B2B E-commerce Services and Developing Countries: Disentangling Myth from Reality[1]

By

Daniel J. Paré

Research Fellow

Media@LSE

The London School of Economics & Political Science

Houghton Street, London, WC2A 2AE, United Kingdom

Email: d.pare@lse.ac.uk

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Abstract

The adoption of B2B e-commerce applications based on the Internet and the World Wide Web is being promoted in some quarters as offering producer firms in developing countries new exchange mechanisms that enable them to compete on a more equal basis in world markets. In this optimistic view B2B e-commerce promises a radical shift in the way in which international buyers and sellers trade with one another. The argument presented in this paper challenges the efficacy of this outlook. Evidence obtained from research involving an attribute analysis of 184 e-marketplaces and interviews with 75 enterprises and 37 key informants in two major sectors in three developing countries suggests that Internet-based B2B e-commerce is not as effective in reducing transaction costs or in opening the doors to global markets as the optimists would have us believe. The evidence also suggests that Internet-based B2B e-commerce has only marginally altered the way in which international buyers and sellers in the garments/apparel and horticulture/agriculture sectors trade with one another. The paper concludes that policies aimed at promoting 'e-readiness' are unlikely to succeed on terms that maximise benefits for developing country producers if they fail to give careful attention to the specific characteristics and positioning of these firms within global value chains, and to the digital applications they use to deal with operational challenges.

B2B E-commerce and Developing Countries: Disentangling Myth from Reality

Introduction

The adoption of B2B e-commerce platforms based on the Internet and the World Wide Web is being promoted as offering producer firms in developing countries new exchange mechanisms that enable them to compete on a more equal basis in world markets (Goldstein and O'Connor 2000; UNCTAD 2000; 2001; United Nations 2000; World Trade Organization (WTO) 1998). For example, the *E-commerce and Development Report 2001* states that "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).

According to this view, the implementation of B2B e-commerce is expected to result in a reduction of the transaction costs that are incurred by these firms, thereby lowering barriers to their participation in international trade. It also is expected to provide opportunities for producer firms in developing countries to enhance their international profile and to develop direct one-to-one trading relationships with international buyers and sellers (Benjamin and Wigand 1995; Garcia 1995; Leebaert 1998; Malone and Laubacher 1998; Malone *et al.* 1987). Citing the rapid adoption of the Internet and the World Wide Web, some analysts have even pointed towards the potential for 'leap-frogging' generations of ICTs (Panagariya 2000). In this optimistic view, B2B e-commerce promises a radical shift in the way in which enterprises trade with one another.

There is little doubt that the public Internet[1] is a relatively inexpensive communication tool as compared to other communication services. When an affordable telecommunication infrastructure is in place, its use can enable buyers in industrialised countries to have easier access to information about developing country producers. Its use also can expedite the ability of developing country suppliers – assuming that they have access to the Internet – to obtain information about buyer requirements in industrialised countries.

Despite the optimism in many quarters about the potential benefits of B2B e-commerce for developing country firms, there is a substantial gap in the evidence base concerning the extent of B2B e-commerce implementation and the way various applications are being used by firms in developing countries. In this paper, it is argued that attention needs to be given to the specific characteristics and positioning of developing country producers within global value chains if policies promoting e-readiness[2] are to have a chance at succeeding on terms that are beneficial to these firms.

The empirical research upon which this paper is based focused mainly on Internet-based B2B e-commerce in two industrial sectors: garments/apparel and horticulture/agriculture. These sectors were chosen because they are important for employment and export growth prospects of poor countries in South Asia and sub-Saharan Africa (Dolan and Humphrey 2000; International Labor Organization 1996),

and because global trading platforms for these products were in operation during 2001-2002 when the research was undertaken.

In order to move beyond simple assessments of the perceived potential benefits of B2B e-commerce in general terms, the research was designed to examine specifically how international trading transactions are structured and handled when some form of B2B e-commerce is introduced into a global value chain. The analysis indicates that B2B e-commerce services available to user firms are not as effective in opening the doors to global markets for firms in developing countries as the optimists would have us believe.

