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### E-Commerce in Trade: Some Solutions to the Particular Problems Facing Africa in the Digitisation of Trade Documentation.

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#### I. INTRODUCTION

The growth of e-commerce is fast shifting business from paper-based documentation to electronic, and one area of increasing digitisation of documents is in international trade.[1] The move to paperless trade presents some legal problems to the international business community, and particular technological problems to low-tech Africa. While enormous amounts of time, energy, and money have been invested in developing the technologies and to create a conducive legal environment for

paperless trade, the technological inadequacies of low-tech Africa (Sub-Saharan Africa) has been left largely unattended.

The resulting information technology (IT) gap between Africa and developed countries means Africa is unable to support paperless trade. The problem may be considered to relate to a remote region and therefore insignificant, but a closer examination would suggest that the implications are wider. Although this paper focuses on Sub-Saharan Africa, low-tech problems exist in other parts of the world. The continuing existence of the IT gap will stifle global paperless trade, as hi-tech countries cannot trade electronically with many countries. Low-tech countries are an integral part of the world's interdependent economies, which means it is not an option to stop trading with them. This paper considers the causes, nature and implications of the low-tech problems, and suggests solution.

## II. CAUSES AND NATURE OF THE IT GAP

While developed countries have invested, and keep investing, in the development of their IT infrastructure and systems, sub-Saharan Africa has done, and continue to do, little or nothing.[2]

Numerous factors account for the IT underdevelopment in Africa detailed treatment of which is beyond the scope of this paper.[3] Prominent among the reasons are the lack of basic economic infrastructure, such as reliable power supplies and national electrification, inadequate transport and basic telecommunication infrastructure, absence of skilled IT personnel, lack of political will or initiative on the part of government, political instability, economic mismanagement, and poverty generally.[4]

By far, the primary cause of the technological divide is lack of funds in Africa, coupled with mismanagement of the little resources available. Most African countries are heavily indebted, and are burdened with interest and loan repayments. They are unable to raise the capital needed to finance the development of their fundamental infrastructure, and train personnel for IT development. The economic circumstances precipitate government inertia in the development of the necessary infrastructures, and there are no research and development projects in IT or other sectors. Serious steps have to be taken to develop the IT infrastructure of Africa.

Another problem in Africa is the lack of regulatory framework for IT, which is essential for wide acceptance and efficient operation of electronic systems. Although IT presents legal problems in developed countries too, most hi-tech countries are gradually enacting laws to facilitate paperless transacting.[5]

Interestingly developed countries have not done much to assist developing countries to develop their information technology infrastructure. The reason may be because information technology has itself grown very quickly over a short period and developed countries themselves are still developing their systems so there has not been time to consider and assist developing countries. But the more probable reason, as this writer sees it, is that the hi-tech world has ignored or does not appreciate the implications of low-tech technological inadequacies to global paperless international trade.[6]

## III. IMPLICATIONS OF THE IT GAP

As has been noted, lack of the necessary technology in Africa disables the region from supporting paperless trade. A simplest trade transaction would involve various parties--including an importer, exporter, a carrier, freight forwarder or shipping agent, an insurer, banks, and government agencies such as customs, revenue, health, and quarantine authorities. A mass of documents including the bill of lading (or similar transport document), an insurance certificate, a customs declaration, orders, invoices, dispatch advice documents, bookings, confirmations is generated and used by various entities.

For paperless trade to be successful the entities must be capable of supporting electronic versions of the documents they use, else they will demand paper.

The threshold technology needed to operate paperless trade may be summarised as below.

§ Importers and exporters (traders) and their agents have the technology--hardware, software, and other accessories--to install and maintain an electronic system at acceptable international standards. Their system should enable them to create, transmit, receive, store, secure, and retrieve structured electronic data and they must be connected on-line to the international community.

§ Government agencies have the technology to support electronic systems and they have installed electronic clearance systems to which importers, exporters, freight forwarders, brokers, carriers and other like entities are connected.

§ Banks and other financial institutions have the technology and have installed an electronic system to which importers, exporters and other entities are connected and the system is connected to the international business community.

