E-COMMERCE AND DEVELOPMENT REPORT 2001

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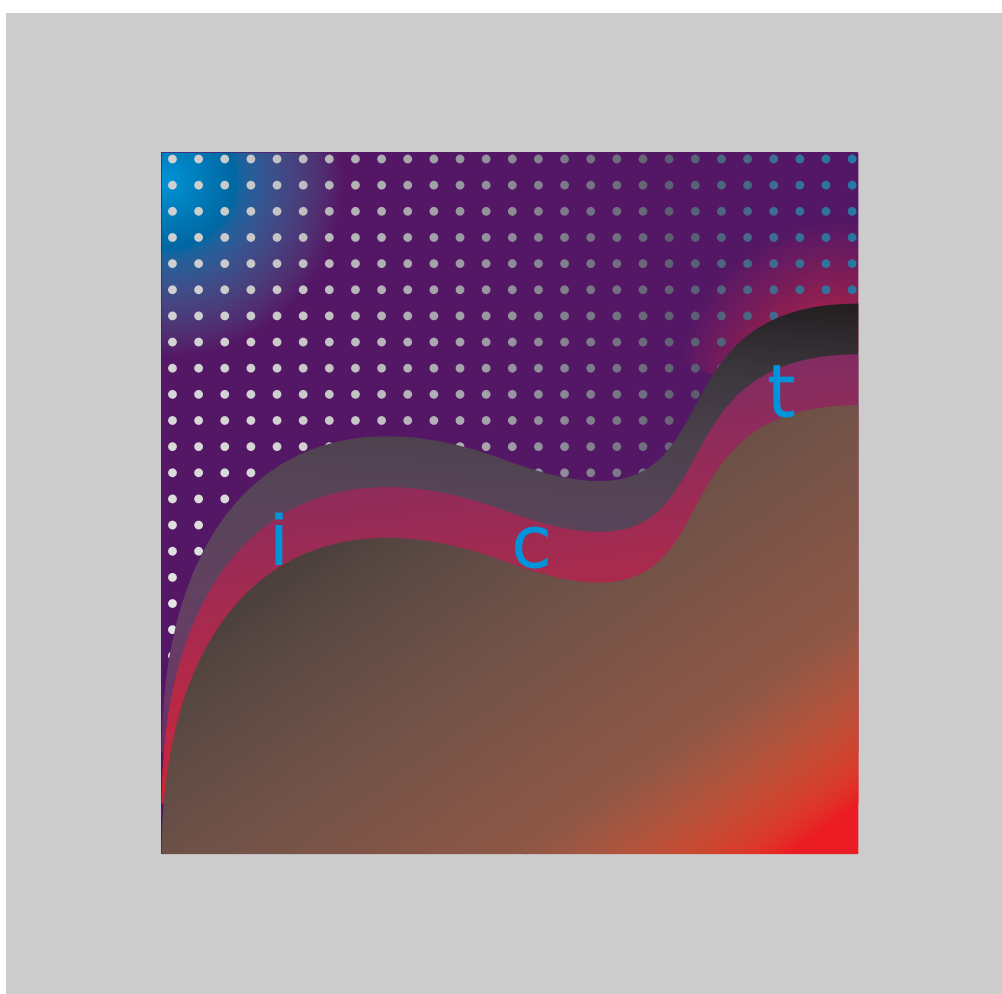
Part Four

EXPERIENCES AND OPPORTUNITIES
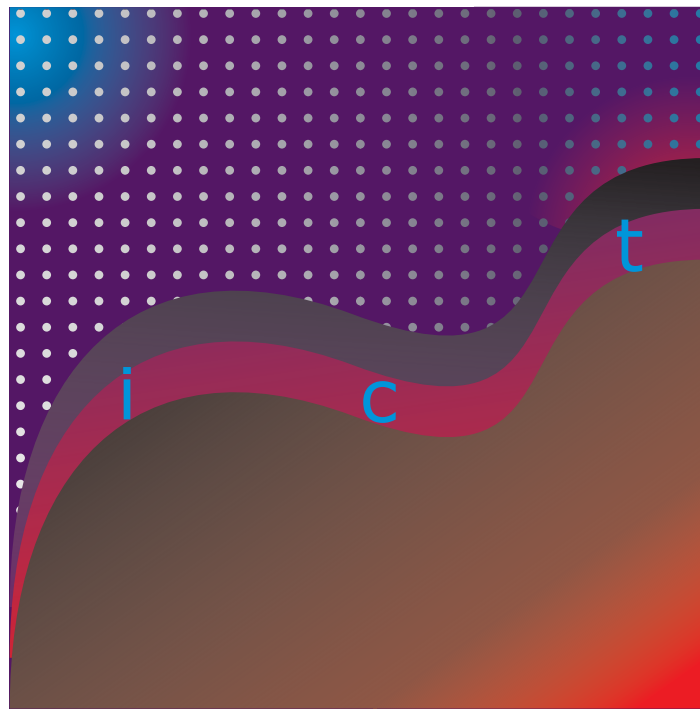
Chapter 9
E-COMMERCE IN THE LEAST DEVELOPED COUNTRIES

A. Introduction

A survey of ten least developed countries (LDCs) was conducted by UNCTAD in preparation for the Third United Nations Conference on the LDCs (Brussels, Belgium, 14-20 May 2001). The purpose of this survey was to identify:

- Enterprises that have successfully applied e-commerce strategies in their business operations;

- Potential business opportunities resulting from the World Wide Web and web-enabled technologies;

- Partners (governmental and non-governmental institutions) that are currently promoting and/or supporting e-commerce initiatives at the enterprise level.

The countries visited were Bangladesh, Cambodia, Ethiopia, Madagascar, Mozambique, Myanmar, Nepal, Togo, Uganda and the United Republic of Tanzania.

The focus of this chapter is on *enterprises* located in LDCs. It recognizes, but does not address important macro issues such as the responsibility of LDC Governments to ensure that civil society is not marginalized by developments in e-commerce, the global information society and the Internet.

A number of enterprises were identified, of which the best 16 cases were selected.[1] Nine enterprises were classified as business-to-business examples (teleservicing[2]) and seven were classified as business-to-consumer examples. The criteria used to identify successful stories included the potential market size, the sustainable competitive advantage, the qualified management and the replicability of the business model.

The biggest challenge facing LDC enterprises is not the technology aspect of e-commerce, but dealing with the business culture and practice changes that will be required within the enterprises in order for them to successfully adopt an e-commerce strategy.

B. Survey findings

Information was gathered via desk research and country visits. Visits lasted on average three days per country. Key people and organizations were identified in each of the countries to assist in identifying e-commerce-active enterprises. Recognized opinion leaders, including business leaders, Internet-service-related business leaders, academics and government officials, were interviewed to obtain an overall picture of the general e-commerce situation in a country.

1. Findings at the country level

The following findings refer only to the LDCs surveyed. The general findings (at the country level) are categorized under the following:

- The physical e-commerce infrastructure which addresses the physical environment needed for an enterprise to carry out an e-commerce strategy. This would include Internet-related services, telecommunications and electronic payment systems;

- The policy and regulatory environment which addresses those policies or regulations which most hinder enterprises from engaging in e-commerce.

- Institutional and human resources which address the national skills base and resource and development capabilities necessary for enterprises engaging in e-commerce strategies.

Information supporting the findings in this section can be found in the Annex, which is a report on selected LDCs.

(a)   Physical e-commerce infrastructure

From the enterprise point of view, Internet access is available in all countries surveyed, albeit in a very restricted manner in Myanmar. The quality of Internet access (in terms of number, reliability, capacity, cost and range of services of Internet Service Providers (ISPs)) ranges from very good in cities such as Dhaka, Kampala and Dar-es-Salaam (offering a range of wireless options) to very poor in Addis Ababa and Yangon (prohibitions, long waiting lists, low bandwidth, and high cost).