In Section II the analytical framework developed for the study is set out. In Section III a review of the research methodology is provided. The results are presented in Section IV. The last section draws out the implications of the research findings for policies geared towards the needs of producer firms in developing countries.

E-commerce and the Reduction of Transaction Costs

For developing country producer firms, the capacity to benefit from the diffusion of ICTs, and, in particular, from the implementation of e-commerce, requires both a reduction in the many facets of technological divides and improved institutional arrangements to support increased international trade (Mansell 2001; Mansell and Wehn 1998; Patterson and Wilson 2000). Most studies of 'e-readiness' primarily focus on the indigenous constraints with which firms located in developing countries must contend (Bhatnagar 1999; Braga 2000; Hossain 2000; Mann 2000; McConnell International 2000, 2001; World Information Technology and Services Alliance 2000).

The interactions between such factors as connectivity, access, network security, capability/skills, and regulatory environments all, in important ways, influence whether firms can participate effectively in the global economy. However, these are not the only factors influencing the magnitude of the transaction costs facing developing country producer firms that seek to trade internationally by using B2B e-commerce. Very little attention so far has been given to the changes that may, or may not, occur when 'digital' or 'electronic' commerce applications are introduced into the trading process.

The belief that implementing B2B e-commerce will significantly decrease the transaction costs[3] associated with trade across organisational and geographical boundaries underpins much of the discussion about the potential for the public Internet and the World Wide Web to globalise commerce. According to this view, the adoption and implementation of ICTs facilitates a "closer integration of adjacent steps in the value-added chain", thereby allowing firms potentially to reduce the costs associated with selecting suppliers, negotiating and fulfilling contracts, and ensuring that contract terms are met (Malone *et al.* 1987: 484). This reduction in the 'unit costs' of coordination, it is claimed, will encourage firms to expand the number of transactions they conduct across both organisational and geographical boundaries (Benjamin and Wigand 1995; Davidow and Malone 1992; Malone and Laubacher

1998; Malone *et al.* 1987).

Unfortunately, this view overlooks the importance of the procedures and processes as well as the dynamics involved in transacting. It also is illustrative of a tendency among some analysts to discuss ICTs and 'the Internet' as artefacts or simple appliances, rather than as complex processes of inter-networking made possible by a series of inter-linked computer networks, a compendium of hardware and software, data flows, and human agents (Kling 1999; Paré 2000). The significance of the distortions that may arise from this techno-centric orientation cannot be underestimated. The failure to consider the processes and rules that underpin B2B e-commerce can lead researchers and policy makers to overestimate the potential savings that may be incurred and to underestimate the new costs that firms in both developing and industrialised countries may experience from participating in electronic transactions. This points to the need for a cautious assessment of claims about the potential for a B2B e-commerce environment based on the public Internet and the World Wide Web to help developing country producer firms gain improved access to international markets.

In order to provide a means for critically assessing some of the claims about the implications of B2B e-commerce for producer firms located in developing countries, the methodology developed for this study enabled the researchers to emphasise the conventional aspects of 'commerce' as well as the changes that may occur when 'digital' or 'electronic' commerce applications are introduced into the trading process. In this study activities associated with B2B e-commerce were situated and examined within the framework of transactions within the value chains that producer firms in developing countries must enter if they are to trade successfully on the international market.

Methodology

Before evaluating the extent to which B2B e-commerce implementation has the capacity to assist developing country producer firms to secure improved access to new international markets, it is important to clarify what B2B e-commerce entails. A variety of definitions of B2B e-commerce has been employed by researchers and policy makers (OECD 2000; UNCTAD 2000; Wigand 1997; World Trade Organization (WTO) 1998). In its broadest conception, B2B e-commerce includes any form of economic activity conducted over computer-mediated networks (Wigand 1997). Narrower definitions of B2B e-commerce focus on the public Internet as the principal network involved.