§ There is in every country a minimum national technological infrastructure--technical and regulatory.

Trade parties and government agencies in Africa lack the threshold technology. While this situation remains, trade parties in Africa will demand paper. The hi-tech world cannot ignore the contribution of developing countries in international trade. In a world of economic interdependence, trade needs to continue between developed and developing countries.[7] Developing countries consume a substantial part of products of developed countries and are essential participants in the global economy. On the other hand, developed countries rely on raw materials from developing countries for their products. Such international economic linkage is a central, defining feature of the world economic system.[8]

Undeniably the level of technological inadequacies and the consequent problems will vary between countries, depending on their existing national IT infrastructure, and between parties in the same country. Whatever the level of technological inadequacy of countries and traders therein, some form of accommodation is needed while they are yet unable to trade electronically.

## **IV. SOME SOLUTIONS**

For convenience of discussions, three scenarios are postulated in this paper based on the users of trade documents. Users are divided into commercial parties and government agencies. Commercial parties include importers, exporters, banks, insurers, carriers, freight and forwarding agents, and brokers. Government agencies include customs and excise, tax, quarantine, health and other like authorities, and central banks. The first scenario is where government agencies can support electronic documents, but commercial parties cannot--this scenario is called "semi-LT". Second is where commercial parties can support electronic documentation, but government agencies cannot--this scenario is called "demi-LT". Third is where neither government agencies nor commercial parties can support electronic documentation--this scenario is called "absolute-LT."

### **A. A Dual System**

Maintenance of a dual system in which both electronic and paper systems operate concurrently may be a solution to the IT Gap. Under such a system, hi-tech parties will be able to issue and deal in both paper and electronic documents. The document to use in a particular transaction will depend on the technological capabilities of parties. Paper will be used in the aspects of transactions that involve

low-tech parties, and electronic documents used in transactions or aspects of a transaction between hi-tech parties. This will enable Africa to continue to participate in international trade.

Illustrations of how such a system would operate are based on sea-carriage documents, particularly the negotiable bill of lading, although transport documents are only one of several documents used in trade transactions.<sup>[9]</sup> A dual system will mean a paper system for low-tech parties and an electronic system for hi-tech parties. To be effective and efficient, the dual system must have the following features (i) paper bills of lading and electronic bills of lading (EBLs) must be obtainable at the time of shipment; (ii) EBLs must be convertible to paper bills of lading; and (iii) Paper bills of lading must be convertible to EBLs.

### **1. Paper and Electronic Bills of Lading must be Obtainable at the Time of Shipment**

It must be possible for a shipper to obtain an EBL or a paper bill of lading at the time of shipment. The shipper's choice of document will be determined by the technological situation prevailing at the location of the intending recipient of the documents. If the shipper can obtain an EBL or a paper bill of lading at the inception of the contract of carriage, he will be able to trade with partners from diverse technological backgrounds. Where the transaction involves only hi-tech parties, the shipper will obtain an EBL, and where low-tech parties are involved, he will obtain a paper bill of lading.

### **2. EBLs must be Convertible to Paper Bills of Lading**

A holder (i.e. a shipper, an endorsee or a named consignee) of an EBL must be able to convert it to a paper bill of lading at any time prior to delivery of the cargo. Such an attribute is crucial for two reasons. First, a shipper may not know the bill of lading requirement at a known destination at the time of shipment. If the shipper obtains an EBL but realises later that a paper bill is required, a mechanism should exist for him to convert the EBL to paper. Undesirable consequences would result if such a mechanism were absent. Second, where the underlying contract is financed under a banker's documentary credit, the participating banks may wish to deal in EBLs in preference to paper bills of lading. As international banks in Africa are mostly multinationals that may be able to afford modern technologies, they will be among the first institutions to implement electronic data systems.<sup>[10]</sup> After they invest substantial capital in technology, banks will want to have minimum dealing with paper documents. They may wish to deal in EBLs, and convert to paper for onward use by their customers. As such, banks will favour a system that enables conversion from EBLs to paper bills of lading.<sup>[11]</sup>