The availability and the quality of telecommunications have improved dramatically in LDCs. Most enterprises located in urban areas now have access to some form of telecommunication, either a fixed line or a wireless line. The quality and reliability of telecommunications varies between the countries surveyed and between cities and rural areas. Enterprises in Kampala will soon have access to fibre optic telecommunication links, whereas Dhaka still has problems with regular downtimes and low bandwidth.

Most countries surveyed reported relatively high local telecommunications costs (from $10c per minute), with the exception of Ethiopia. This has an impact on use of Internet, as most Internet connections are dial-ups.

There is a correlation, in terms of availability and quality of Internet access, between those countries that have liberalized their Internet access and those that have not. Myanmar and Ethiopia have not issued private ISP licences and as a result have a very poor Internet infrastructure.

All the countries surveyed still rely on Very Small Aperture Terminal (VSAT) gateways. This situation impacts on international bandwidth costs and entails the risk of down time, putting them at a disadvantage in relation to developing and developed countries.

The proliferation of privately owned Internet cafes has surprised many; it provides a viable access option for those enterprises/individuals that do not have their own computers and telecommunications access. Kathmandu (Nepal) has over 1,000 Internet cafes, possibly because of tourism. However, even cities not known as tourist destinations are experiencing growth in this area, for example Lomé (300), Dar-es-Salaam (100), Dhaka (50), Kampala (25) and Maputo (10). The popularity of Internet cafes appears to be unrelated to the cost or quality of ISP services but rather to a greater or lesser awareness on the part of the general public regarding the Internet and its benefits. Most people visiting Internet cafes use the service for e-mail and surfing for news and entertainment.

Most countries surveyed have Global System for Mobile Communications (GSM) cellular networks, and in some cases, more than one operator (i.e. Bangladesh, Uganda, United Republic of Tanzania). Ethiopia and Mozambique have only one State operator. The presence of GSM networks is important for e-commerce because of the number of e-commerce applications now available that can be carried by such networks.

Those countries with more than one mobile operator have benefited from the resulting competitiveness. Mobile operators have built networks covering large parts of the country, reduced call costs, made access easier for the wider population by offering prepaid options, and provided access to subsidized handsets. These product offerings have resulted in unexpected subscriber numbers in excess of 150,000 in countries such us Bangladesh, Uganda and the United Republic of Tanzania.

Joint ventures between ISPs and cellular operators are being set up, enabling ISPs to establish points of presence (POPs) in rural areas. CyberTwiga (ISP) and Mobitel (a cellular operator) in the United Republic of Tanzania have entered into such a relationship.

The banking infrastructure in the LDCs surveyed is not conducive to e-commerce. Most banks are not electronically interlinked, nor even the branches of the same bank. None of the countries surveyed had a national electronic payments clearing system. There are isolated examples of online banking (one bank in Mozambique) and the use of smart cards (one bank in Uganda).

Owing to the lack of a local credit management infrastructure, none of the banks surveyed issue credit cards (not even multinational banks located in LDCs) and very few businesses (usually only hotels and tourist-oriented shops) can accept credit card payments.

(b) Policy and regulation

The LDCs visited, with the exception of Ethiopia and Myanmar, are at various stages in the liberalization of their telecommunications environment, some are in the process of privatizing their State telecommunications company (Mozambique and the United Republic of Tanzania), others have issued second and third private fixed-line licences (i.e. Uganda and Bangladesh), and most have issued private ISP licences.

Some of the countries visited, including Uganda, the United Republic of Tanzania, Bangladesh and Togo, allow private VSAT licences enabling ISPs to purchase their own bandwidth from international satellites. VSAT licences are limited, however, to data traffic.

None of the LDCs visited, with the exception of Togo, allow voice-over IP (Internet telephony). Policing, however, is lax in countries such as Nepal, where IP services are openly offered at Internet cafes.

None of the LDCs visited have an e-commerce policy in place. Bangladesh is at an advanced stage in developing an information technology (IT) policy. Others are at early stages in their e-commerce strategies and IT policy development. None have an e-commerce law as yet (relating to the legalization of digital signatures, cyber crime, protection of databases, copyright issues, etc.)

All LDCs visited have varying degrees of foreign exchange and banking regulations in place which impact on the flexibility of e-commerce strategies aimed at international markets. These include, for example, restricting access to foreign e-commerce-related support services and the holding of foreign bank accounts, and not being able to ship without traditional payment assurances in place, i.e. letters of credit. Other prohibitions, for example on the use of encryption technologies, will impact on the viability of electronic banking and the use of smart cards etc.

(c) Institutional and human resources

Many of the national universities of the countries visited had paid some attention to Internet, IT and e-commerce issues. Initiatives related to IT and e-commerce were found in universities in the United Republic of Tanzania, Uganda, Bangladesh and Ethiopia. Most universities were active in advising government at a policy level.

All the above-mentioned universities have computer science faculties. Bangladesh appears to be by far the most advanced in producing computer science graduates (around 1,300 a year).

The United Republic of Tanzania, Bangladesh and Nepal have a plethora of private colleges offering courses teaching computer skills, web development and programming. Bangladesh produces around 10,000 IT-related graduates per year. This level of skills development is less apparent in the other LDCs, possibly owing to a low local demand for these types of skills and to low levels of awareness of opportunities in this field.

With the exception of Bangladesh and possibly Nepal, the LDCs visited have almost no capacity to develop software. Bangladesh sees software development as a major focus area for future export industries (over 62 software development enterprises are listed in a local association, 10 of which are already servicing international clients).

2. Findings at enterprise level

(a) Business-to-consumer e-commerce examples (international)[3]

Almost all the identified enterprises selling a product or service online were business to *unique consumer* e-commerce models. All focused on online selling to a small niche market located in industrialized countries. Examples include Ethiogift.com (Ethiopia) and Munshigi.com (Bangladesh), which market the concept of non-resident Ethiopians or Bangladeshis buying gifts online (sheep, flowers etc.) to be delivered to relatives or friends living at home. Of the 16 enterprises chosen as success stories, seven were classified as business-to-consumer examples. Of those, six were focused on small niche markets such as the diaspora market.

Other examples of unique offerings include enterprises selling traditional textiles, garments, music, food etc. to their respective diasporas living abroad, or to small niche markets. Examples include LifeinAfrica.com (Uganda) selling traditional cloth to African-Americans and promoting African culture, and SimplyAfrican.com (owned by Raha.com, United Republic of Tanzania) selling high-quality African art to art lovers in the United States.

The average annual turnovers of enterprises servicing the diaspora community or small niche markets are between $2,000 and $30,000 a year. Their net profits are low because a large portion of the sales price goes to the original producer and to delivery and payment charges.

Although there is clearly a business model in pursuing unique markets such as the diaspora market, it is limited. Funds transferred from non-residents to their family each year provide an indication of the potential size of the diaspora market. For example, approximately $100 million is transferred home each year by non-resident Ethiopians to support their families. A small percentage of this money is sent to purchase products from home.

Success has come to those LDC enterprises that have been able over a period of time to develop a consumer trust, by creating a loyal subscriber base (i.e. Lifeinafrica.com), offering information about home (i.e. Radio One (United Republic of Tanzania), Simba Radio (Uganda), *The Addis Tribune* (Ethiopia)),[4] or by developing an agent network in the target market (i.e. Ethiogift has a network of Ethiopian restaurants assisting in selling, or facilitating sales and distributing marketing literature).

Enterprises selling products to overseas markets have to charge high delivery costs and provide for longer delivery times. Most rely on local producers who sometimes prove unreliable with regard to delivery and consistency of quality. In order to protect their online reputation, these enterprises have to keep large quantities of stock. Although their international markets are small and niche, they are widely spread, and this makes it difficult to arrange bulk order deliveries; consequently, shipping is a large component of the end price.