Perhaps the most unsatisfactory feature of these definitions is a tendency to promote monolithic conceptualisations of what B2B e-commerce is or is not. The problem facing users, academics, policy-makers, and other interested parties is that B2B e-commerce, like the Internet, manifests itself in a multitude of ways. Monolithic conceptualisations of B2B e-commerce, however, are unable to capture this diversity and impair our ability to understand its potential (Benkler 2000; Biegel 2001; Lessig 1999; Mansell 2002; Wu 1999). In order to avoid this problem the approach used in this study focused on specific e-commerce applications[4] and the types of services they

facilitated. It is here that variations and the potential for reducing transaction costs are most apparent to users of B2B e-commerce.

Understanding how B2B e-commerce implementation is affecting firms in developing countries is relatively uncharted territory.[5] The core concern for this exploratory study was the way that transactions are structured and handled when some form of B2B e-commerce is introduced. To address this issue, the methodology was devised to focus on the way B2B e-commerce applications are being used to mediate exchanges between potential trading parties.

The framework for the analysis was developed to give specific attention to the 'commerce' rather than the 'digital' or 'electronic' aspects of B2B e-commerce (Hawkins *et al.* 1999). This emphasis on 'commerce' is decisive for understanding how B2B e-commerce implementation might influence the prospects for international trade because it concentrates attention on the processes and rules that potential trading parties must grapple with to participate effectively in an exchange.

There are two components of commercial trading that are common to all transactions: transaction preparation and completion (Verhoest and Hawkins 2000). Transaction preparation involves marketing and advertising, and includes all the information exchanges that are associated with a transaction, as well as information related to problems of actor motivation. Transaction completion encompasses ordering, billing and payment, as well as the transfer of products and services from sellers to buyers within supply chains, and to final customers.

Rather than defining imperatives – or end-states – to which all commercial transactions may be reduced, these categories are proposed as entry points for examining processes of commercial exchange. Seen in this light, transaction preparation and transaction completion constitute a conceptual framework for examining electronically mediated commerce that emphasises both autonomous and interactive practices (Das and Teng 1998; Granovetter 1985; Gulati 1995; Jones *et al.* 1997).

During the first phase of the study the research focused on a group of applications that may facilitate exchanges between potential trading parties regardless of their geographical location and that may be classified according to their functional characteristics: web-based trading platforms – or e-hubs – that are intended to facilitate B2B e-commerce. On the public Internet and the World Wide Web e-hubs constituted the primary spaces for transactions and interactions between firms.[6] Kaplan and Sawhney (1999: 2) define e-hubs as, "neutral Internet-based intermediaries that focus on specific industry verticals or specific business processes, host electronic marketplaces, and use various market-making mechanisms to mediate any-to-any transactions among businesses".

This part of the research involved an attribute analysis of 117 B2B e-hubs – supporting a total of 184 e-marketplaces – using a taxonomic instrument that was developed to operationalise the conceptual focus on transaction preparation and completion. The aim was to identify the features of these e-hubs that would be

apparent to potential users and that might be expected to influence the transaction costs incurred by trading parties within any given sector's value chain.[7]

In the second phase of the study, the experiences with B2B e-commerce of producer firms – in the two sectors – in Kenya, South Africa, and Bangladesh were examined based on in-country interviews using a semi-structured questionnaire.[8] The approach here was exploratory and used standard face-to-face interview techniques.The former were designed to develop ideas and to extract opinions, views, and reactions on specific subject matter, while the latter was oriented toward eliciting attitudes and collecting some quantitative data (Oppenheim 1992).

Analysis of the experiences of traders in these countries was expected to help clarify the potential benefits of B2B e-commerce applications in firms seeking to trade internationally. The sample included firms that were known to be active on the international market and that might be expected to be implementing B2B e-commerce or to be considering such implementation in the near term.

