global buyers have created production and distribution systems to meet their requirements without themselves taking ownership of production or distribution facilities. The development of such networks in the garments industry has been analysed by Gereffi (1994; 1999) and, in the case of the footwear industry, by Schmitz (1995; 2000). Similarly, the co-ordination of the activities of independent firms along the value chain in the case of the horticulture industry has been examined by Dolan and Humphrey (2000; 2001).

The work on global value chains suggests that greater integration is driven by factors such as: (i) the role of global buyers in product innovation which requires the supply chain to deliver customised products; (ii) the complexity of logistics arising from time pressure, seen clearly in parts of the horticulture industry; (iii) the increasing complexity of the regulatory environment (particularly, but not exclusively, in the food industry) and the rise of goods with 'credence' characteristics;²⁸ and, (iv) the importance of 'non-contractibles' in transactional relationships, such as the reliability of delivery and co-operation in product innovation.

The way that globally dispersed production and distribution systems are co-ordinated substantially influences how firms in developing countries are linked into the global economy. This has clear consequences for the types of B2B e-commerce that will be attractive for producer firms in these countries. Much of the enthusiasm about the B2B e-commerce opportunity has been predicated on the assumption that international trade for these firms consists mainly of arm's-length transactions which can occur easily in on-line environments.

However, in sectors such as garments and horticulture, a large volume of global trade is conducted through explicitly co-ordinated value chains. In contemporary horticultural supply chains, large retailers do not source products without conducting extensive audits of the suppliers' premises and their quality, management, traceability and related systems. The product is usually customised to the retailer's requirements. Information about product specifications and demand is often commercially sensitive and it is unlikely to be shared outside the existing supply base. New sources of supply are developed only after careful analysis of a supplier's production, quality and management systems.

Explicit co-ordination in the value chain is reflected in growers increasingly working under contract to exporters. Exporters develop close ties with importers and retailers. This reflects the growing complexity of horticultural products. Rapid product innovation, the need for reliable delivery of consistent-quality products and concerns about pesticide residues, environmental impacts and labour standards, have led to very tightly co-ordinated supply chains. Horticultural products have been transformed from basic commodities to differentiated branded products requiring high levels of consistency and quality. These are product attributes that the spot market has difficulty assuring.²⁹

In the case of garments, in contrast, global value chains tend to be fragmented and dispersed. There are large upstream and downstream firms as well as many small and medium-sized firms throughout the chain. There are few vertically integrated firms and few firms that cover the entire value chain. The global sourcing networks in the garments sector are multifaceted and dense. In this sector, market fragmentation creates a possibility for some types of B2B e-commerce to be implemented in different parts of the value chain.

The garments firms in this study were largely selling to buyers that define the products and specify the processes and standards to be used. In some instances, the garments buyers were also stipulating the sources of fabrics and trim needed to produce the final product. In some cases, certification and quality control were being handled by end-customer in-country buying offices, e.g. American retailers such as Gap, Target, JC Penney and Walmart. However, in most cases, certification and quality control services were contracted to independent local buying agents or to local branches of global sourcing and quality assurance

27. For a recent collection of work in this area, see Gereffi and Kaplinsky (2001).

28. Three types of goods can be distinguished according to their quality characteristics. 'Search' goods have qualities that can be clearly defined and specified in advance. The qualities of 'experience' goods can only be judged through consumption. 'Credence' goods have characteristics that cannot be directly experienced. Claims about their characteristics are either extrinsic to the product or hard to verify in later stages of the production and distribution process. Credence characteristics include hard-to-verify product characteristics such as safety and nutritional value, place of origin, and adherence to labour and environmental standards in production.

29. The way that supermarkets in the United Kingdom control the production, processing and transport of fresh vegetables from Africa without taking ownership of the product until it arrives in their distribution centres is discussed in Dolan and Humphrey (2000).

Box 6.1: Global sourcing networks

In South Africa, a key informant described the sourcing process:

'If JC Penney wants to source T-shirts from South Africa, this is what would happen. JC Penney will go to Linmark which is an international sourcing agent which has a South African office. Linmark may have enough information to identify the suppliers or else they will go to the Export Council. They will say to the Export Council that JC Penney is the customer, this is what they are looking for, and who do you think we can do business with? The complexity of the needed information is such that you couldn't do it by surfing through corporate Websites or through a B2B trading hub. It will be very painful and risky to do it electronically. The sourcing agent will need to know whether the supplier is able to deliver the right finish, the right quality, how reliable the supplier is, etc. It doesn't lend itself to e-commerce'.

firms such as Li & Fung, Linmark Westman International, or Mast Holdings.³⁰ These global sourcing agents are responsible for identifying vendors, placing orders, tracking production, and acting as quality and compliance assurers.

Our analysis of the garments firms indicates that it would be very costly in terms of R&D, overseas visits, sampling, etc., and very difficult due to lack of knowledge, to bypass agents to deal directly with end-customers. The agents already have a sophisticated market intelligence system and well-developed, multi-layered global sourcing networks. They have long-term relationships with overseas customers based on trust and reputation (see Box 6.1).

The importance of existing global sourcing networks in the garments sector was highlighted by a respondent in Bangladesh. He observed that one of the biggest mistakes made by those who promote the use of the Web is the idea that it will help to bypass intermediaries. He insisted that this view is wrong because it does not acknowledge that third party intermediaries play a central role in co-ordination and quality control in the garments sector. Another said that, 'you cannot just locate JC Penney on the Web and then hope to do business with them – it doesn't work that way'. He argued that establishing a business relationship with JC Penney is a complex process that entails input factor inspections and quality control.

These global value chain structures have clear consequences for B2B e-commerce possibilities. They largely rule out the use of spot markets and 'many-to-many' e-marketplaces. For some products, particularly in standardised, low-end market segments, the use of private, buyer-controlled e-marketplaces and competitive bidding between suppliers may become more evident. For all products, greater supply chain integration and co-ordination are likely to lead to an increasing emphasis on 'e' competence. Global buyers increasingly expect their suppliers to possess basic

competencies in using ICTs. E-mail use is extensive and it seems that e-mail and the Web will be used more extensively for value chain co-ordination. Production schedules, quality information, shipping and inventory management along the value chain could be better integrated by using some types of restricted-access Internet applications in areas related to supply chain management.