The low turnovers of these enterprises limit what they are able to spend on marketing, and consequently they have to rely heavily on word of mouth or advertising and presence on news/information portals. Some news sites (Newafrica.com) claim visitor numbers in the region of 80,000 hits per month. This reflects the hunger of the respective diasporas for information about home; for example, Simba Radio (Uganda) has registered thousands of visitors per week as receiving its audio streaming, mainly from the United States). These portals therefore provide an opportunity to expose appropriate products to a highly targeted online community.

Business-to-consumer e-commerce (international) is an interesting option for medium-sized manufacturing exporters in LDCs, yet only one enterprise was found to be successfully applying an e-commerce strategy, namely Genuine Leather Craft (GLC) of Ethiopia. In the case of GLC, the idea of marketing leather garments directly to the end consumer came as a result of difficulties in getting the support of agents based in the major markets, who preferred suppliers from more established supplier countries (Italy, Turkey and Pakistan). Up to 40 per cent of GLC's sales are now from online orders from consumers around the world, many of which are repeat orders.

Manufacturers wanting to apply business-to-consumer models (i.e. selling directly to the end consumer in a foreign market) have faced a number of hurdles. These include becoming known to their target market, creating consumer trust (these enterprises are not internationally known brands), constantly changing freight charges, trade regulations, and high payment (credit card) commissions. GLC indicated that it did not have the expertise to develop its own online strategy in terms of marketing, website development and back-end processing.

Online businesses selling to international consumers face regulatory problems in countries with exchange controls, particularly those that require proof of payment prior to shipment, or payment before shipment. Export/import regulations may prevent the return and replacement of defective goods. Lengthy customs procedures for exports can also impact on customer service and delivery promises.

All identified business-to-consumer models based in LDCs have their websites hosted in the United States, Canada or another developed country, mainly because credit card payment options can be offered. Other reasons include cheaper and better-quality hosting services, regarding for example website performance and listing.

Obstacles identified by LDC enterprises engaged in online business-to-consumer models include the high costs involved in developing a quality website and acquiring online clients, expensive fulfilment costs, problematic online payment issues, exclusivity of distribution channels and the lack of a domestic market.

(b) Business-to-business e-commerce examples (international)[5]

The business-to-business e-commerce model is the most important form of e-commerce in terms of value. Experts agree that more than 80 per cent of e-commerce transactions will be those between businesses. This percentage will be even higher in LDCs (probably above 90 per cent), particularly if international business is involved, as local business-to-consumer e-commerce is unlikely to reach any significant levels. In that framework, teleservices represent enormous opportunities, mainly because of the huge difference in wages between LDCs (as low as $20 per month but around $500 for highly qualified individuals) and developed countries (from $2,000 to $10,000 per month for similar activities).

A "teleservice" can be defined as a "service which can be executed from a remote location using web enabling technologies". Examples of online and offline teleservices are translation, data scrubbing, copy editing, medical transcriptions, data input, creation of customized marketing databases, creation of (simple) websites, scanning (i.e. digitalization of print documents), call centres, follow-up marketing calls and remote surveillance.

Online teleservices can be divided into interactive and non-interactive. Interactive online services involve real-time involvement by the contracted party. Examples of these types of services include call centres handling airline reservations, telemarketing and after-sales support. Some of these services are being outsourced by large corporations and often to call centres outside the country. The low-cost Internet telephony now allows call centres to be established in a country other than that of the target audience, provided that the call centre, for example situated in an LDC, has reliable low-cost high-bandwidth connections. A report by the Economic Commission for Africa[6] has identified a call centre project in Togo (Café Informatique[7]) which provides call centre services over the Internet for clients based in the United States. The attraction of locations such as Togo is the significant human resource cost advantages. The Café Informatique has secured a pilot contract with a major United States telephone company to update telephone directories. The centre employs over 50 operators. Although an attractive opportunity, online teleservicing has substantial barriers. There are relatively high start-up costs for equipment and high training costs, and the company must have the capacity in place before trying to win a contract. Online

contracts often involve 24-hour operations and the skills required are difficult to develop as they involve teaching people not only language but also new cultures and behaviours.

Online non-interactive services include Internet radio stations, or Internet sports sites which provide downloadable but recent news on sports events. Radio Simba[8] could be classified in this category, except that at this stage it is not charging recipients for the service.

Far more attractive options for LDC enterprises are the various forms of offline teleservicing. These include transcription services, data input, software development, remote access server maintenance, web development, creation of databases, digitization of old documents (i.e. architectural drawings), translations and editing. Technosoft Transcription of Bangladesh is contracted to medical practitioners in the United States to transcribe audio patient record files into text. The indications are that this area of teleservicing is a multimillion-dollar industry. Bangladesh believes, on the basis of Indian projections, that if it could capture 5 per cent of the Indian projection, it could generate revenues in excess of $300 million per year.[9] Other types of transcription and data input such as legal transcripting provide similar opportunities.

Offline teleservicing generally involves lower start-up costs. Since operations do not have to be "live", management has the opportunity to intercept poor-quality work prior to delivery. Doticom Services,[10] a four-person company in Uganda, was able to win a contract to input data from scanned invoices into an accounting package for an auditing firm in Canada without a large initial investment.

Offline teleservices offer talented individuals living in LDCs an opportunity to do work for companies based in developed countries. For example, an enterprise in the developed world requires desk-top publishing services for a document. The document is sent by e-mail to the contracted person, who could be situated in any LDC provided that he or she has Internet connectivity. The person works on the document and, once finished, sends it back to the enterprise by e-mail. These services are referred to as offline, as the work is done offline, and only when it has been completed, does the person go online to send it to the customer. Companies in developed economies will increasingly secure these types of services in low-

labour-cost countries. The report by the Economic Commission for Africa on electronic commerce in Africa, mentioned earlier, identified a number of examples of offline services: a Moroccan company with a staff of over 70 that digitizes manuscripts for a European publisher; a Moroccan company that offers Internet-based translation services; and a Senegalese company that employs 30 skilled computer-aided design technicians to do architectural detailing for European clients.

Software development and remote access maintenance (RAM) also provide a viable opportunity for low-labour-cost countries that have the required skills base. Unfortunately, most LDCs lack that base for this type of business. Bangladesh, however, has such a capacity in place (it produces 1,300 computer science graduates a year), and Techbangla,[11] a local business initiative, aims to turn Bangladesh into a significant global software exporter with a $1 billion industry. Five companies in Dhaka have already secured international contracts.

However, despite these considerable opportunities, only few larger LDC enterprises provide teleservices to enterprises in developed countries. Obstacles identified by enterprises in LDCs in establishing teleservicing operations include the difficulty selling their services/breaking into established markets, lack of immediate capacity and regulatory hindrances.

3. Technological developments that could benefit LDCs

Promising developments in low-bandwidth cellular applications such as "short message service" (SMS), content push and pull technologies, platforms allowing interface between mobile handsets and computers/databases, and mobile payment solutions will enable the current GSM networks in LDCs to provide the carrier for a local e-commerce infrastructure. Growth in cellular networks has expanded telecommunications and provided thousands of people with handsets. This implies that there are potentially thousands of "points of access" for e-commerce in LDCs.

Wireless solutions are now being deployed which could enable LDCs to leapfrog Internet infrastructure development. Mobitex allows e-mail to go wireless using cellular architecture. In the United States, Mobitex is operational on the 895–910 MHz spectrum. More than 1,500 users can be served through a single base station. Other wireless internet solutions are Ricochet, offering end users rates of 128 kps, and High Data Rate (HDR), which offers high-speed, high-capacity packet data services using GSM infrastructure on an "always connected basis"[12].