Interviews were undertaken with respondents from 75 enterprises across the three countries. In addition, 37 key informant interviews with industry experts, business association representatives, e-commerce solution providers, and government officials were conducted (see Table 1). The firms selected for the study were identified on the basis of these interviews The study's in-country research collaborators also were able to draw upon their research experience to identify potential participant exporting firms.

Table 1: Number of Interviews per Country[†]

Country	Garment/Apparel Firm Interviews	Horticulture Firm Interviews	Key Informant Interviews	Total
South Africa	28	12	15	**55**
Kenya	12	15	14	**41**
Bangladesh	7	N/A	8	**15**
Total:	**47**	**28**	**37**	**85**

[†] All of the enterprise interviews were conducted with individuals in senior management positions. These individuals are likely to be well placed to convey an understanding of the scale and scope of e-commerce implementation within their respective firms' and of the influence of the Internet and the World Wide Web on their firm's international trading relationships

In the light of the study's resource constraints no attempt was made to achieve a statistically random sample. However, an effort was made to elicit the range of experiences of the participating exporting firms. Therefore, the results presented below should not be taken as 'representative' per se. Instead, they illustrate the factors and issues with which the participating firms must contend when they seek to participate in international B2B e-commerce.

Results

The overall results of the empirical research on B2B e-hubs and on the experiences of developing country producer firms suggest that experience departs substantially from the 'received wisdom' about the likely impact of B2B e-commerce.

1. **There is very little evidence of support for the preparation and/or completion of transactions online using Web-based B2B e-hub interfaces.**

- For 84 percent of horticulture/agriculture and 74 percent of garments/apparel exchanges, the service provider had almost no direct role in assisting buyers and sellers to assess *a priori* the quality of the goods they may wish to purchase.

- Explicit mention of the ability to access information about a potential trading partner's credit and/or trading history was made in less than one quarter of the horticulture/agriculture and the garments/apparel exchanges. In these limited cases member credit rating information was available for an unspecified fee only by contacting a third party or 'strategic partner' that was linked to the B2B e-hub (i.e. Dun and Bradstreet, The CIT Group).

- For 73 percent of the horticulture/agriculture and 85 percent of the garments/apparel e-hub exchanges, the service provider played no role in the transaction settlement process. Parties to an exchange were responsible for establishing payment conditions, the vetting of users was infrequent, and buyers and sellers were usually reliant on information provided solely at the discretion of the counterpart in the exchange. Some 57 percent of the horticulture/agriculture and 37 percent of the garments/apparel B2B e-hubs explicitly noted on their web-sites that they did not mediate business communications and/or the transactions between trading parties, and that it was the user's responsibility to evaluate with due diligence whether they might enter into an exchange agreement with another party.

- The extremely limited amount of product and partner information that users of the B2B e-hubs in the sample have at their disposal before entering into an exchange suggests that '*buyer/seller beware*' is the norm.

- The results of the interviews with producer firms in developing countries yielded very little evidence of buying and selling via the Internet and the World Wide Web. Some 83 percent of garments/apparel firms and 66 percent of horticulture/agriculture firms had not registered with, or made use of any Web-based e-marketplaces. However, a very limited number of firms, particularly in the garments/apparel sector, had been invited by their buyers to participate in closed online auctions.

2. **B2B e-commerce activities are related primarily to the exchange of information using Internet and Web-based applications.**

- Some firms are using online bulletin boards and other online venues for posting trade leads and to establish contacts with potential trading partners. Users of these types of services were often small firms that were not members of established value chains. There is some evidence, particularly from a survey conducted by one of the largest bulletin board firms, that many of the users of this type of service are traders or intermediaries of some description. These organisations tend to make contacts online to supplement traditional ways of finding potential trading

partners. However, within the sectors investigated in this study the use of these types of services was generally regarded as being a practice of 'the lunatic fringe'.