Value chain integration is already evident in the electronics industry. Examples such as Cisco Systems' use of ICT for supply chain co-ordination are cited in the literature.³¹ But the nature of the application of ICTs to achieve value chain integration in other sectors will vary. Following Sturgeon (2002) and the value chain work of Gereffi, Humphrey and Sturgeon (2003), it may be that the types of e-marketplaces that develop will correspond to two different types of market structures.

In one type of market structure, technical standards simplify the interfaces between firms and reduce asset specificity. The exchange of complex information is feasible without customised interchanges and both buyers and sellers work with a variety of partners. The cost of switching value chain partners is relatively low. This market structure would favour industry-level, relatively unrestricted e-marketplace exchanges. Depending on the degree of concentration in the industry, the number of buyers and sellers could be quite small.

In a second type of market structure for products where information is difficult to codify or standardise, relationships between buyers and sellers are more likely to be bilateral and exclusive, and this would favour closed, firm-sponsored e-marketplaces or direct value chain co-ordination without using e-marketplaces.

30. Linmark Westman International is part of the Taiwanese-owned, but Singapore-based, Roly International Holdings Group; Li & Fung is the largest global garment sourcing company in the world and has its headquarters in Hong Kong; Mast Holdings is an American company and is owned by The Limited.

31. See, for example, Christiaanse and Markus (2003: 2).

In this study, three main business related reasons appeared to account for the fact that the producer firms in developing countries were not making greater use of the potential offered by the Web. The first was the importance of developing trusted relationships with trading partners. Many respondents indicated that Web-enabled relationships can not be substituted for face-to-face encounters. One respondent said, 'Either you go to visit or they come here. After that they feel comfortable... seeing and feeling is very important'. Another suggested that 'the buying and selling relationship is 100 per cent about personal relationships. Anyone who forgets that is dead'. And yet another – 'this is a closed industry, therefore, we need a recommendation ... we don't just ship to anybody'.

The second reason was that many firms were not actively trying to find new outlets for their products. They either had a stable customer base or were seeking to establish one. This involved building relationships through personal contacts and networks. This was one reason that firms in the horticulture sector seemed to shun auctions. According to two large horticulture firms in Kenya, prices at flower auctions (electronic and traditional) were unstable and generally lower than those offered by long-term contracts with large retailers. These respondents preferred to operate with a system that arranges a customer before the product has been planted.

The third reason was that firms were often cautious about using the Internet or e-marketplaces to develop new sources of supply when the risks arising from poor supplier performance were high. When it was suggested to one large horticulture firm that seeds could be purchased on the Web, the response was that core inputs, such as seed supplies, were so important to the business that they would only be sourced from known suppliers. Agronomists from the firm visited seed suppliers to verify the quality of the product prior to purchase.

These considerations varied with the size of a firm and the nature of its purchases as well as with the criticality of the products being purchased. One respondent said that although they accounted for only a very small percentage of the firm's overall input purchases, packaging materials, seeds and packing equipment had been purchased on the Internet. Another pointed out that technical publications that were not available in Kenya had been purchased using the Web.

It should come as no surprise that private, exclusive B2B e-commerce arrangements are likely to be more attractive to buyers and sellers within established supply chains. Earlier uses of ICTs supporting information processing and corporate communication networks were developed in both open and private or corporate forms. For example, leased line networks were developed by the large firms (and by smaller

firms through network sharing arrangements) on a closed basis at least since the 1960s (Mansell 1993; Noam 1992).

Internet protocols can be configured for the open access to the Internet or for private, restricted access networks (extranets/intranets). This bifurcation of networks and applications is consistent with the interests of some buyers and sellers in maintaining a degree of information asymmetry. A transaction cost analysis may suggest that there are strong drivers to eliminate or reduce such asymmetries in order to reap efficiency gains. However, our analysis of the industrial structure and commercial practices of garments and horticulture firms in this study suggests that there are incentives to maintain such asymmetries. This is likely to favour the development of private, exclusive B2B e-marketplace developments.

6.3 Learning, intermediaries and global networking

The foregoing observations about how some types of B2B e-commerce are facilitating commercial trading resonate with the experience of technological innovation in the ICT sector more generally. It is crucial to examine the specific technologies and applications that are in use to understand their potential impact. There are strong parallels between our analysis of the importance of global value chains and market structures for the development of Internet-based B2B e-commerce and experiences of the development of information systems to support intra- and inter-firm information processing over the last two decades (Roche and Blaine 2000; Mansell 2002; Mansell and Steinmueller 2000). Some of the work on information systems focuses on the experiences of firms and public sector organisations in developing countries (Roche and Blaine 1996; Avgerou and Walsham 2000). The central message of this research is that:

'Information and communication technologies, and related systems, have significant potential to aid the economic growth and improvement of social conditions in the developing world; however, such potential is not released by simply transferring technologies and processes from advanced economies. ... people involved with the design, implementation and management of IT-enabled projects and systems in the developing countries must improve their capacity to address the specific contextual characteristics of the organization, sector, country or region within which their work is located' (Avgerou and Walsham 2000: 2).

Research on the development of information systems also confirms that the role of intermediaries is often essential in facilitating the learning processes that enable users to assess whether the applications are beneficial to them (Steinmueller 2000; Lundvall and Johnson 1994; Johnson et al. 2002). The types of B2B e-commerce, i.e. e-mail, Bulletin Boards, that become attractive to producer firms in developing countries depends upon whether the system designs reproduce capabilities for comprehending and utilising information that is essential for trading (Lombard and Ditton 1997; 2000).

Although the use of digital photography to support B2B e-commerce activities may enable improved information exchanges, research is needed to identify the tasks for which an electronic medium actually enhances the information exchanges that are necessary for transactions. Learning to use the technologies that may be used to facilitate B2B e-commerce will also be a relatively slow process and this is especially so for smaller firms.

The difficulties of building capabilities for developing and using various types of B2B e-commerce, and the complexity of global value chains which involve many intermediaries, buyers and suppliers, create both barriers and opportunities for the use of Internet-based applications. In many instances, in international markets, intermediaries are not simply serving as costly friction in an otherwise friction-free marketplace. They are playing key roles in the markets in which they operate. There may be a potential for those roles to be performed more effectively and efficiently if the intermediaries and the other firms in the supply chain take advantage of some forms of Internet-based B2B e-commerce. However, this potential must not be taken for granted and B2B e-commerce must not be assumed to be the lowest cost alternative.