It seems that both the CMI Rules for Electronic Bills of Lading (hereinafter 'CMI Rules') and the Bill of Lading Electronic Registry Organisation (Bolero) anticipated the need for a dual system, and provide for conversion from EBLs to paper bills of lading.<sup>[12]</sup>

### **3. Paper Bills of Lading must be Convertible to EBLs**

Convertibility from paper bills of lading to EBLs is essential for the same reason convertibility from EBLs to paper bills of lading is necessary. For example, a shipper (or an endorsee) who obtains a paper bill of lading should not be precluded from requesting delivery of the goods at a port in a high-tech country where an EBL is required. Similarly, a holder of a paper bill of lading should not be precluded from dealing with parties, such as banks and other potential customers, who want to deal in electronic documents only. The CMI Rules and Bolero do not provide for convertibility from paper bills of lading to EBLs.

Technologically, conversion of paper bills of lading to EBL is easy. There is no doubt that equipment exists today that can convert various types of printed information to digital information. A simple method will be to withdraw the paper bill of lading and issue an electronic equivalent to the holder. Due consideration must however be given to prescribing the proper party to digitise and the

legal effects of digitised bills.

#### **4. Practical Problems with the Dual System**

There are practical problems that may militate against the maintenance of a dual system including delays, costs, and possible unwillingness by hi-tech parties to retain paper after they become fully electronic.

Late arrival of shipping documents at ports of discharge is a major problem with paper documents which dematerialisation seeks to eliminate. Frequently, vessels arrive long before the bill of lading, as the preparation and movement of paper documents are slow.[13] Complicated too are government regulations and the demands from banks to see and check seaborne trade documents. As vessels cannot wait, because demurrage charges will accrue and their schedules will be distorted, parties obtain letters of indemnity from banks to enable them to take delivery of their cargoes.[14] The resort to letters of indemnity adds to the paperwork, costs, and legal problems.[15] It is expected that the speed of electronic documents will minimise, if not eliminate, the delays associated with paper. Switching between paper and electronic documentation systems may cause delays, be cumbersome, and increase the potential for errors. Furthermore, a dual system may encourage and perpetuate reliance on paper by some parties, and the delays and associated costs of relying on paper documents.

Cost reduction is one of the main driving force behind the switch to electronic systems.[16] Electronic documentation reduces costs. Electronic documents are amenable to automation, which reduces preparation time and eliminates re-keying of data entry and the potential associated errors. Automation also reduces manual sorting, matching, filing, reconciling, and mailing tasks. Retention of electronic records is convenient and economical, and retrieved electronic information is easier and more efficient to analyse and interpolate than paper, offering time and cost savings.[17] Maintaining a dual system will negate many of the advantages of cost saving, convenience, and efficiency. In addition to investments in technology, hi-tech parties would have to retain the existing structures that are cost ineffective and inefficient, and this can discourage patronage.

For the dual system to operate, carriers must be willing to maintain such a system. The system will not work if it is not patronised by carriers. Considering that SeaDocs failed because of lack of patronage by carriers, banks, and insurers,[18] and the CMI Rules have remain dormant because shipping parties have not adopted them, one cannot be optimistic about the viability of a dual system. It is therefore imperative to consider other alternative methods of accommodating Africa in paperless trade.

### **B. Third Party Facilitators**

The use by low-tech parties of third party facilitators (TPFs), independent IT service providers, to trade electronically with hi-tech parties may be a solution to the problems presented by the IT gap. The TPFs would have authority to co-ordinate the receipt, certification, authentication, storage, conversion, and transmission of paper and electronic documents for and on behalf of low-tech parties.[19]

The specific functions to be performed by a TPF will depend on the IT problems prevailing in the low-tech economy in which it operates. In a semi-LT economy the TPF will materialise electronic documents for lodgement with government departments. The functions of the TPF in a demi-LT economy will be to receive and transmit electronic documents for and on behalf of private parties. In an absolute-LT economy the functions of TPFs will be a combination of their functions in semi-LT and demi-LT economies.