The move from highly structured and streamlined electronic data interchange (EDI) standards to XML (eXtensible Markup Language) standards will allow LDC suppliers and buyers easier access to B2B market places and exchanges. This new standard will enable buyers and suppliers to perform full-fledged EDI-type transactions using web-enabling tools (i.e. web browsers). This is a significant development for LDCs in that current EDI systems are the domain of larger companies (of which there are very few in LDCs) since the cost of the customized software and technical coordination is far too high for smaller businesses. This situation is reflected in the OASIS statistics, which show that 95 per cent of Fortune 1,000 companies were using EDI in 2000, whereas only 2 per cent of small and medium-sized businesses are using EDI.[13]

One of the most promising developments for B2B is the Application Service Provider (ASP). ASPs offer business software services on demand over the web without the need to invest in specific products. LDC enterprises will be able to develop their e-commerce strategies without the large investments in software systems previously required. Currently, these services are not widely available in LDCs but could easily be offered from virtually anywhere in the world should the demand justify it.

4. Global developments in B2C/B2C e-commerce important to LDCs

The failing of the "dot.coms" on international stock markets should not affect LDCs in a direct way. The most important e-commerce developments for LDCs are in B2B sector. Although many B2B exchanges and market places have been formed over the past few years, many are not operating as expected. One of the reasons given is that many of these initiatives are being driven by brokers/middlemen who do not have control over the buying or selling and therefore cannot force a change in the buying and selling culture based just on some transaction cost savings. There is, however, a trend whereby traditional market makers are beginning to come together to form B2B markets and exchanges. It is believed that this will most likely be the basis of future e-commerce.

Many of these companies come out of the EDI culture and will develop their business systems further to accommodate open standard buying or selling platforms.

There is no doubt about the cost savings and efficiencies of B2B e-commerce, hence the absolute assurance that it will work one way or another. Cisco Systems claim to have saved over $1 billion thanks to their e-commerce system where they are linked with suppliers.

These developments will no doubt impact on LDCs. Viable B2B portals hold promise for those LDC enterprises that are e-commerce-enabled as the latter will be able to tap into a highly efficient international procurement system, which will save them high marketing and market development costs and provide them with improved market penetration.

There should be no doubt that business is moving in the direction of e-commerce. Jupiter Communications believe that world B2B e-commerce will be worth $6 trillion by 2003,[14] while the Gartner Group has put the figure at around $3.6 trillion.[15] Whatever the prediction, it is clear that business is moving online at a rapid pace. Even small business spending online increased by 138 per cent during the first quarter of 2000 and the number of medium to large businesses engaged in e-commerce is already above 40 per cent.[16] Enterprises in LDCs cannot afford to miss out on these developments.

C. Concluding remarks and recommendations

1. Concluding remarks

E-commerce in LDCs is insignificant when compared with e-commerce in developed and developing countries. However, a number of enterprise case studies were identified of which the best 16 are presented in the annex.

There are several major impediments to the development of e-commerce in LDCs: enterprise managers' lack of initiative and leadership in taking advantage of e-commerce; and the lack of awareness at government level of e-commerce issues, coupled with the need for Governments to assume their role in urgently addressing the lack of an e-commerce culture in their countries. There is an urgent need for

enterprises (particularly exporting enterprises) to educate themselves on e-commerce and to become aware of international business-to-business opportunities. Countries in which there have recently been impressive developments in the use of e-commerce (i.e. the United Kingdom and Canada) are countries whose Governments have realized the importance of their role in promoting e-commerce and creating an e-commerce-friendly environment.

The unavailability of electronic banking capabilities in LDCs has a limiting effect on e-commerce, particularly local (domestic) e-commerce. Restrictive regulations such as exchange controls, protection of telecommunication monopolies, restrictive trade practices and prohibitions (i.e. encryption, Internet telephony, own gateway access etc.) are currently more of concern to LDC enterprises wanting to engage in e-commerce strategies than whether or not e-commerce policies and laws are yet in place. The absence of such laws and policies do not therefore prevent e-commerce from taking place but would increase business confidence if they were.

A further problem preventing manufacturers and other medium to large companies from taking e-commerce onboard is the initial costs associated with the change in terms of financial and time investment. Previous bad experiences of IT installations contribute to this concern. Fortunately, the costs are dropping and it is becoming easier to link up with existing market places and exchanges via Internet browsers. The bigger problem faced by many small and medium-sized LDC companies is the lack of internal IT-driven business systems to match the demands that will be placed on a company joining an exchange or market place.

As regards the physical e-commerce infrastructure, most of the countries surveyed had sufficient infrastructure to enable enterprises to implement some form of e-commerce strategy. Certain cities have excellent access to Internet services. Owing to the nature of the Internet, those e-commerce services not available in LDCs can be provided virtually from service providers based in other countries. These include hosting, website maintenance and, payment facilities. Hence, the LDC physical e-commerce infrastructure is limiting but not prohibitive. Even in the current environment, LDC enterprises could engage in e-commerce strategies. Moreover, new technologies (web-enabling cellular applications) offer

exciting new opportunities to leapfrog development of a local e-commerce infrastructure.

2. Enterprise-related recommendations

(a) Business-to-consumer e-commerce examples (international)

There are limited opportunities in niche international consumer markets for LDC enterprises that have the appropriate product offering. Enterprises considering such opportunities should ensure that their business model, in terms of overhead structure and expansion plans, takes this limitation into account. It is vital that these companies understand their target market, and structure the offering to meet the need directly. Enterprises with something unique to sell in the international market, whether it is the diaspora market or another market, should work with the appropriate content sites/portals, such as radio stations, newspapers or information portals, that already have a loyal visitor base (e.g. Newafrica.com, Africaonline). Such symbiotic relationships could allow them to:

- Share credit card merchant facilities;

- Share international web-related costs, i.e. web maintenance and hosting;

- Enter joint marketing arrangements;

- Enter joint market research initiatives;

- Enter joint distribution strategies.

(b) Business-to-business e-commerce examples (international)

Business/industry leaders must rapidly become aware of the benefits of using information and communication technology and e-commerce for their enterprises. Current manufacturers/exporters (e.g. the garment industry of Bangladesh, the shrimp/fish industry of Mozambique/United Republic of Tanzania, commodity suppliers) have the most to gain from looking to e-commerce strategies, provided that the opportunity is approached in the correct manner. This includes the realization that an e-commerce strategy is not just a website but provides an opportunity to use information and web-enabling technologies to:

- Improve the efficiency of information sharing and use, such as better access to company and market intelligence;

- Improve internal business practices;

- Improve external business practices, such as the way they deal with suppliers, clients and service providers.

Business/industry leaders must become aware of the implications of adopting an e-commerce strategy. A willingness to address old business cultures, practices and production procedures is vital in adopting an e-commerce strategy. The use of networking, e-mail, intranets and extranets has altered the way companies use and distribute information. This is a fundamental shift in business practice and culture. The only way to achieve cooperation for all parties is for the strategy to be driven and led from the top, and not from the information technology department. In Japan, even companies such as Toshiba, Fujitsu and NEC are in the process of making fundamental changes to business practices and product lines in order to maximize their position on the Internet.

Business/industry leaders must become aware of the penalty for not adopting e-commerce strategies. It is an indisputable fact that business is moving online irrespective of what has happened to many Internet companies, namely dot.com failures. Furthermore, it is important to understand that adopting an e-commerce strategy does not mean turning on traditional and current distribution/sales networks relationships. E-commerce should rather be seen as an enhancer of these relationships.

When considering e-commerce strategies, exporting enterprises in particular must consider joint initiatives with other enterprises in developing their e-commerce strategies. In smaller economies, where human and other resources are scarce, e-commerce strategies/initiatives are best approached at the industry level. Key institutions such as universities could assist in providing guidance, since keeping track of international best practice is very important. Groupings of enterprises could jointly afford the services of top consultants to put strategies in place. Interaction (partnership) with service suppliers such as freight forwarders and banks and with government agencies is critical. The e-commerce strategy could easily be undone by poor services or regulatory interference.