If intermediaries and suppliers and buyers are tightly linked within the global value chains, they are likely to remain so, even as electronic means of facilitating trade are introduced. Despite the potential for global networking offered by the Internet, there is no a priori reason to expect that B2B e-commerce will replace conventional means of organising trade.

The next section answers the research questions set out in section 1 and shows how our analysis should influence B2B e-commerce and other policies aimed at improving developing country producer firms' access to international markets.

7. Conclusions and Policy Implications

Facilitating B2B e-commerce is high on the policy agenda of national governments and international development agencies. The United Nations High Level Panel on Information and Communication Technologies, for example, concluded in 2000 that when firms in developing countries are connected to global networks they will be able to compete on a more equitable basis (United Nations 2000). This view was echoed in the UK Government White Paper on 'Making Globalisation Work for the Poor' (Department for International Development 2000). The focus of the G-8 countries' Digital Opportunities Task Force (2002) is shifting to broader 'e-development' issues including a greater concentration on ICT access and connectivity for health, education and skills-building initiatives. However, applications for businesses and local entrepreneurs are still high on the priority list for new investment.

Viewing B2B e-commerce as the great 'equaliser', most policy documents focus on resolving the digital obstacles to the spread of B2B e-commerce and on taking advantage of 'digital opportunities'. This report also recognises that there is a 'digital divide' and that there are many opportunities. However, we do not regard digital technology as the highest priority issue for developing country producers who are seeking to strengthen their export position in the global marketplace.

7.1 B2B e-commerce: new opportunities or marginalisation

In this project our research questions focused on whether B2B e-commerce is really creating new opportunities for producer firms in developing countries or whether it threatens to marginalise these firms because they are not responding to the vision for B2B e-commerce that is so prevalent in the literature. We asked first:

Is B2B e-commerce opening new and cheaper access to global markets for developing country producer firms or, conversely, is it strengthening existing buyer – producer relationships and reinforcing existing power relations?

B2B e-commerce, in its open, 'many-to-many' e-marketplace form, is not very effective in opening global markets for producer firms in developing countries in the garments and horticulture sectors. This is because of the nature of business transactions in the two sectors.

Measures to tackle the 'digital divide' by improving ICT infrastructure do not address this problem, and attempts to create electronic trust mechanisms are not likely to change the picture significantly. Davenport et al. (2001) and others confidently

suggest that the resolution of trust issues is a key element in the take-off of independent B2B e-marketplaces. This confidence is misplaced. On-line trust mechanisms cannot address many of the trust issues highlighted in this report.

Some types of Internet-based B2B e-commerce are developing, but these appear to be the private, exclusive models, where access is restricted to firms that are already integrated within their sector supply chains. Some types of B2B e-commerce using e-mail and Bulletin Boards are helping to reduce communication costs for producer firms in developing countries. They are also helping to reduce the costs of accessing certain types of product and price information.

Improved access to global markets for developing country producer firms does not follow simply from these and other types of B2B e-commerce. Some costs of transactions associated with trading in the global market may increase as a result of the need to invest in hardware and software. The costs of maintenance of equipment and of accumulating a new skills base may also increase. Producer firms in developing countries are moving to implement some types of B2B e-commerce, but the technology is being implemented within a much wider strategic context. This study shows that in 2002 the role of 'many-to-many' B2B e-marketplaces was marginal. Our interviews with major buyers also confirmed that this was the case. The forms of e-marketplaces that were developing were not destabilising the existing positions of firms within their global value chains.

B2B e-commerce was not opening up new or cheaper access to global markets. Where new access possibilities were available to developing country producer firms, this was much more likely to be due to changes in a firm's position within its existing global supply chain. In sectors such as horticulture and, to an extent, garments, the position of global buyers is becoming stronger in the global supply chains. This study suggests that the structure of these chains and the co-ordination needs of buyers and sellers will strongly influence the specific types of B2B e-commerce that develop in the future.

There are few if any signs that B2B e-commerce in the form of 'many-to-many' e-marketplaces is responsible for strengthening buyer-producer relationships or reinforcing existing power relations. Nor does it appear to be weakening buyer-producer relationships or undermining existing power relations. Further research is needed to evaluate the implications of private, exclusive e-marketplaces.

In this project, we asked secondly about how sophisticated ICTs are affecting the prospects of developing country producers.

Are developing country producers being marginalised by the spread of B2B e-commerce trading relationships that depend on sophisticated ICTs and on efficient logistics systems, electronic payment systems and new certification procedures?

The garments and horticulture firms in this study were based in Bangladesh, Kenya and South Africa. They were selected on the basis of key informants' and local researchers' assessments that they were trading their products on the international market and that they were likely to be using, or planning to use, some form of B2B e-commerce. A few firms were identified through our analysis of e-marketplaces.

The spread of the Internet and the development of the telecommunication infrastructure in these countries are following distinct patterns. The 'digital divide' between these countries and the wealthy countries is huge. However, regardless of whether the firms that participated in this study were located in rural or urban areas, they all had access to the Internet in 2002. They were all using computers and most were making use of e-mail communication and to a much lesser degree, the Web. The technology in use was not leading-edge as connectivity was mainly achieved using analogue networks and modems (see Appendices 2 and 3).

There were no signs that developing country producers were being marginalised by the spread of B2B e-commerce or by the emergence of trading relationships that depend on sophisticated ICTs. Despite the high costs of accessing and using the telecommunication infrastructure in Bangladesh and Kenya, and to a somewhat lesser extent in South Africa, the use of the Internet and a limited number of applications was enabling firms to bypass the voice telephone infrastructure. They were using data communication services provided by Internet Service Providers, and even cyber-café's. In this sense, the use of the Internet was offering a basis for the inclusion of these firms, rather than their marginalisation.

Market conditions for producer firms in developing countries are influenced more by the existing market structures and commercial practices than by the introduction of new ICTs. However, if buyers in the industrialised countries do increase their use of broadband networks and extend the use of extranet/intranet applications in support of global supply chain co-ordination, the gap in the extent of digital network developments and the costs of Internet access could become a barrier for producer firms in developing countries.