## **1. Functions of a Third Party Facilitator in a Semi-LT Economy**

In a semi-LT country, exporters and importers will have no difficulties communicating electronically with carriers, banks, and their international counterparts, and banks will have no problems communicating electronically with foreign correspondents and carriers. These commercial parties can receive, store, and transmit electronic messages. They can conclude their international contracts electronically, and deal in electronic bills of lading (EBLs).

Technological problems arise in communications between exporters, importers, and carriers on the one hand and government departments on the other hand. Government departments in semi-LT economies are incapable of supporting electronic documents, and so they will demand paper documents. There must be a way of materialising the necessary documents for submission to the government departments, and TPFs should do this.

### **(a) Services to Importers in a Semi-LT Economy**

It is unlikely that government departments will accept ordinary computer printouts of electronic documents from importers, as that would compromise regulatory controls. Customs, for instance, will not want to accept an uncertified off-print of an EBL[20] or a consular invoice from an importer's computer, because figures may be altered to avoid payment of the necessary tariffs. TPFs would issue certified prints of EBLs and other electronic documents as would be acceptable to government departments.

### **(b) Services to Exporters in a Semi-LT Economy**

Government departments in semi-LT economies will issue paper documents. Exporters will receive a combination of electronic documents from carriers and other private parties, and paper documents from government departments. The paper documents may need to be dematerialised for transmission to hi-tech economies. TPFs would dematerialise and authenticate the paper documents to standards acceptable to hi-tech parties in developed economies.

### **(c) Services to Government Departments in a Semi-LT Economy**

Carriers will need TPFs to lodge transportation data with government departments in semi-LT economies. As carriers will want to lodge the requisite transport information (usually comprising general cargo declaration, crew list and declaration, and passenger list) electronically, and government departments will only accept paper, a carrier's paperless data will have to be converted to paper by a TPF for lodgement.

To ensure timeous availability of certified paper copies of carriers' information to the relevant government departments, the data should be transmitted to the TPF ahead of the carriers' scheduled date of arrival. This will ensure that some of the advantages of computerising ports clearance procedures will accrue with the manual system of semi-LT countries.[21] The major advantages of computerising port clearances such as automated checks, elimination of data re-keying, and lower costs may elude the manual system, but early availability of carrier transport data may afford some advantages. TPFs are essential, and offer advantages in semi-LT economies.

## **2. Functions of a Third Party Facilitator in a Demi-LT Economy**

In demi-LT economies, TPF's will receive, store, and transmit electronic messages for and on behalf of private parties such as importers, exporters, and banks.

### **(a) Services to Exporters in a Demi-LT Economy**

Since exporters are unable to receive EBLs, they will arrange with a TPF to receive and hold EBLs and other electronic documents on their behalf. Upon an exporter's instructions, the TPF will transmit his EBL to the exporter's counter-parties such as banks, importer-consignees or buyers.

#### **(b) Services to Importers in a Demi-LT Economy**

For an importer in a demi-LT economy, the TPF will receive, hold, and transmit EBLs for and on its behalf. The importer's communication of the EBL to other buyers, government departments, and carriers will be done by the TPF.

#### **(c) Services to Banks in a Demi-LT Economy**

Banks in demi-LT countries that are not able to support electronic documents and would need the services of TPFs to finance international trade. They will need TPFs to receive and transmit EBLs of their customers--importers who apply for documentary credits or exporters who are beneficiaries of credits. In some cases, banks may need the services of TPFs to communicate financial information to their correspondents in hi-tech economies.

#### **(d) Relationship of Parties with TPFs in a Demi-LT Economy**

Operating through TPFs would require that exporters, importers, and banks maintain electronic accounts with TPFs. A one-off importer may not need to maintain a standing account with a TPF; he may open a temporary account for a particular transaction and close it when the transaction is completed. International sale transactions often are either one-off deals or far apart rather than recurrent. Parties to such transactions often do not know each other's credit worthiness or hesitate to transact without a reliable assurance of performance by their counterparts,<sup>[22]</sup> and it is in such that negotiable bills of lading and documentary credits are mostly used.