In the case of teleservices, new initiatives should use the cluster approach, all focusing on a particular type of teleservicing with a view to creating a significant capacity for that type of teleservicing in the country. The teleservicing business is very sensitive to reputation, quality assurance and reliability. If enterprises

in an LDC focus on one type of teleservicing, i.e. medical transcriptions in Bangladesh, the country will eventually have the critical mass in terms of capacity and reputation to impact on international markets. This will require leadership at the industry/business association level and possible government involvement.

There is sufficient evidence to believe that the potential in offline teleservicing is unlimited, and very viable for LDCs to embark on it with a sense of urgency and commitment. Offline teleservicing (transcription, data input) is more viable than online teleservicing (call centres) for LDCs because of lower start-up costs, manageable quality control and better possibilities to grow from a small capacity with smaller contracts. Also, because of less reliable telecommunications infrastructure and regulatory restrictions for voice-over IP, offline teleservicing is more suited to LDC environments. An offline teleservicing operation in Ghana has just secured a contract to process insurance claims (data input) with a client (an insurance company) in the United States that will eventually create 4,000 jobs.

(c) Local e-commerce

Banks and ISPs should consider installing web-based and other low-cost technologies enabling the roll-out of local e-commerce solutions. The banking community, ISPs and GSM operators must take cognizance of the needs of their clients in order to be able to transact electronically within domestic environments. They must explore the various technologies now available to make e-commerce infrastructure possible and cost-effective.

Local manufacturers and wholesalers must take advantage of any local e-commerce infrastructure initiatives by investigating the possibility of introducing online ordering and payment systems for small retail outlets. Where banks, in particular micro finance banks, are in the process of introducing various forms and levels of electronic banking in certain LDCs, manufacturers and wholesalers should explore the possibilities of providing electronic payment options for their customers using these systems.

3.   Recommendations to LDC Governments

Government leaders should become "e-commerce savvy". They should make it an urgent priority to understand what e-commerce is all about, what its benefits could be, and what consequences await LDCs that do not become part of e-commerce developments. They should commission market studies for key industries to determine what should be done, and to where government resources should be directed, to make the biggest impact. This could mean targeting important industry sectors where e-commerce strategies will become most critical.

LDC Governments should create an image of e-commerce awareness and leadership and demonstrate to the business community the importance of e-commerce. They should consider e-commerce issues at the highest level, possibly by creating an e-commerce Cabinet position, as was done in the United Kingdom. E-commerce awareness programmes should be aimed at enterprises and government departments in order to encourage a change in understanding and the approach to e-commerce.

Governments should identify e-commerce as a critical element of international competitiveness, in the same way as many of them have approached export promotion. This would lead them to design policies that would provide an incentive to industry and enterprises to take advantage of e-commerce opportunities. They could adopt e-commerce-type solutions for trade-related services such as port and customs clearance in order to improve trade facilitation. By enabling paperless trading, Governments will play a major role in assisting exporters in becoming e-commerce-ready. Enterprise- and industry-level incentives for applying e-commerce strategies could include special tax incentives, training incentives, investment incentives, establishment of "techno-parks" (similar to an export-processing zone) and provision of special access to finance.

Governments should, in line with their e-commerce strategy, allocate resources to developing their countries human resources and technical capacities. Actions would include a combination of education and training initiatives, including policy-level training for government officials, introduction of incentives to induce non-residents to return home and incentives to encourage inward immigration of talented people in the IT field, and development of international networks of partners and collaborators. For example, LDCs should aim at leveraging IT corridor developments in neighbouring developing and developed countries by entering into joint ventures or partnerships with universities or enterprises in those neighbouring countries.

LDC Governments should address policy and regulatory issues impacting on e-commerce. These would include restrictive telecommunications and trade regulations, laws affecting banking and foreign exchange, establishment of companies abroad, use of foreign hosting services, and encryption limitations. LDCs should develop an e-commerce legal framework in line with international practice. Governments should explore possible cooperation with international organizations active in promoting e-commerce best practice. This must include the development through training of a policy development capacity and a capacity to negotiate at diplomatic level.

E-commerce policy and laws are important, but the lack thereof should not deter enterprises from implementing e-commerce strategies. E-commerce has flourished in the United States for many years without the existence of e-commerce laws. Prohibitive regulations, however, such as foreign exchange laws, telecommunications laws and import/export regulations directly restrict e-commerce development.

Notes

1 The company sheets are presented in the Annex.

2 A teleservicing model is a business model that uses the Internet to service foreign companies on a remote basis. It is explained in section B, paragraphs 2 (b).

3 Business-to-consumer e-commerce (B2C) is the online selling of virtual or physical products to consumers or end users, and is similar to retailing in traditional business models.

4 These examples are discussed in the Annex under their respective countries.

5 Business-to-business (B2B) e-commerce refers to the online buying and selling of virtual or physical products and services between businesses, and is similar to wholesaling in traditional business models.

6 Post-African Development Forum Summit: Electronic commerce in Africa, report by the ECA (http://www.uneca.org/adf99/adf99ecommerce.htm)

7 See Annex in the section on Togo.

8 See Annex in the section on Uganda.

9 See Annex in the section on Bangladesh.

10 See Annex in the section on Uganda.

11 See Annex in the section on Bangladesh.

12 A system known as General Packet Radio Service (GPRS).

13 United States Internet Council, "State of the Internet Report 2000", www.usic.org.

14 United States Internet Council, op. cit.

15 *Businessweek*, European Edition, "Rethinking the Internet", 26 March 2001, p. 51.

16 United States Internet Council, op. cit.

Annex

Report on selected LDCs and companies

Note

A number of enterprise case studies based in LDCs were identified by UNCTAD. The best 16 were chosen for the purposes of this report. Note that information provided in this report about the companies is based on information given by the companies. This information has been accepted at face value and has not been verified.

UNITED REPUBLIC OF TANZANIA

What is striking about Dar-es-Salaam is the extent to which the Internet is becoming part of the daily lives of thousands of Tanzanians (working people, students and school-going children). Internet cafes have sprung up all over the city and outlying areas (there are estimated to be between 70 and 100 privately owned Internet cafes hosting on average between 10 and 20 computers). This is an important development for the United Republic of Tanzania as it points to the possibility of a rapid uptake of local e-commerce solutions. Phone calls are costly, and it is therefore cheaper to spend an hour in an Internet cafe (costing about $1.00) rather than an hour on a dial-up connection from home. In any event, most people do not have the option of accessing the Internet from home.

The United Republic of Tanzania is, relative to other LDCs, advanced in the deregulation of its telecommunications services, particularly Internet-related services. There are a number of private ISPs with a national subscriber population of about 10,000 accounts. Wireless connections are widespread, one ISP reporting that it has installed over 300 antennas in Dar-es-Salaam alone.

A further indicator of the potential uptake of e-commerce in the country is the extent to which and speed at which cellular telephony has taken off (there are now more than 100,000 subscribers, up from 30,000

in 1999). There are three operators, all offering pre-paid services, a fact which indicates that thousands of people in the United Republic of Tanzania are not averse to the concept of a card with a monetary value, which is a good sign for the introduction of digital cash or smart-card-type technology.

The country's lack of business and government leadership in the area of e-commerce is a cause of concern. Very few companies have considered e-commerce strategies and the Government has not yet embarked on any initiatives to create a e-commerce environment.

The financial of the United Republic of Tanzania infrastructure is not e-ready. Credit cards do not exist and even electronic bank transfers are not commonplace, many corporate employees still being paid by cheque or in cash. There are interesting plans underway to address the first impediment, which involve certain banks installing intranets and considering the introduction of smart cards. The National Microfinance Bank has plans to link 40 of its 95 branches by intranet, thus enabling rural people to transfer funds to cities. It is considering entering into a joint venture with a multinational bank to introduce smart cards for its 800,000 account holders. These plans are currently on hold as the bank is in the process of being privatized.