Similarly, buyers in the supply chains in which developing country firms are integrated may move to introduce costly supply chain management systems

that require sophisticated information management systems, costly data input procedures, and the need to provide and monitor commercially sensitive information in electronic form. The consequences of weak capabilities and restricted financial resources among producer firms could become more visible in this case. This could pose a threat that would contribute to a marginalisation of producer firms in developing countries.

It may not be in the buyers' interests, however, to promote greater use of sophisticated ICT systems in the short- and medium-term. In the garments and horticulture sectors, the producer firms repeatedly claimed that the sector characteristics of their industries are creating strong incentives for 'business as usual'.

7.2 Implications for policy makers and practitioners

B2B e-commerce has been growing more slowly than expected at the end of the 1990s in Europe. In the United States, B2B e-commerce is certainly growing, but not nearly as quickly as predicted initially. When the commercial practices of firms have been examined in detail at the firm level on a sector-by-sector basis in the OECD countries, the key predictor of change in the sector value chains is a change in commercial practices, not in technology: '... the "new economy" is in fact not very different from "business as usual".' This conclusion is confirmed by the results of our study and it has major implications for policy. Our third major research question was:

How can government or technical assistance agencies help producers in developing countries to participate in B2B e-commerce developments on an equitable basis?

Our strongest recommendation to policy makers and practitioners is that achieving equitable participation in B2B e-commerce development requires a wholesale rethinking of the goals of policy in this area. The goals of B2B e-commerce policy and ICT strategies need to be linked first and foremost to the goals that are set for the more equitable participation of producer firms in developing countries in international markets. These goals need to come first and they need to inform the priorities for government policy and measures taken by technical assistance agencies.

In this section, we comment on six of the key pillars which normally support B2B e-commerce policies and strategies.³² We argue that some of these pillars should receive a lower priority when the main objective is to strengthen the position of producer firms in their global value chains. We follow this assessment with a discussion of the fundamental importance of gaining a much better understanding

32. The notion of policy 'pillars' is adapted from Shadrach (2003 forthcoming) who links the need to re-assess the priorities for policy to the equally important need to undertake participatory research and evaluation of ICT initiatives for development.

of value chains and business relationships (section 7.3) and with suggestions about short- and medium-term measures that can be taken by policy makers and practitioners (section 7.4).

Poor ICT infrastructure

Much B2B e-commerce policy is focused on reducing the 'digital divide'. It puts technology first and encourages strategies to increase the rate of growth of the spread of telecommunication networks, Internet Service Provider services, etc.

This study shows that the absence of a robust and cost-effective telecommunication infrastructure is not a key factor influencing the types of B2B e-commerce that are being used by producers in developing countries. In fact, for some types of B2B e-commerce, an extensive telephone network is not required. Present uses of B2B e-commerce require reliable and cheap access to the public Internet (which means there must be a possibility to access and use basic links to the underlying telecommunication infrastructure). These uses also require personal computers and a reliable source of electricity. There is no evidence that a more sophisticated ICT infrastructure would significantly change the way firms engage with B2B e-commerce applications.

Many firms are using analogue networks and modem technology which means that there are limitations on their use of the Web. Telecommunication service reliability and high costs continue to be significant issues in some developing countries, but they should not be the principal concern in the light of the preferred uses and configurations of B2B e-commerce at present.

While policy and regulatory measures to extend access and reduce the cost of using networks are important, the policy lesson for B2B e-commerce is that further take-up depends on how value chains and business relationships develop. This issue is not the principal focus when all the attention rests on the ICT infrastructure as the driver of change.

Poor transport infrastructure

There is no point in trying to sell on-line if products cannot be delivered at reasonable cost to the buyer's desired locations. For digital or immaterial products this is not a problem. But most developing country exports are not digital, they are material. The availability of some forms of B2B e-commerce often raises expectations for faster delivery. This makes the transport infrastructure even more critical for the development of B2B e-commerce and for the participation of producer firms from developing countries in international markets. These firms must meet increasingly stringent quality and time-to-market requirements.

The policy priority is to address 'old' issues of providing efficient road and rail links, better port facilities and faster customs clearance. This is essential for operating in the global economy. Far from

disappearing in the digital age, these issues acquire increasing importance, but they tend to be neglected in the policy debate on B2B e-commerce.

Weak or absent legal and institutional infrastructure for B2B e-commerce

The absence or weakness of the legal and institutional infrastructure attracts much attention in B2B e-commerce discussions. There are major international and regional efforts to establish frameworks and rules for digital signatures, electronic security and payment systems.

These measures do not appear to be critical for the types of B2B e-commerce that are currently being implemented in developing countries. This is because there is very little on-line buying and selling of developing country producer firms' products. Contract commitments and payments are not generally being made on-line. Conventional commercial practices in these areas are favoured by firms, even those which find buyers or suppliers through B2B e-marketplaces.

Once again, there is no evidence that radical new business models would emerge if these legal issues were resolved. We found no pent-up demand for on-line trading in the sectors studied. Improving legislation and rules for B2B e-commerce is desirable, but it should not be a priority for policy makers who want to improve access to international markets for exporters in developing countries.

Weak trust infrastructure to support B2B e-commerce

A trust infrastructure to support B2B e-commerce with respect to quality assurance and buyer and seller redress may be important for some kinds of transactions. This is especially so for small value trading of standardised products in 'many-to-many' markets.

But the sophistication of electronic trust services comes at a high price. The advantage of a very common form of B2B e-commerce observed in this study – the use of Bulletin Boards – is that they are cheap and do not offer complex services. For SMEs, this lack of sophistication and cheapness is an attraction. For trade in many products, however, the information requirements are very complex and they are difficult to address through on-line trading, certification and redress systems. Business processes that are non-contractible such as reliability and willingness to solve problems with business partners are very important, but they are not addressed by such systems.

More sophisticated technical solutions do not seem likely to be regarded as substitutes for existing means of building trust through personal contacts and face-to-face relationships. For boosting opportunities for producer firms in developing countries much more attention needs to be given to commercial practices and especially to the role of intermediaries and brokers in building trust within global value chains.