Parties' accounts will serve as their electronic address. When the TPF receives an electronic document designated for any party, it will hold it in that party's account and send a written acknowledgment, presumably on paper, to confirm to the party that the TPF has received the document and it is holding it for the party. The acknowledgement message must specify the type of document, its sender, date of transmission and receipt and, if the parties are agreeable, details of the content of the document.

### **3. Functions of a Third Party Facilitator in an Absolute-LT Economy**

The functions of a TPF in an absolute-LT economy will be a combination of its functions in semi-LT and demi-LT economies as described above. As absolute-LT is where neither private parties nor government departments are capable of supporting electronic systems, TPFs will be the hub through which data will flow between absolute-LT economies and hi-tech economies. Assuming that hi-tech parties will deal in electronic documents only, TPFs will be needed to provide different services to various low-tech parties in absolute-LT economies.

#### **(a) Services to Importers in an Absolute-LT Economy**

EBLs designated for the importer will be received at an address to be maintained by the importer with the TPF. The TPF will hold the EBL for the importer, and at the request of the importer, transmit it to the carrier to enable the importer to take delivery of the goods. Since the importer cannot support EBLs, both reception and transmission of EBLs would be done by the TPF on the importer's behalf.

TPFs would issue to importers certified paper copies of EBLs and other electronic documents they receive and hold for importers. The acknowledgement message must specify the type of document,

its sender, date of transmission and receipt and, if agreeable to the parties, content of the relevant document.

The paper copies will serve three purposes. First, they will constitute a formal notification to the importer and an acknowledgment of receipt by the TPF of the document it (the TPF) holds for the importer. Second, the paper copies may constitute legal evidence in the event of a dispute between the importer and the TPF. Third, and importantly, the importer will be able to submit the paper copies to government departments in fulfilment of any existing regulatory requirements for custom, quarantine, and tax purposes.

#### **(b) Services to Exporters in an Absolute-LT Economy**

As with the importer, EBLs meant for the exporter will have to be received at an address maintained by the exporter with a TPF. The TPF will receive the EBLs, hold, and, at the appropriate time, transmit them on behalf of the exporter to appropriate parties such as banks, consignees or buyers.

It is imperative that the TPF issues to the exporter certified paper copies of EBLs it holds on the exporter's behalf. This will serve as a formal notification to the exporter, an acknowledgement by the TPF that it holds the EBLs for the exporter, and legal evidence in the event of a dispute.

In addition to receiving and transmitting electronic documents on behalf of the exporter, the TPF would dematerialise for transmission to parties in hi-tech economies paper documents that the exporter generally obtains. Such documents would include insurance policies, consular invoices, and export licences and permits. In absolute-LT economies, documents obtained by the exporter will be paper-based, which may need to be transmitted to hi-tech economies electronically. The TPF will be the entity to dematerialise the paper documents to acceptable digital formats.

#### **(c) Services to Government Departments in an Absolute-LT Environment**

As with the importer and the exporter, government departments in absolute-LT economies will need the services of TPFs to materialise incoming electronic information and dematerialise outgoing paper-based documents. Carriers' transport information to customs and other regulatory establishments would have to be converted to paper for lodgement. On the other hand, paper-based documents from government departments designated for hi-tech economies would have to be dematerialised by the TPF for onward transmission.

In an absolute-LT economy, therefore, TPFs will occupy a central position in the economy's international commerce, managing all data flows. Absolute-LT economies will be isolated from the rest of the international business community without TPFs, unless some other system of accommodating them in paperless trade is adopted.

For TPFs to occupy such a central position in low-tech economies, they must not only possess the technological capacity, but also legal authority and commercial viability. They must have legal recognition to materialise and dematerialise documents for use not only within the low-tech country within which they operate, but internationally.