Company Sheet No. 1: IPP Ltd (Radio One)

Classification: Business-to-consumer model

Contact, staff and turnover

- IPP Ltd, Mikocheni Light Industry Area, Dar-es-Salaam, United Republic of Tanzania; website: www.ippmedia.com. Telephone: +255 741 786664
- Head: IT IPP Media – Mr. Finehasi Lema; e-mail: lema@raha.com
- Revenues in 2000: Revenues attributed specifically to the Internet project are difficult to determine. The project has, however, enhanced the revenue of Radio One thanks to new international listenership/viewership. This international exposure has led to a 20 per cent increase in spending on the radio.

Main line of business

- IPP is a media conglomerate with a television station, three radio stations and two newspapers. It provides media services to the Tanzanian people.

Line of e-business

- IPPmedia.com is the Internet version of Radio one. The company believes that its Internet strategy is vital to the future of Radio one and of the IPP group and will eventually account for as much as 50 per cent of its revenue within the next 10 years.
- Radio One has a unique visitor rating of approximately 45,000 to 60,000 visitors per week, located mainly in the United States and Europe.
- Online listenership was limited because of the bandwidth (32 people), but now broadcasts are distributed via other servers.
- The company has a fully fledged media division creating web content and maintaining the site. Subcontracting to experts and artists occurs, but most of the work is done in-house. The company is able to leverage the group's resources in news and information gathering and is thus in a position to use mainly its own media content.

Clients

- Current viewership and listenership of the IPP media group;
- Advertisers on radio and TV and in newspapers;
- Clients could include Tanzanian companies wishing to embark on an Internet strategy to promote and sell their products online. These include tour operators and uniquely Tanzanian products, i.e. music, clothing and unique foodstuffs. IPP can provide these companies with exposure to United States and Europe;
- Any company anywhere in the world that needs to expose itself or its product to people who would visit this unique content site.

Modus operandi of the e-business

- Announcements on air about the website;
- Website address in daily newspapers;
- Listing on portals;
- Word of mouth;
- IPP has invested in over 1,800 domain names and intends to create websites based on these models. For example, it has the domain name Serengetti.com and aims to promote Tanzanian products under this brand.

Obstacles

- Local shopping site restricted owing to absence of credit cards; no electronic payment system;
- Problems with local delivery in terms of addresses and cost;
- Bandwidth and other e-commerce infrastructure problems.

Potential business opportunities

- The Tanzanian diaspora may be willing to pay for information about home, i.e. on a subscription basis;
- Product (content) and information are unique, not the focus area for mainline information portals. Opportunity to sell information and products to the larger United States and European portals;
- Able to self-fund new projects as a current revenue stream is in place. Already has resources and capacity to gather news content. Any person anywhere in the world who wants to buy uniquely Tanzanian content, products or services.

Company Sheet No. 2: Newafrica.com

Classification: Teleservicing model

Contact, staff and turnover

- Newafrica.com, Mikocheni Light Industry Area, Dar-es-Salaam, United Republic of Tanzania.

- Contact: telephone: +256 41 2700962; website: www.newafrica.com

- Ms. Roselyne Mariki Nderingo, Managing Director, e-mail: roselyne@newafrica.co.tz

- Revenues in 2000: negligible. Has focused on building a community interested in African information. Began developing revenue models only recently. Financed by a private investor for the past three years. Expects to break even in two years with new revenue models.

- 90 employees.

Main line of business

- Information portal; uniquely African;

- Provides information on a wide range of topics, including business, news, culture and statistics.

Line of e-business

- This is an exclusively online company, and therefore 100 per cent of its business is carried out online;

- Has 70,000–90,000 visitors per month, located mainly in the United States and Europe;

- Many of the staff are young graduates. They regard working for Newafrica as an opportunity to gain experience, despite the low salaries paid. Newafrica employs web designers, software engineers, journalists and researchers;

- Currently Newafrica offers free access to its information sites. It has just received an ISP licence and will be able to generate revenue from subscribers. It plans to start charging for advertising. Up to now, advertising has been free of charge. Plans are afoot to establish a travel booking portal, web hosting services and web design services. It has completed four web design contracts for European companies so far.

Clients

- Current: Companies, institutions and Governments wishing to make public their information and services, and visitors wanting information about Africa;

- Potential: people anywhere in the world wanting to access Newafrica's unique content;

- Commissioned research and creation of customized maps;

- There is a dedicated division that is able to create digital maps of specific regions; limited sales have been achieved in this area;

- Information is unique, not the focus area for mainline information portals; opportunity to sell information to the larger United States and European portals;

- Takes advantage of the LDC diaspora, which wants local information about what is happening at home;

- Currently offers free access to unique information;

- Offers precise information such as statistics and facts about African countries.

Modus operandi of the e-business

- The website is registered on the main search tools/portals, including MSN and Yahoo;

- Publicity due to its uniqueness and through word of mouth.

Obstacles

- Identifying a revenue model. The culture of Internet users is not to pay for information. How to take advantage of 70,000 unique visitors per month;

- Bandwidth and other e-commerce infrastructure problems.

Company Sheet No. 3: Raha.com

Classification: Business-to-consumer model

Contact, staff and turnover

- Raha.com, Raha Towers, Dar-es-Salaam, United Republic of Tanzania; website: www.raha.com; telephone: +255 41 119513; fax: +255 41 138227

- Managing Director: Mr. Hussein Dharsee; email: Hussein@raha.com

- Revenues in 2000: $600,000. 90 per cent Internet service provider accounts, 10 per cent web design, web hosting etc. Self-funded investment of approximately $3 million.

Main line of business

- Internet service provider;

- Also owner of two Internet cafes and a web design studio, and has started a variety of Internet sites such as: www.simplyafrican.com and www.bongoland.com.

Line of e-business

- Raha has 50 per cent of the Tanzanian Internet subscriber market. It offers broadband wireless access to five hubs around the country, providing 6 mbs of raw bandwidth to its server and a 64 K to the international gateway;

- www.Rahanews.com offers 5,000 subscribers news delivered each morning by e-mail;

- www.Simplyafrican.com sells Tanzanian art to the United States.

Clients

- 5,000 subscribers, most corporate and government;

- Advertisers;

- Companies wishing to promote and sell their products online. These include tour operators and uniquely Tanzanian products, i.e. music;

- People in the United States wishing to buy African art. Simplyafrican.com was started six months ago and has achieved $10,000 in sales. Art is bought locally and stored in a warehouse in New York. Deliveries are carried out from New York, and payments are taken by credit card on a website hosted in the United States.

Modus operandi of e-business

- Direct sales, marketing (newspaper advertisements) of ISP services;

- Listings on search engines for sites;

- Free news service to customers;

- Free Internet seminars and training.

Obstacles

- Small cyber population;

- Lack of electronic payment infrastructure;

Potential business opportunities

- There is scope to increase the ISP market, possibly to double the current size;

- There are possibilities for creating websites to sell art, but limited to sales of around $20,000 per year.

ETHIOPIA

Ethiopia still has a highly regulated telecommunications infrastructure. There is only one ISP (state-controlled) and demand for Internet services far outstrips supply (there are approximately 2,000 subscribers with a waiting list of a further 2000). It has been known to take up to a year to secure an Internet account.

More worrying from an e-commerce perspective is that private Internet cafes have been declared illegal except for those in business centres of certain hotels. The Ethiopian Telecommunications Corporation (ETC) is hard at work closing illegal Internet cafes, but demand for these services is so great that the illegal Internet cafes are able to quickly re-establish themselves at another venue. Although the ETC has promised to provide such services, they seem unable to do so, or are slow to meet the demands of the community. Internet access outside Addis Ababa is virtually non-existent. The United Nations Development Programme is currently providing funding to increase bandwidth in Addis Ababa and the roll-out of POPs in rural areas. One positive aspect of telecommunications in Ethiopia is that the cost of local telephone calls seems cheaper relative to other LDCs and will hopefully be maintained at this level in the future.