- The use of email to maintain contacts along the value chain is extensive, if not universal, in both sectors. Firms were using email to co-ordinate production schedules, provide complex information on shipping (e.g. the layout of pallets in air-freighters), and to send digital images in attempts to address quality problems. However, the information conveyed via email is frequently transmitted in concert with the use of faxes and telephone calls.

- Very few – less 15 percent – of the firms in the sample were using the World Wide Web to seek information about prices, export markets, or potential trading partners. The primary constraints at this level were the lack of information specificity and slow connection speeds.

3. Very little business with new customers/suppliers is being generated through the use of Internet-and Web-based B2B e-commerce.

- Of the 74 respondents in the firm sample, 10 had posted items for sale on Web-based bulletin boards. However, only four had successfully completed a sale. None of these small firms was a member of an established value chain. In these instances the Internet and the World Wide Web were being used in much the same way that trade directories might be used. Although access to information may be easier online, business processes associated with negotiating an exchange were taking place 'off-line' using face-to-face meetings and conventional telephone calls.

- There was a virtually unanimous belief among all the firms that the primary benefit of the Internet and the World Wide Web was the potential for cost savings as a result of the use of email

4. There is a relatively slow uptake of B2B e-commerce among many industrialised country buyers in the two sectors examined.

- Only one firm reported that they had experienced direct pressure from its buyers to make greater use of B2B e-commerce applications.

- A number of garment/apparel producers were critical of the 'refusal' of European traders to make greater use of Internet applications. Although European firms are known to have an array of advanced ICTs at their disposal, some ten percent of developing country producer firm respondents suggested that their European counterparts were reluctant to make use of the most basic applications such as email. Traders based in the UK were singled out as being among the worst offenders.

A Reality Check on the Evidence Base on B2B E-commerce

For the period between April 2001 and August 2002 this exploratory study found little evidence of a widespread take-up of Internet- and/or Web-based B2B

transactions involving producer firms in two major sectors in three developing countries. Enthusiasm for online transactions – except in the case of a limited number of closed auctions – was not in evidence. However, it was acknowledged by all participants that B2B e-commerce may become more widespread in the future.

A major reported factor that accounts for the findings of this study is the way in which business is conducted in the garment/apparel and horticulture/agriculture sectors. Trading relationships in these sectors are fostered over extended periods of time and they tend to be highly personalised. Business relationships continue to depend on non-contract based activities (ie. face-to-face meetings) and on complex information requirements. These activities and requirements are not easily transferable to Web-based trading systems, at least, not according to the respondents interviewed in this study. Where B2B e-commerce was in use in these sectors, it generally took the form of:

1) Exchanges of business information via email where email was used to support communication associated with negotiating and completing transactions;

2) Accessing online bulletin boards which served as online 'dating' agencies for firms seeking new trading partners by facilitating initial introductions but by leaving the negotiation and deal completion to traditional methods; and

3) Very limited use of closed online auctions where buyers and sellers are already know to one another.

In addition to increasing the international visibility of their products, producer firms in developing countries must overcome a multitude of supplementary obstacles to ensure the successful completion of a transaction once a potential trading partner has been identified (Maitland 2001). Physical infrastructure barriers, including inadequate telecommunication systems, continue to impede the participation of these firms in global trade. Other barriers to international trade such as a limited skills-building, weaknesses in domestic regulatory regimes, inadequate transportation and distribution networks, the need to meet buyer-driven product quality and environmental standards further limit the capacity of developing country firms to benefit from partial or full implementation of e-commerce (Nielson and Morris 2001).

The evidence suggests that despite making some efficiency gains in terms of facilitating the speed of inter-firm communications, almost no gains have been made at the transactional level. The results of this study suggest that the greatest barriers to more extensive use of Internet-based B2B e-commerce by garment/apparel and horticulture/agriculture developing country-based producers are:

1) The perceived absence of procedures for establishing trust;
2) The primacy of direct personal contacts between established buyers and sellers; and
3) The structure of sector value chains which encourages repeated transactions and close contacts between buyers and sellers.