### **4. Business Structures of TPFs**

In principle, nothing prevents TPFs from assuming any particular business form, but the most suitable business structure would be corporations. Commercial operators, such as Bolero International Ltd, can establish corresponding centres in Africa, and various regions of the developing world, to offer TPF services. To ensure affordability, government of some countries may wish to establish non-commercial statutory corporations instead to offer TPF services.

### 5. *Legal and Regulatory Regime of TPFs*

There must be adequate regulatory regime for TPF operations, particularly where the operators are commercial entities. The use of TPFs is likely to give rise to new legal problems, particularly liabilities. In the absence of regulations, legal problems will fall for determination by the general law of contracts and torts. The general law may not sufficiently protect the interest of all parties, as commercial parties will seek to disclaim responsibility or liability to the extent permissible by law.

[23]

## C. Provide Low-Tech Africa with IT

Building Africa's IT infrastructures to enable it to support electronic documentation systems would offer the best and permanent solution. However, that will take time and require the commitment of substantial funds and other resources. As paperless international trade is already in operation, short-term solutions like the dual and TPF systems may be necessary, but long-term solutions should be pursued in earnest.

Both developed and developing countries recognise the importance of technology and modern modes of communication in economic development.[24] Most of sub-Saharan Africa needs a complete re-engineering of their economic, trading, and technological systems. The starting point is to build the basic infrastructure such as adequate national electrification, cabling, and wiring. There must then be public education to raise awareness and ability in the uses and benefits of IT, and the training of appropriate personnel to organise, manage, maintain, and control the technologies.

Trained personnel should be retained in Africa, which requires giving them incentives such as adequate remuneration, creating congenial work and economic environments, and positive government responses to constructive suggestions. So often highly personnel from developing countries do not remain in, or return to, their countries for economic, political, and social reasons. This results in a brain-drain from developing countries, which leaves these countries permanently short of the technical and specialist personnel needed for IT development, among other things.

The IT needs of Africa require substantial injections of capital, and visionary leadership with technological acumen. As Africa is impoverished, the capital has to be provided from external sources. In addition to funding, the technology itself and technical assistance will have to be provided by hi-tech economies.

Foreign capital may come from private or public sources. Private capital is provided on commercial terms, for which direct returns are the main consideration. Provision of the basic IT infrastructure, which may require the re-engineering of a country's telecommunication, is not likely to attract private capital. Thus capital would have to be raised from public sources. Available sources of public foreign capital are international financial institutions (IFIs) such as the World Bank and its affiliates, regional economic bodies such and the EU, ASEAN and NAFTA, and developed nations.

Of these sources, the World Bank is probably the most likely source, as soft terms of finance are needed. In the last three decades, the World Bank has focused its programmes on Third World policy reform, environmentally sound growth, and public enterprise restructuring.[25] If, as is claimed, "during the fifty years since the Bretton Woods Conference, the Bank and its affiliates have continued to develop in response to the changing needs of their members,"[26] then there is presently an urgent need for the Bank to respond to the IT needs of Africa.

## V. CONCLUSION

Paperless international trade offers numerous advantages and the international business community has worked hard to develop the technology and to create a conducive legal environment for global paperless trade. Although some legal impediments remain, paperless trade can operate validly in most developed economies.

The technology for trading electronically is unavailable in Africa, and many other developing countries. Africa therefore cannot trade electronically, and measures ought to be designed to accommodate it. Two short-term solutions, namely the maintenance of a dual system and the use of TPFs, have been proposed in this discussion.

It is essential that permanent solutions be sought. As a permanent solution, it is suggested that the IT infrastructures in Africa should be built. Since Africa is impoverished and unable to finance the required IT projects, hi-tech economies should assist. Considering the magnitude of projects that are needed, the World Bank should be the primary funding institution, though other multilateral and bilateral sources may offer invaluable financial assistance.

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[1] See Laryea ET, "Bolero Electronic Trade System: An Australian Perspective" [2001] 16(1) J.I.B.L 4; Caplehorn R, "Bolero.Net--The Global Electronic Commerce Solution for International Trade" [1999] *Butterworths Journal of International Banking and Financial Law* 421. *International trade* in this paper refers to international sale of goods involving carriage of goods by sea. That is, transactions involving shipping documents and often referred to as documentary sale transactions. The writer is aware that international trade is much wider and involves more than documentary sale transactions. International trade generally involves the movement of persons, capital, goods, technology or services, but documentary sale transactions are the focus of this paper.