Ethiopia, probably more so than any other African LDC, has a large and affluent diaspora. Many Ethiopian entrepreneurs are based outside the country, selling various unique Ethiopian-content products online. Foreign-based Ethiopian websites market Ethiopian art, music, designs, Geez Font software etc. Their websites are mostly hosted in Canada and the United States. Some of the newspapers now have online versions attracting large visitor ratings from Ethiopians living abroad wanting to know what is happening at home (for example, www.addisstribune.com). The Ethiopian diaspora therefore provides a market for small Ethiopian business-to-consumer sites.

Despite regulatory and infrastructure problems, there are a few Ethiopian companies identified as e-commerce operations. A poor banking infrastructure, the absence of credit cards and stringent exchange control regulations are significant barriers to development, both restricting the growth of those e-commerce ventures currently operating and turning away possible foreign investment in new initiatives. There is no policy framework or specific regulations in place that deal with e-commerce.

There are a few initiatives by the private sector and donor community to promote e-commerce. The Addis Ababa Chamber of Commerce has taken an interest in e-commerce and has organized a few workshops to highlight the benefits of e-commerce for business and to encourage government to liberalize this sector.

Company Sheet No. 1: Ethiolink PLC

Classification: Business-to-consumer model

Contact, staff and turnover

- Ethiolink PLC was formed about three years ago.

- Addis Ababa, Ethiopia; website: www.ethiolink.com

- Director: Dr. Dawit Bekele (PhD in Computer Science); e-mail: dawit@ethiolink.com

- Revenues in 2000: $50,000. Ethiogift – 20 per cent; network maintenance and lay networks – 25 per cent; web hosting – 20 per cent; design of websites – 15 per cent; training and other – 40 per cent.

- Total self-funded investment of approximately $33,000.

- Ethiolink employs 16 people: two technical departments. The Internet department has four people, all graduates in computer science. There are one computer science and two physics graduates in maintenance, marketing graduate, the other have just finished high school, plus two part-time accountants.

Main line of business

- Ethiolink is an Internet and network maintenance company.

- Ethiogift is one of the online initiatives of Ethiolink. It is an online business-to-consumer site which targets the Ethiopian diaspora and split-markets gifts (on a commission basis) bought by the diaspora for friends and relatives in Ethiopia. These include sheep, cakes and flowers.

- Web hosting. Ethiolink currently hosts around 20 sites.

- Web design services: Ethiolink has designed 10 websites and offers Internet consultancy.

- Networking and maintenance services.

Lines of e-business

- Online selling: Ethiogift sells sheep, cakes, liquor, flowers and chocolates on a commission basis, all of which are typical gifts given on certain holidays and birthdays. For example, during Easter Ethiopians living abroad order sheep to be delivered to their relatives in Ethiopia.

- 50,000 unique visitors to the site so far, mainly from the United States.

- Six staff members dedicated to the e-business side of Ethiolink.

Clients

- Ethiopians living around the world, mainly in the United States.

- Customers: regular month – 50; holiday month – 100 to 300.

- Average spent per customer: $50.

- Average mark-up on products: 15 per cent.

- Not sure of percentage of repeat business.

Modus operandi of e-business

- Radio advertisements in the United States led to an immediate response but owing to a lack of capital, follow-up advertisements were not possible.

- Internet advertisements online Ethiopian newspapers. Advertisements cost around $80 for a banner per week.

- Posters in cities, in Ethiopian restaurants.

- Specially printed Ethiopian calendars which are sent free of charge.

- Ethiopian restaurants become agents, market, sell, receive orders, and take payments, with the main agent e-mailing the order. They set up the agent network by using family connections or meet with Ethiopian restaurateurs on trips to various respective countries. The agent in Johannesburg was signed up by one of the partners who travelled there.

- The server is based in Canada.

- Credit card approvals are done by authorise.net in Canada.

- As soon as payment has been confirmed, the product is delivered to the relative living in Ethiopia.

Company Sheet No.1 (contd.)

Obstacles

- Trying to manage a business that stretches over five continents. Information is slow in coming from partners/agents. Need to communicate and motivate agents to sell and service customers. Ethiogift needs a better management system that can accommodate international requirements.

- Poor local banking infrastructure has obliged Ethiolink to bank in the United States.

- Knowledge of laws in other countries; the company had to be established in the United States in order to open a bank account. The consequence of this is that Ethiogift is subject to United States tax laws. Dawit Bekele is concerned that he does not know enough about the legal consequences of operating in this way.

Potential business opportunities

- There is an Ethiopian diaspora of around one million people living mainly in Europe and the United States (500,000). This diaspora is possibly the most wealthy of the African diasporas. Western Union transfers more than 100 million bir a year to Ethiopia, mainly for family purposes. The potential revenue of Ethiogift could grow 20-fold.

- www.ethiomarkato.com has just been launched. It will sell Ethiopian items to the diaspora and interested people based in other countries, i.e. traditional clothes and spices via direct express delivery. It will not stock products but will have supplier agreements in place. With good marketing it can equal or do better than Ethiogift.

- Becoming an ISP as soon as the ETC permits private licences.

- Intention to create an Ethiopian cyber mall, which would allow incubating companies in Ethiopia to go online. These are companies that have a product but do not have the technical expertise to go online. Ethiolink will design the website, host the site, handle payment and security issues and deal with delivery problems. Ethiolink believes it can succeed as it already has the trust of hundreds of online customers and already has a level of exposure in the international online market place.

- Becoming an online travel agent.

- Local ideas include an online supermarket and the creation of cyber cafes.

- There is one big problem with local opportunities for e-commerce: only 2,500 people in Ethiopia can access the Internet. But for business to business, it may be enough, i.e. small business people from small towns have to come to Addis Ababa to buy their products. If it is possible for them to order and make payment online, the business will send the goods. The banking system is not up to speed yet: there is limited privatization and the Commercial Bank of Ethiopia still controls 90 per cent of the banking market.

- Teleservicing to industrialized companies, offshore software development. There are highly talented students who could perform this service. Dawit Bekele is a lecturer at Addis Ababa University and has direct access to the students.

Company Sheet No. 2: Genuine Leather Craft

Classification: Business-to-consumer model

Contact, staff and turnover

- Genuine Leather Craft started 10 years ago.
- Director: Mr. Teshomo Kebede, telephone: 531894; e-mail: glc@telecom.net.et
- Addis Ababa, Ethiopia; website: www.genuineleathercraft.com
- The company employs 42 people.
- Medium-sized enterprise: turnover about $150,000 a year.
- Leather garments provide 60 per cent of turnover.

Main line of business

- Producer of boutique leather garments.
- Producer of leather bags, leather-upholstered furniture and car seat covers for local market.

Line of e-business

- Sale of leather garments online, business to consumer.
- Outsourcing website maintenance to Ethiolink.
- About four people in production work exclusively on online sales to assure quality and prompt response to orders.
- Started selling online about three years ago, first 8 per cent of garment sales, then 28 per cent, and then 40 per cent in 1999/2000. Sales are now dropping because the company has not been able to make the necessary updates to keep repeat fashion buyers.
- 60 per cent of total business is accounted for by garments.
- The average garment price is $85.

Clients

- United States, Canada, South-East Asia, Japan.
- 25 per cent of sales are to the Ethiopian diaspora.
- 68,000 hits since inception up to September 2000; about 20,000 visitors per year.
- The company has potential in an appropriate regulatory environment, and if its technical problems are solved, it could go 100 per cent online.
- The company does not have applications software to track client behaviour.
- Classic sales are constant, but fashion garments are sensitive to updates. Must keep changing the website to give the right impression.
- When dealing business-to-customer, custom made is a major opportunity. Can charge 20 to 40 per cent more for custom made.