Lack of preparedness, awareness and need for training and capacity building

Lack of preparedness, awareness and the need for training are very important issues. There is a need to build capacities in ICT use and general capacities in the industrial sectors of developing countries. ICT competence is becoming a pre-requisite for inclusion in global value chains. On-line buying and selling may not be developing, but there is a clear growth of on-line co-ordination of supplier-buyer relationships.

But policy makers and practitioners working in technical assistance agencies should ensure that their responses are not driven by broad-brush ICT and B2B e-commerce strategies. Instead, their responses should be driven by an understanding of how producer firms are integrated in their supply chains and by what they can do to combine their sector-based strengths with the potential of carefully selected applications of ICTs.

Capacity building and training are crucial for operating in international markets, but the contribution of B2B e-commerce must be carefully defined. Capacity building initiatives must be governed by the context in which producer firms are operating in international markets.

Enthusiasm, resistance and cynicism about B2B e-commerce

In the B2B e-commerce policy area there has been a tendency to assume that managers of firms based in developing countries will uniformly welcome the application of sophisticated ICTs and that reductions in transaction costs will justify their enthusiasm. These assumptions are unhelpful, if not wrong, in two ways.

Enthusiasm on the part of younger managers is contrasted with resistance on the part of older managers. The potential for reduced transaction costs is not a convincing argument for persuading the sceptics.

This study shows that many younger entrepreneurs in developing countries are enthusiastic about the new technology applications. When these entrepreneurs are able to access and bear the costs of digital technologies, they are sometimes ahead of their buyers in the industrialised countries in devising effective means of integrating these technologies into their business practices. They are sometimes critical of their industrialised country counterparts for their reluctance to introduce changes in commercial practices and routines.

However, there is resistance to changes in commercial practices and to the adoption of ICTs in the case of many of the older managers for whom strong inter-firm networks and ties are at the core of their business strategies. The issue for policy makers and practitioners is to avoid simply assuming that the 'old' commercial practices are less efficient than the new electronic means of trading. This creates cynicism which may mean that inefficient practices become entrenched and the effective deployment of some types of B2B e-commerce is postponed. In some cases, the use of ICTs does lead to reductions in transaction costs and to efficiency gains, but that is not the whole story. There are many non-ICT related costs to be considered by producer firms.

Table 7.1 summarises these six key pillars that are usually seen as obstacles that stand in the way of the rapid development of B2B e-commerce in developing countries. It also summarises our assessment of their relevance and priority based on the results of this study.

Table 7.1: Obstacles to B2B e-commerce and assessment

Obstacle	Assessment
Poor ICT infrastructure	Not as relevant as often assumed.
Poor transport infrastructure	Very important.
Weak or absent legal and institutional infrastructure	Not as important as often assumed.
Weak trust infrastructure for certification and effective redress	Open e-marketplaces are not assuming the risks and expense need to generate trust. The off-line trust infrastructure is a higher priority.
Lack of preparedness, awareness and need for training and capacity building	Training and capacity building should not be driven by broad-brush ICT and B2B e-commerce strategies.
Enthusiasm, resistance and cynicism	Getting the balance between 'old' business practices and appropriate 'new' B2B e-commerce solutions is a high priority for both younger and older managers of producer firms.

7.3 Commerce first, technology second

Value chains and business relationships are the key issues for policy makers and practitioners in the B2B e-commerce area and in efforts to enhance producer firm prospects for trading in global markets.

Governments and development agencies are trying to 'mainstream' the use of ICTs. This is a slow but essential process and it must apply to strategies for B2B e-commerce too.

This means that the promotion of B2B e-commerce should be tackled through sector- and industry-specific studies. These studies are needed to shed greater light on how the organisation of global value chains is affecting supplier-buyer relationships and on the incentives of firms to exchange information and to negotiate prices in on-line and off-line ways.

Our identification of major discrepancies between the prevailing vision of Internet-based B2B e-commerce and the experience of exporting firms in developing countries suggests the need to re-assess existing 'e-readiness' policies. These policies should give much greater attention to the characteristics and positioning of developing country producers within global value chains. They should focus on the technical, financial, and organisational structures within which these firms operate.

It is essential to build up a base of empirical knowledge about the many ways in which analogue and digital technologies are being used by producer firms in developing countries. Always focusing on the potential of the most sophisticated ICTs is a high risk strategy. The greatest risk is a failure to build on the strengths of producer firms that are integrating older and newer technologies into their businesses in useful and cost-effective ways.

This study emphasises the importance of firms' commercial practices and the operation of exporting firms within their industrial structures. It offers insights into the priorities for an informed discussion about the opportunities and limitations of 'many-to-many' e-marketplaces and into the likely development of private, exclusive on-line trading applications using the Internet. The latter is likely to have substantial impacts on global supply chain integration in the medium-term and on the positions of producer firms in developing countries within these chains.

On the basis of this study our key propositions for B2B e-commerce (in contrast to those set out in section 2) are as follows:

Proposition 1: B2B e-commerce 'many-to-many' e-marketplaces are not the most important development for producer firms in developing countries that are already trading in global markets. Instead, private, exclusive Internet-based trading and new ways of integrating supply chain information for

better co-ordination are the key developments.

Proposition 2: 'Many-to-many' e-marketplaces may be supported by business functions to help firms to transact on-line in a few cases, but firms in developing countries are not likely to change their off-line business practices and relationships unless they see major benefits for their positioning in global value chains.

Proposition 3: B2B e-commerce does not offer greater returns to firms in developing countries than other channels for conducting trade. Producer firms in developing countries continue to rely on their preferred intermediaries and conventional trade channels. Geographical distance still matters despite the distance-reducing potential of the Internet. E-marketplaces only reduce transaction costs marginally.

Proposition 4: 'Many-to-many' B2B e-commerce is unlikely to help most smaller firms to enter global markets. This is because of the high costs of global branding, the need to form trusted relationships, and the need to meet the quality and other standards of buyers in global value chains. Although smaller firms may register at 'many-to-many' e-marketplace sites or use the Internet to find new trading partners, they are not more likely than larger firms to buy and sell their material products using the Internet, and very few in this study were doing so.

Given these propositions and the overall conclusions of this study, what are the next steps?

7.4 Next steps: what can be done?

We conclude with: (i) observations about the need for a radical change in policy priorities that will help stakeholders in developing countries to find their own region- and value chain-specific solutions for developing B2B e-commerce; (ii) suggestions for making more realistic assessments of B2B e-commerce opportunities and obstacles.