[2] See Bofo KST, "Communication Technology and Dependent Development in Sub-Saharan Africa" in Lent JA and Sussman G (eds), *Transnational Communications: Wiring the Third World* (1991) Sage Publications Newbury Park, 103; Adjibolosoo SBK, *The Human Factor in Developing Africa* (1995) Praeger, 153-175.

[3] For a detailed consideration of these factors see, for example, Khalil TM and Bayracktar BA (eds), *Management of Technology IV: The Creation of Wealth Vol 2* (1994) Industrial Engineering and Management Press, Norcross; Ezeala-Harrison F and Adjibolosoo SBK (eds) *Perspective on Economic Development in Africa* (1994) Praeger, New York.

[4] See Gyasi EM, Tsikata GK, and Asante, *Determinants of Foreign Direct Investment in Ghana*, (2000) ODI, London; Schware R and Kimberley P, *Information Technology and National Trade Facilitation*, (1995) World Bank, Washington DC, 13; Adjibolosoo, *The Human Factor in Developing Africa*, above n 2.

[5] See, for example, the *Electronic Communications Act 2000* (UK); *Electronic Signature in Global and National Commerce Act 2000* (US); *Electronic Transactions Act 1999* (Australia); *Electronic Transactions Act 1998* (Singapore). See also Smedinghoff TJ and Bro RH, "Moving With Change: Electronic Signature Legislation as a Vehicle for Advancing E-commerce" (1999) 17(3) *John Marshall Journal of Computer and Information Law* 723.

[6] See Laryea ET, "The Technological Challenges Facing Developing Countries in the Move to Paperless International Trade" (1999) 11 *Bond Law Review* 274.

[7] Root FR, *International Trade and Investment* (1990) South-Western Publishing Co., Cincinnati, 1; Huq AM, *The Global Economy* (1988) Oryx Press, New York; Cooper RN, *Economic Policy in an Interdependent World: Essays in World Economics*, (1986) MIT Press, 289-331.

[8] Pollins BM and Brecke PK, "International Economic Processes" in Bremer SA (ed), *The Globus Model: Computer Simulations of worldwide Political and Economic Developments* (1987) Westview Press, Colorado, 459.

[9] While all trade documents need to be dematerialised, the bill of lading has been chosen because to date it has been the most difficult of all trade documents to dematerialise. A typical international trade transaction will involve contracts of sale, agency, insurance, payment, and other banking and commercial arrangements. Documents will be generated to serve the purposes of all these contracts and arrangements, as well as satisfying various regulatory regimes such as export and import licences, exchange control, custom clearance, health, safety, packaging, and labelling. See Allan DE, "Trade Financing--Export Transactions", in Malleson Stephen Jaques (ed), *Australian Finance Law* (4<sup>th</sup> edn, 1999) LBC, Pyrmont NSW, 323.

[10] Banks in hi-tech countries have been at the forefront of the move to paperless systems, and are vigorously propagating telephone, Internet, and computer banking. See, generally, Tyree A, *Digital Cash* (1997) Butterworths, Sydney.

[11] The fact that banks in Africa may be multinationals that can afford electronic systems does not mean that they will necessarily install such systems. There may be numerous other factors that may militate against their installing electronic systems such as the lack of national information technology infrastructure, lack of a critical mass, and lack of support services.

[12] For discussions on the CMI Rules, see Kelly RB, "The CMI Charts a Course on the Sea of Electronic Data Interchange: Rules for Electronic Bills of Lading", (1992) 16 *Tulane Maritime Law Journal* 349; and for Bolero, see Laryea, above n 1, and Caplehorn, above n 1.

[13] Bridge M, *The International Sale of Goods: Law and Practice* (1999) OUP, 442; Todd P, Todd P, *Bills of Lading and Banker's Documentary Credits*, (3<sup>rd</sup> edn, 1998) LLP, London, 2.