If partial or full implementation of Internet-based B2B e-commerce is to become more widespread much greater attention will need to be given to the specific

characteristics and positioning of developing country producer firms within global value chains and to the technical, financial, and organisational structures within which these firms operate. In addition, there is a need for policy-makers to give greater consideration to the multitude of ways in which digital applications are being used to deal with the operational challenges presented by different types of value chains. This will be essential if the implementation of B2B e-commerce applications is to begin to bring some of the expected benefits – in savings in transaction costs and in reduced barriers to global trading – for producers in developing countries. Insofar as this dimension of the e-commerce equation is overlooked policies aimed at promoting 'e-readiness' are unlikely to succeed on terms that maximise benefits for developing country firms.

Notes:

[1] In order to avoid confusion, a distinction is drawn here between e-commerce that occurs on private digitalized, and/or proprietary networks, and the digital space available, even for a fee, specifically on the Internet, see Sassen (2000).

[2] Defined as the capacity to participate in the global digital economy, see McConnell International (2000).

[3] Transaction costs have been described as the "costs of running the system" (Williamson 1985: 18), and are seen as the "economic equivalent of friction in a physical system" (Wigand 1997: 8). According to transaction cost theory, participating in a commercial exchange involves two types of costs: (i) those relating to problems of co-ordination and (ii) those relating to problems of actor motivation (Garicano and Kaplan 2000; Milgrom and Roberts 1992)

[4] E-commerce applications reside in the network layer above the public Internet protocols that oversee basic data transmission.

[5] Initial research in this domain includes: Moodley, Morris, and Velia (2002), Tregurtha and Vink (2002), Kiryanjui and McCormick (2002), Moodley, Morris, and Barnes (2001), and Maitland (2001).

[6] These intermediaries also are often referred to as 'portals' or 'market-makers', see Wilson (2000), and Mahadevan (2000).

[7] For a detailed account of the methodology employed for this part of the research see Paré (2003).

[8] This part of the research was conducted in collaboration with Mike Morris, Sagren Mooldley, and Myriam Veliam of the University of Natal; Nick Vink and Norma Tregurtha of Stellenbosch University; Dorothy McCormick, Mary Njeri Kiryanjui and John Njoka of the Institute for Development Studies, University of Nairobi; and Zaid Bakht of the Bangladesh Institute of Development Studies.

References:

Benjamin, Robert, and Rolf Wigand. 1995. Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review* 36 (2):62-72.

Benkler, Yochai. 2000. From consumers to users: Shifting the deeper structures of regulation toward sustainable commons and user access. *Federal Communications Law Journal* 52 (3):561-579.

Bhatnagar, Pradip. 1999. Telecom reforms in developing countries and the outlook for electronic commerce. *Journal of International Economic Law* 2 (4):695-712.

Biegel, Stuart. 2001. *Beyond our control? Confronting the limits of our legal system in the age of cyberspace*. Cambridge: The MIT Press.

Braga, Primo. 2000. The networking revolution: Opportunities and challenges for developing countries. Washington D.C.: The World Bank, Global Information and Communication Technologies Department, infoDev Working Paper, June.

Das, T. K, and Bing-Sheng Teng. 1998. Between trust and control: Developing confidence in partner cooperation in alliances. *Academy of Management Review* 23 (3):491-512.

Davidow, W, and M Malone. 1992. *The virtual corporation*. New York: Harper.

Dolan, Catherine, and John Humphrey. 2000. Governance and trade in fresh vegetables: The impact of UK supermarkets on the African horticulture industry. *The Journal of Development Studies* 37 (2):147-176.

Garcia, D.L. 1995. Networking and the rise of electronic commerce: The challenges for public policy. *Business Economics* 30 (4):7-14.

Garicano, Luis, and Steven Kaplan. 2000. The effects of business-to-business e-commerce on transaction costs. In *Working Paper No. W8017*. Cambridge, MA: National Bureau of Economic Research. papers.nber.org/papers/W8017.pdf (last accessed May 1, 2001).