What should policy makers and practitioners who are keen to assist their local producers do?

Change the pillars of B2B e-commerce policy

The first pillar of policy for B2B e-commerce should be the firms that are trading internationally. The assumption must be that the configuration of problems varies enormously between and within developing countries, and often also between and within sectors. Finding out from those firms seeking to increase exports and other local organisations what obstacles they encounter in their region or sector is essential. Linking this information to an improved understanding of the firms' position in the global value chain and to assessments of commercial practices and procedures is an essential first step. Only then can a judgement be made on priorities for action. Another pillar of policy should be to recognise

that economic changes and globalisation mean that participation in international markets and global value chains is getting harder for firms producing material products. Although some countries are developing forms of B2B e-commerce to support trade in intangible or immaterial services, for many developing countries, the expansion of international trade depends on trade in products that require close co-ordination with buyers and tight integration within global supply chains. As producers face greater competition in their distant markets, investing in capacity building in their sectors is also essential.

B2B e-commerce policy should not be a 'policy pillar' at all in the context of enabling producer firms to achieve improved access to their global markets. Instead, it should be recognised that there are no easy B2B e-commerce formulas that will launch developing country firms into new markets or help them to find new customers. What producer firms actually do with the ICTs they have available to them and, especially, how they are using or want to use the Internet, should be assessed in the context of the first two pillars, ie. from the standpoint of the local stakeholders and from the standpoint of the players that influence their external markets. This means that although investment in the most sophisticated ICTs and in older networks and digital applications may be important for producer firms, the choices should be made based on what is best for highly differentiated sectors and firms in developing countries, and not on a highly technical and abstract assessment of technological potential and its supposed impact on transaction costs.

Towards realistic assessments of B2B e-commerce opportunities and obstacles

The radical change in B2B e-commerce strategy which gives priority to value chains and business relationships will address the real operational challenges that producer firms within their global supply chains are facing. Policy makers and practitioners in the industrialised and developing countries should put their resources into encouraging 'bottom-up' initiatives to define effective uses of ICTs and specific forms of B2B e-commerce in the wider context in which firms are trading.

Policy makers, business leaders and practitioners working in technical assistance agencies need to fashion B2B e-commerce policies that match and enhance the capabilities of the firms they are meant to support. There is a need to fund more research to make careful assessments of the availability of on-line trading and off-line alternatives. The cost, skill,

organisational and other features of on-line and off-line alternatives must be considered if policies to promote 'e-readiness' are to succeed. The most promising approach will be to include relevant stakeholders in both the analysis of the problems and the formulation of new initiatives.

The stakeholders include the local enterprises that (intend to) use B2B or other forms of e-commerce, the producer firms, the business associations, Internet Service Providers, telecommunication companies, relevant government agencies and the main foreign buyers of local products. There are already some venues and fora in developing countries that are responsible for capacity building initiatives in the ICT area. For the most part, these focus on the 'old pillars' of B2B e-commerce or ICT strategy.³³ This is partly because funding is made available to support investment and capacity building in the ICT area.

Despite the user or stakeholder-centred intentions of the managers and sponsors of these initiatives, they do focus on the 'e' or the 'digital' to a much greater extent than they do on the sector- and firm-specific needs. Although digital opportunity initiatives are important, much more must be done to connect those participating in the ICT-using sectors with those who can help to assess and evaluate how to proceed with realistic ICT or B2B e-commerce strategies. It will be costly both in time and money to shift the focus to the real needs of producer firms and to tailor their choices of technology and on-line and off-line practices to enhance their participation in global markets. In our study, it is clear that there is a basis for some kinds of effective Internet use to build upon.

Key to the 'new pillars' approach is that the relevant actors are able to deepen their understanding of the problems and own the recommended solutions. Outside consultants are not superfluous in this process, but they need to work in a participatory way. This type of participatory approach will work best when the focus is on particular value chains and locations. Policy makers keen on this approach will need funding to resource the effort that is needed.

- Funds are needed to conduct an appraisal of trade opportunities and obstacles on a systematic basis across sectors and countries;
- Expertise for co-ordinating appraisals that connect industrial sector representatives with those who can help define realistic uses of ICTs; and,
- Working with industrial sector fora, other intermediaries, and the firms themselves to decide the priorities for ICT or B2B e-commerce related actions.

33. See for example, Commonwealth Telecommunication Organisation, Building Digital Opportunities Programme, at www.cto.int/frame.php?dir=06&sd=11&id=44; some of the International Institute for Communications Programmes at www.iicd.org/; the LINK Centre's projects and workshops on ICTs in South Africa at <http://pc7.mgmt.wits.ac.za/profile.html>; and the programmes run by LIRNE.NET www.lirne.net/index.htm, all accessed 1 February 2003.

Foreign development assistance agencies can help by creating a fund that local business and policy networks can draw upon. They can also help by insisting that the composition of the participants (both in research and in policy discussions) encompasses industrial sector representatives, and not just those who advocate the potential of sophisticated ICTs.

Some funds may already be available but our study suggests that too often they promote a vision of B2B e-commerce that is disconnected from producer firms experiences. Foreign development assistance agencies can make available experts with experience in undertaking rapid participatory appraisals. Methods for such appraisals exist but they must be adjusted to diagnosing and resolving specific configurations of obstacles. They must be used to implement measures that make ICT applications relevant to developing country producer firms.

Appendix 1: Research Methodology

B2B e-marketplaces and e-hubs

The data collection strategy involved two phases. The first phase took place over six weeks in April and May 2001. Internet sites were randomly selected by conducting a keyword search using the Google and Copernic2000 search engines and by visiting their Web sites.³⁴ The goal was to identify about 50 B2B portals (sometimes called e-hubs) in each sector that were providing user firms with the means to engage in B2B e-commerce using the public Internet. For the horticulture sector, the search was limited to sites concentrating on the exchange of fruits, vegetables, flowers and agro-food products. This technique identified 177 B2B portals in each sector. The total number of portals in the initial sample was thus 354.

The second phase involved visiting the Web sites of the selected B2B portals to conduct an 'attribute analysis' using a taxonomy developed for the project. A pilot study led to minor modifications to the initial taxonomy to refine the coding of variables and to include services that were offered by particular portals.