[14] Green MC, "Letters of Credit and the Computerisation of Maritime Trade" (1988) 3 *Florida International Law Journal* 221, 226-228.

[15] For the problems with letters of indemnity, see Mattout J-P, "Letters of Indemnity in Shipping Transactions: Legal Aspects" [1991] *J.I.B.L* 320, 321-323.

[16] It is estimated that paper documentation costs 7 per cent of the US\$6 trillion in international trade each year, representing US\$420 billion per year, and electronic documentation will cut these costs greatly. See Caplehorn, above n 1.

[17]. See Wright B and Winn JK, *The Law of Electronic Commerce*, (3<sup>rd</sup> edn, 1998) Aspen Law & Business, New York, para 1-9; Emmelhainz MA, *Electronic Data Interchange: A Total Management Guide* (1990) Von Nostrand Reinhold, New York, 20-40; Sokol PK, *EDI: The Competitive Edge* (1989) Intertext Publications, New York, 16-17.

[18] See Roberts JL, "Electronic Bills of Lading", in Wilde DMC and Islam MR. (eds) *International Transactions: Trade and Investment, Law and Finance*, (1993) LBC, North Ryde NSW, 85, at 87.

[19] Though the functions of the proposed TPFs may be similar to Trusted Third Parties (TTPs) often required in electronic transactions that are secured by cryptographic protocols, they must be distinguished. The main function of TTPs is to issue certificates (i.e. digitally signed statements) that provide independent confirmation of an attribute claimed by a party proffering a digital signature. The certificates TTPs issue are a computer-based record that names or identifies its subscriber, and authenticates electronic messages. In effect, TTPs add credence or authentication to electronic

transactions between hi-tech parties. TPFs, though TTPs in the sense that they are third parties trusted with the conduct of transactions between other parties, will facilitate trade between low-tech and hi-tech parties. For the functions of TTPs, see Ford W, "Advances in Public-Key Certificate Standards", [1995] *SIG Security, Audit & Control Review* 9; Froomkin MA, "The Essential Role of Trusted Third Parties in Electronic Commerce", (1996) *75 Oregon Law Review*, 49; Smith BW and Tufaro PS, "To Certify or not to Certify? The OCC Opens the Door to Digital Signature Certification" (1998) *24 Ohio Northern University Law Review* 813.

[20] Primarily, the bill of lading is used between carriers, exporters, and importers. The importer has to present the bill of lading to the carrier to take delivery of the goods it represents. Since in a semi-LT economy the importer and the carrier can communicate electronically, prints of the bill of lading will ordinarily not be needed. However, government departments may demand submission or lodgement of bills of lading with them for regulatory purposes, such as custom clearance. As government departments in a semi-LT economy will accept only paper bills of lading, there will be a need to materialise EBLs.

[21] The main advantages of electronic clearance procedures are speed, efficiency, and cost saving. Computerisation of customs processes reduces clearance steps and increases operations at ports. In some cases steps have reduced from twelve to four, normal processing time per transaction has reduced from three days to 20 minutes, and resulted in saving millions of dollars. See Hanna N and Boyson S, *Information Technology in World Bank Lending: Increasing the Development Impact* (1993) The World Bank, Washington, DC, 33-37.

[22] See Todd P, *Bills of Lading and Banker's Documentary Credits*, above n 13, 10.

[23] Such as the *Unfair Contract Terms Act 1977* (UK); and the *Trade Practices Act 1974* (Australia).

[24] Melody WE, "The Information Society: The Transnational Economic Context and Its Implications" in Lent JA and Sussman G (eds), *Transnational Communications: Wiring the Third World* (1991) Sage Publications Newbury Park, 27.

[25] Esberstadt N and Lewis CM, "Privatising the World Bank", [1995] *The National Interest*, 14-15.

[26] Talero E and Gaudette P, *Harnessing Information for Development: A Proposal for a World Bank Group Strategy*, (1996) World Bank Discussion Paper, 1.