Goldstein, Andrea, and David O'Connor. 2000. E-commerce for development: Prospects and policy issues: OECD Development Centre Technical Papers No. 164 www.oecd.org/dev/publication/tp1a.htm (last accessed April 25, 2001).

Granovetter, Mark. 1985. Economic action and social structure: The problem of embeddedness. *American Journal of Sociology* 91 (3):481-510.

Gulati, Ranjay. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal* 38 (1):85-112.

Hawkins, Richard, Robin Mansell, and Edward Steinmueller. 1999. Towards digital intermediation in the information society. *Journal of Economic Issues* XXXIII (2):383-391.

Hossain, Najmul. 2000. E-commerce in Bangladesh: Status, potential, and constraints. Institutional Reform and the Informal Sector (IRIS) Center, University of Maryland. Report prepared for the JOBS/IRIS Program of USAID/Bangladesh: www.inform.umd.edu/EdRes/Colleges/BSOS/Depts/IRIS/docs/bd6.pdf (last accessed April 9, 2001).

International Labor Organization. 1996. Globalization of footwear, textiles and clothing industries. Geneva: ILO.

Jones, Candace, William S Hesterly, and Stephen P Borgatti. 1997. A general theory of network governance: Exchange conditions and social mechanisms. *Academy of Management Review* 22 (4):911-945.

Kaplan, Steven, and Mohanbir Sawhney. 1999. B2B e-commerce hubs: Towards a taxonomy of business models. gsbwww.uchicago.edu/fac/steven.kaplan/research/taxonomy.pdf (last accessed May 1, 2001).

Kiryanjui, Mary Njeri , and McCormick. 2002. E-commerce in the garment industry in Kenya: Usage, obstacles, and policies. Institute of Development Studies-Nairobi: www.gapresearch.org/production/B2B%20Kenya%20garments%20final.pdf (last accessed September 17, 2002).

Kling, Rob. 1999. Can the "next-generation Internet" effectively support "ordinary citizens". *The Information Society* 15 (1):57-63.

Leebaert, D, ed. 1998. *The future of the electronic marketplace*. Cambridge: MIT Press.

Lessig, Lawrence. 1999. *Code and other laws of cyberspace*. New York: Basic Books.

Mahadevan, B. 2000. Business models for Internet-based e-commerce: An anatomy. *California Management Review* 42 (4):55-69.

Maitland, Carleen. 2001. Institutional assets: Shaping the potential for electronic commerce in developing countries. Doctoral Dissertation, Economics of Infrastructure, Faculty of Technology, Policy and Management, Delft University of Technology, Delft, The Netherlands.

Malone, Thomas W, and Robert J Laubacher. 1998. The dawn of the e-lance economy. *Harvard Business Review* September-October:145-152.

Malone, Thomas W, Joanne Yates, and Robert Benjamin. 1987. Electronic markets and electronic hierarchies. *Communications of the ACM* 30 (6):484-497.

Mann, Catherine L. 2000. Electronic commerce in developing countries: Issues for domestic policy and WTO negotiations. Washington DC: Institute for International Economics Working Paper 00-3. www.iie.com/CATALOG/WP/2000/00-3.pdf (last accessed April 4, 2001).

Mansell, Robin. 2001. Digital opportunities and the missing link for developing countries. *Oxford Review of Economic Policy* 17 (2):282-295.

———, ed. 2002. *Inside the Communication Revolution: Evolving Patterns of Social and Technical Interaction*. Oxford: Oxford University Press.

Mansell, Robin, and Uta Wehn, eds. 1998. *Knowledge societies: Information technology for sustainable development*. New York: Oxford University Press for the United Nations Commission on Science and Technology for Development.

McConnell International. 2000. Risk e-business: Seizing the opportunity of global e-readiness. August: www.mcconnellinternational.com (last accessed September 27, 2001).