The method offered a means to identify and code variations in the features of on-line trading environments that would be most apparent to users. The first part of the taxonomy focuses on specific properties and corresponding variables associated with transaction preparation. Table A1.1 lists these and provides the rationale for their inclusion. The second part of the taxonomy focuses on specific properties and corresponding variables associated with transaction completion (see Table A1.2).

Table A1.1: Elements of transaction preparation

Property	Rationale	Variables
Content	Primarily influences transaction costs associated with searching for products, services, sellers and buyers. Motivation related costs are linked to users' assessment of the relevance of information available.	<ol style="list-style-type: none"> 1. Sector focus of the portal. 2. Type(s) of goods exchanged. 3. Type(s) of information provided.
Ordering	Users must have some assurance that the products they wish to purchase meet certain specifications and the people they are dealing with are reputable.	<ol style="list-style-type: none"> 1. Product specification information. 2. Product related quality assurance mechanisms 3. Buyer/Seller related quality assurance mechanisms.

Table A1.2: Elements of transaction completion

Property	Rationale	Variables
Logistics	When deciding whether to make a purchase buyers must have a reasonable degree of confidence that the goods will be delivered.	<ol style="list-style-type: none"> 1. Extent to which portal participates in delivery of product/goods. 2. Types of logistical support available.
Settlement	The settlement mechanisms used may limit the ability of producer firms in developing countries from participating effectively in B2B e-commerce transactions	<ol style="list-style-type: none"> 1. Types of settlement mechanism employed in the venue. 2. Redress mechanisms.

34. The keywords used in these searches included: for horticulture B2B e-commerce sites – agricultural portal; ag portals; B2B agriculture; B2B+horticulture; agriculture+ecommerce; B2B+agriculture+portal. For garments, B2B e-commerce sites – garments+portal; apparel+portal; B2B+apparel; B2B+garments; garments+ecommerce; apparel+ecommerce. Search returns not selected for inclusion in the sample generally were in one of the following categories: (a) business-to-consumer sites; (b) dead link; (c) job advert; (d) press release; (e) news/press report; (f) academic or government report; (g) double listing (i.e. identified in another keyword search); (h) personal CV; (i) non-English. In those instances where the links provided by the returned search engine results was to a directory Web site page(s), the links listed in the directory were followed-up.

Table A1.3: Number of interviews per country

Country	Garments Firms	Horticulture Firms	Key Informants	Total
South Africa	28	12	16	56
Kenya	12	15	14	41
Bangladesh	7	NA	8	15
Total:	47	27	38	112

Note: NA = not applicable.

As the mapping of the portals proceeded, 118 B2B were eliminated from the original garments sample and 119 were eliminated from the horticulture sample. Those eliminated were: (i) no longer trading; (ii) providers of network systems; (iii) failed to meet the criteria for inclusion (ie. did not support trade in either fruits, vegetables, flowers, and/or agro-food products); and, (iv) providers of a proprietary B2B e-commerce service. The final sample consisted of 58 horticulture and 59 garments B2B portals.

Country Interviews

The study included interviews with respondents from firms in Bangladesh, Kenya and South Africa that were expected either to be engaged in some form of B2B e-commerce or to be trying to establish this form of trading. The aim was to clarify the potential benefits of B2B e-commerce applications for firms trading internationally. Interview data were collected from 74 firms, 47 for garments firms and 27 from horticulture

Table A1.4: Summary of firm respondents

Position	Garments		Horticulture	
	Frequency	Per cent	Frequency	Per cent
Managing Director	14	29	3	11
Missing Cases	12	25		
Export Merchandise Director	5	11		
CEO			5	18
Proprietor			4	15
Chairperson	3	7		
Marketing Director	3	7		
Director	3	7	6	22
General Manager	2	4	2	7
Production Manager	2	4		
Systems Support Manager			2	7
Divisional Managing Director	1	2		
Information Systems Director	1	2		
Chief Financial Officer	1	2		
Marketing Manager			1	4
Project Advisor			1	4
Operations Director			1	4
Group Finance Officer			1	4
Accounts Manager			1	4
Total:	47	100	27	100

firms. An additional 38 key informant interviews with industry experts, business associations, e-commerce solution providers, and government officials were conducted in the three countries.

The number of interviews conducted in each country is listed in Table A1.3. Given project resource constraints, no attempt was made to achieve a statistically random sample. However, an effort was made to elicit a range of experiences of the participating exporting firms. And the purposive sampling method enabled many key issues to be addressed.

The firms in the sample were selected on the basis of interviews with key informants in each country. The project's in-country research collaborators also were able to draw upon their experience to identify potential participant exporting firms. A few firms were identified through their participation in the B2B e-marketplaces examined in the first phase of the project.

The interviews were conducted using a semi-structured questionnaire and face-to-face interviews. They were conducted between February and May 2002 and their duration ranged between one and two hours. All the respondents were promised confidentiality and individual, firm, and association names are not provided.

The firm interviews were conducted with individuals in senior management positions. (see Table A1.4). Of the 47 respondents from the garments firms, slightly more than half were linked to firms employing less than 1,000 employees, excluding casual labour. Some three-quarters of the respondents from the horticulture firms were linked to firms with less than 500 employees, excluding casual labourers (see Table A1.5). For both sectors, the majority of firms had been established within the last 25 years (see Table A1.6).

Table A1.5: Number of employees

	Garments Firms		Horticulture Firms	
	Frequency	Per cent	Frequency	Per cent
*500	12	25%	22	81%
501-1000	15	32%	0	0
1001-1500	7	15%	0	0
≥1,501	13	28%	5	19%
Total:	47	100%	27	100%

Table A1.6: Age of companies

No. of Years in Business	Garments Firms		Horticulture Firms	
	Frequency	Per cent	Frequency	Per cent
1-25	23	49	15	56
26-50	7	15	7	26
51-75	11	23	0	0
76-100	1	2	3	2
Information not provided	5	11	2	7
Total:	47	100	27	100

Appendix 2: Characteristics of the Garments Sector Firms

The dominant export markets for the garments firms in the sample were continental Europe and the United States (see Table A2.1)

Of the 47 respondents in this sector, 25 per cent reported sourcing inputs (fabric, trim and other components) exclusively from the domestic market (see Table A2.2). Of those that were importing inputs from overseas, the primary market was Asia, with the European Union also being an important destination particularly for high value-added inputs.