———. 2001. Ready? Net. Go! May: www.mcconnellinternational.com (last accessed September, 27 2001).

Milgrom, Paul, and John Roberts. 1992. *Economics, Organization, Management*. Englewood Cliffs, NJ: Prentice Hall.

Moodley, Sagren, Mike Morris, and Justin Barnes. 2001. Unlocking Value in the "New Economy": E-Commerce in the Apparel and Automotive Value Chains. Paper read at TIPS Conference on New Directions in the South African Economy, at Johannesburg, South Africa. 10-12 September 2001.

Moodley, Sagren, Mike Morris, and Myriam Velia. 2002. The Adoption and Use of B2B E-Commerce by Leading Export-Oriented Garment Producers in South Africa: Real 'Digital Dividends' or a Leap of Faith? School of Development Studies, University of Natal, Durban. June: mimeo.

Nielson, Julia, and Rosemary Morris. 2001. E-commerce and trade: resolving dilemmas. *The OECD Observer* 224:37-39.

OECD. 2000. Defining and measuring electronic commerce: A background paper. Paris: DSTI/ICCP/IIS(2000)5.

Oppenheim, A.B. 1992. *Questionnaire Design, Interviewing and Attitude Measurement*. London: Pinter Publishers.

Panagariya, Arvind. 2000. E-Commerce, WTO and Developing Countries. *The World Economy* 23 (8):959-978.

Paré, Daniel J. 2000. Internet Governance in Transition: Just Who is the Master of this Domain? Doctoral Dissertation, SPRU, Science and Technology Policy Research Unit, University of Sussex, Falmer, Brighton.

———. 2003. Does This Site Deliver? B2B e-commerce services for developing countries. *The Information Society* 19 (2):*forthcoming*.

Patterson, Rubin, and Ernest J III Wilson. 2000. New IT and Social Inequality: Resetting the Research and Policy Agenda. *The Information Society* 16 (1):77-86.

Sassen, Saskia. 2000. Digital Networks and the State: Some Governance Questions. *Theory Culture and Society* 17 (4):19-33.

Tregurtha, Norma, and NicK Vink. 2002. B2B e-Commerce and the South African horticultural export industry: Current status and future directions. Department of Agricultural Economics, University of Stellenbosch, South Africa: *mimeo*.

UNCTAD. 2000. *Building Confidence: Electronic Commerce and Development*. New York: United Nations.

———. 2001. *Ecommerce and Development Report 2001*. New York: United Nations.

United Nations. 2000. Report of the High-Level Panel on Information and Communication Technology. New York: United Nations, April 17-20. www.un.org/documents/ecosoc/docs/2000/e2000-55.pdf (last accessed July 23, 2001).

Verhoest, P, and Richard Hawkins. 2000. A Transaction Structure Approach to Assessing the Dynamics and Impacts of 'Business-to-Business' Electronic Commerce. Impacts and Perspectives on Electronic Commerce (IPEC) Project, Telematica Instituut, The Netherlands. May, 18: Unpublished Working paper.

Wigand, Rolf T. 1997. Electronic Commerce: Definition, Theory, and Context. *The Information Society* 13 (1):1-16.

Williamson, O E. 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press.

Wilson, Paul. 2000. An overview of developments and prospects for e-commerce in the agricultural sector: European Commission: Agriculture Directorate-General europa.eu.int/comm/agriculture/markets/e-commerce/report.pdf (last accessed April 9, 2001).

World Information Technology and Services Alliance. 2000. International Survey of E-commerce - 2000. www.witsa.org/papers/EComSurv.pdf (last accessed September 27, 2001).

World Trade Organization (WTO). 1998. *Electronic Commerce and the Role of the WTO*. Geneva.

Wu, Timothy. 1999. Application-Centered Internet Analysis. *Virginia Law Review* 85:1163-1203 www.student.virginia.edu/~lawrev/WuPDF.pdf (last accessed October 29, 2001).