Table A2.1: Export markets, garment firms (N=47)

	Garments Firms	
	Frequency	Per cent
EU (including UK)	29	62
US	29	62
UK	21	45
Sub Saharan Africa	6	13
Middle East	1	2
Australia	1	2
Japan	1	2
Canada	1	2

Note: Percentage column adds to more than 100 per cent because of multiple responses.

Table A2.2: Most important countries from which inputs are sourced, garment firms (N=47)

	Frequency	Per cent
Asia	30	64
Domestic Market only	12	26
EU	9	19
Sub Saharan Africa	2	4
Middle East	2	4
Mauritius	2	4
US	1	2
South America	1	2

Note: Percentage column adds to more than 100 per cent because of multiple responses.

Some 32 per cent of the 28 South African firms, and 17 per cent of the 12 Kenyan firms were sourcing inputs exclusively from domestic suppliers. With the exception of one firm that produced all its inputs in-house, none of the six other Bangladeshi firms reported sourcing their inputs exclusively from the domestic market. They relied primarily on suppliers from Asia.

The export transactions of these firms tended to be highly intermediated and direct selling or purchasing was exceptional. The firms generally reported using one or more intermediaries to reach the end-customer. Only a few of the firms had achieved the status of 'core supplier' to United States or European end-customers.

Only 25 per cent of the 28 South African respondents reported that their firms had direct links with end-customers in the export market and 10 per cent claimed to link into export markets via their parent companies. The remainder were dependent upon third parties (ie. global buying and/or quality assurance agents, independent agents, and importers/wholesalers).

Table A2.3: Type of Internet connection, garment firms

	Frequency	Per cent
Analogue	30	63
Integrated Services Digital Network ³⁵	14	29
Symmetric Digital Subscriber Line (SDSL) ³⁶	2	4
Cable	2	4
Total	47	100

All of the seven Bangladeshi respondents reported that they had no direct links with end-customers in the export market. The majority of their sales were being conducted through local buying houses. Information about the nature of customer links for Kenyan firms was not obtained.

All 47 firms in this sector used computers and had connections to the Internet. In order to connect to the Internet the firms were either using analogue modems or an ISDN connection (see Table A2.3). Only three of the firms, all based in Bangladesh, reported using high-speed Internet connections. One-third of the 47 firms had an Intranet installed, and approximately 90 per cent of these firms were based in South Africa (see Table A2.4). None of the 12 Kenyan firms were reported to have an Intranet. When these networks were in place they typically were used to enable staff to read company information and to allow staff to access databases.

None of the 47 firms had implemented an extranet. The prospects for developing an external business network by providing clients and commercial partners with limited, firewall-managed access to the firm's internal network were limited. However, respondents from four of 28 South African, two of the 12 Kenyan, and one of the seven Bangladeshi firms mentioned that their firms were accessing the extranets of their buyers.

Table A2.4: Adoption of Internet technologies, garment firms

	Frequency	Per cent
Public Internet	47	100
Intranet	16	34
Extranet	7	15

Note: Percentage column adds to more than 100 per cent because of multiple responses.

35. ISDN supports data transfer rates of 64 Kbps (64 000 bits per second). ISDN uses a modified Public Switched Telecommunication Network (PSTN), upgraded so that the basic 'call' is a 64 kbit per second, all-digital end-to-end channel.

36. SDSL provides high speed data networking over a single-pair of copper telephone lines. Equal amounts of bandwidth are provided in the upstream and downstream direction. It is faster than ISDN, with speeds ranging from 160 kbps to 1.544 Mbps.

Appendix 3: Characteristics of the Horticulture Sector Firms

The dominant export markets for the horticulture firms in the sample were continental Europe, and United Kingdom and the Middle East (see Table A3.1).

The vast majority of the 27 firms in this sector were sourcing their inputs (ie. seeds, chemicals, packaging and other components) exclusively from the domestic market (see Table A3.2). Of those firms sourcing inputs from abroad, the three primary markets were the Netherlands, Israel and South Africa.

For international sales, the 12 South African and 15 Kenyan horticultural producers rarely market their crops independently. The export transactions were highly intermediated and direct selling or purchasing was exceptional. None of the 27 firms in this sector had direct links with end-customers. They were dependent on intermediaries such as brokers, importer/wholesalers and auctions.

Table A3.1: Export markets, horticulture firms (N=27)

	Frequency	Per cent
EU (including UK)	24	89
UK	11	41
Middle East	11	41
Far East	7	26
Netherlands	5	18
US	4	15
India	2	7
Canada	1	4

Note: Percentage column adds to more than 100 per cent because of multiple responses.

Table A3.2: Most important countries from which inputs are sourced, horticulture firms (N=27)

	Frequency	Per cent
Domestic Market only	21	79
Holland	3	11
Israel	3	11
South Africa	3	11
UK	2	7
US	2	7
EU	1	4

Note: Percentage column adds to more than 100 per cent because of multiple responses.

Table A3.3: Type of Internet connection, horticulture firms

	Frequency	Per cent
Analogue	14	52
Integrated Services Digital Network	9	33
Symmetric Digital Subscriber Line (SDSL)	2	7
Cable	1 [†]	4
No Response	1	4
Total	27	100

[†] *The offices of this firm were located adjacent to a local ISP with each enterprise housed in the same building. The proprietors of these two companies had negotiated a private agreement wherein the horticulture firm's computers were directly linked.*

All 27 respondents reported that their firms used computers and had Internet connections. Firms predominantly were using analogue modems or an ISDN connection to access the Internet (see Table A3.3).

Only two firms, one in South Africa and one in Kenya, reported having implemented an Intranet (see Table A3.4). These were used to enable staff to read company information and to allow staff access to databases. None of the firms had developed and/or implemented an extranet. The prospects for developing an external business network by providing clients and commercial partners with limited, firewall-managed access to the firm's internal network appeared to be limited.

Table A3.4: Adoption of Internet technologies, horticulture firms

	Frequency	Per cent
Public Internet	27	100
Intranet	2	7
Extranet	0	0

Note: Percentage column adds to more than 100 per cent because of multiple responses via an Ethernet connection, to the ISP's servers.

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