Modus operandi of e-business

- Does not advertise its website.
- Uses the Internet to follow fashion trends visiting competitor websites, international fashion websites, and fashion critic websites.
- It was eight months before the first order was received.
- Client visits website, views garments, prices and options, colour and style selection chart. Under showcase, chooses men's or women's selection. Shows colours, chooses colour, shows image of garment. Bulk order is 500 and above. Free on board (FOB) quoted. Quote delivered worldwide for business-to-consumer.
- Shopping cart collects orders, and then client is required to complete an order form. This will involve supplying credit card details, which are automatically cleared through a United States credit card clearing company. An order coming through to the company means that the card has been approved, and payment is received by the company from the credit card company within three days. The prices online include the fee of the credit card company, which is 8 per cent. The other payment option is payment in advance by wire transfer direct to Ethiopia. The company

Company Sheet No.2 (contd.)

ensures that the client receives the order within 10 days anywhere in world. This is promised on the website. Buyers sometimes do not give all necessary details, and e-mail clarification is required.

Obstacles

- Difficulties in keeping up with the fashions, as most online sales are fashion-sensitive.

- The appearance of the website is fashion-sensitive and must be changed as well; this requires design expertise not available in Ethiopia.

- Difficulties in maintaining the website, which lead to repeat visitors seeing no new changes and therefore no repeat orders.

- Not easy to get service on time from outsourced web maintenance. Urgent changes cannot be made.

- Customs procedures are difficult. With regard to exchange controls, anything over $30 must be approved by the National Bank of Ethiopia, which takes at least half a day.

- Sending five items to five separate buyers needs five separate customs clearances and exchange controls. In-house procedures take an hour or two to respond to an online order received correctly, which then takes two days to leave the country. Also costly in terms of time and actual disbursement.

- Under exchange controls, the National Bank must ensure that payment for anything leaving the country is guaranteed.

- Credit cards are not allowed by enterprises. The company works with a credit card clearing company in the United States; this is not legal but it has no choice.

- Cannot attend to client complaints, it has and will have problems with refunds owing to exchange controls.

Potential business opportunities

- Germany is the biggest consumer of leather garments in the world.

- Develop business-to-consumer market, particularly on the custom-made side.

- To increase rewards and benefits for end buyers.

UGANDA

Uganda, like the United Republic of Tanzania, has taken great strides in deregulating its telecommunications sector. There are two fixed-line operators, three cellular operators and five ISPs. A number of initiatives by cellular operators and ISPs are underway to provide various broadband solutions to the business community. Bandwidth is still expensive, but costs are expected to drop as these solutions are rolled out. Quality Internet access (cost-effective broadband) will be an important comparative advantage for Ugandan enterprises in the context of teleservicing.

Since the introduction of the third cellular licence (MTN) and prepaid phone cards, the cellular subscriber base has grown from less than 30,000 to more than 100,000 subscribers. This, as in the case of the United Republic of Tanzania, is an important indicator as to how rapidly many Ugandans accept useful new technologies. The signs are therefore positive that thousands of Ugandans would quickly see the benefits of e-commerce if they were offered to them.

As is the case in the United Republic of Tanzania, in spite of the favourable telecommunications environment and the advanced technologies now offered by ISPs (i.e. wireless connections), initiatives from the business and government sectors to take advantage of e-commerce opportunities are disappointing.

There is one example of teleservicing in Uganda involving a company (Doticom Services) offering data input services to a Canadian auditing firm. This was the result of an initiative of Infodev, the G77 Chamber of Commerce and private consultants. Another five companies are in the process of being established in a similar fashion.

Simba Radio, a native-language broadcaster, provides an interesting case of how niche radio stations can have success on the Internet. It currently streams its content (African music) over the Internet. Thousands of non-resident Ugandans living in the United States and elsewhere tune in each week. Simba Radio is now considering how to capitalize on this captive audience. Currently, no revenue is derived from its Internet strategy.

There are no credit cards in Uganda, and debit cards are not widely used owing to the poor distribution of points of sale. Banks seem to be content to maintain the status quo, and the Central Bank is in the process of introducing an electronic cheque-clearing facility rather than exploring more modern electronic payment systems. Pride African (headquartered in Kenya) has plans to introduce intranets into its banking operations, which could result in various electronic banking services.

Company Sheet No. 1: Doticom Services

Classification: Teleservicing model

Contact, staff and turnover

- Contact: e-mail: kakooza@hotmail.com; telephone: +256 77 405071; fax: +256 41 256888

- Partners: Mr. Alex Kakooza and Mr. Joseph Sewanyana

- Revenues in 2000: $3,000; 90 per cent in January 2001.

- Target is to sell 2,000 hours per month at $5 per hour.

- Staffing: two people, the aim being to have a total staff of 20.

- Qualifications of staff: at least a diploma in accounting, and computer skills.

Main line of e-business

- Teleservicing: electronic data entry and electronic bookkeeping.

Clients

- One auditing firm, based in Canada. The company could look to the United States for more work.

Modus operandi of e-business

- Client sends scanned images in batches of about 900 images.

- Input data from images into Excel or QuickBooks, charged per hour.

- Hours predetermined in contract according to average productivity in Canada.

Obstacles

- Obtaining trained staff

- Problem with bandwidth: it takes too long to download, and another venue has therefore to be used to download a file.

- Prospective clients insist on tests being done to ensure quality and commitment. They need to know that the work is done, irrespective of holidays, weekends etc. The current perception creates a drawn-out sales cycle which will improve over time with an improved reputation.

Potential business opportunities

- Multimillion dollar industry. A small company of about 20 employees could earn in the region of $15,000 to 20,000 per month.

- Average charge around $5 per hour.

Company Sheet No. 2: LifeInAfrica.com

Classification: Business-to-consumer model

Contact, staff and turnover

- The Life in Africa Foundation; PO Box 28825, Kampala, Uganda; website: www.LifeInAfrica.com

- Telephone: +256/41/236 700 or +256/77/422 303/ E-mail: mzungu@lifeinafrica.com

- Director: Christina Jordan, founding director

- Number of staff: two ful- time staff; 15 volunteers (8 of whom are computer-literate - only two have website design experience, and the rest are learning).

- Revenues in 2000 (turnover) in $: $12,000 ($10,500 in loan donations; $1,500 in revenue).

Main line of business

- Launched at the end of February 2000, www.LifeInAfrica.com raises funds to support micro finance in Africa. Funds raised in 2000 have supported a loan guarantee programme in Kampala, Uganda, which is run by volunteers.

Line of e-business

- The e-business initiative is designed to support both the Life in Africa Foundation and its beneficiaries through selling beneficiary-produced artisan products online. The profit on the sale price is shared between the Life in Africa Foundation and the artisans.

Clients

- Subscribers to Life in Africa publications

- African-American community; educated class with global outlook.

Modus operandi of e-business

- The Life in Africa Foundation marketed the African Crafts Market via regular e-mail newsletters to 1,000+ subscribers. Supplies of goods were purchased (i.e: financed up front) from producers, and then sold via secure credit card transactions on the Internet.

- Secure credit card processing is outsourced to a United States-based company which levies a 6.5 per cent fee on every transaction.

- The company issues a weekly cheque (drawn on a United States bank) representing the transactions made, less the 6.5 per cent fee.

- The Life in Africa Foundation has a United States bank account, in which the cheque is deposited. Every so often a transfer is made to Uganda.

- The producers receive their asking price upfront, and then an additional 10 per cent of the price paid after purchase of an item.

Obstacles

- Shipping is expensive, and international courier service is more expensive than the goods themselves. The Ugandan post can be used for shipping individual orders (registered express mail), but the individual items must be small enough to fit into an envelope (posting boxes is significantly more expensive). Moreover, the shipping charges are not uniform (at one time a certain item would cost $7 to mail, while another time the same item to the same country would cost $10 to mail).

- Pre-financing the stock severely limits the company's ability to offer a range of items. In the future, it will negotiate a different kind of arrangement with producers. For example, it might purchase the inputs, and not pay for the labour until an item has been ordered.

Potential business opportunities

- The African-American market online represents a enormous potential for the kinds of items the company's borrowers can produce, particularly textiles and clothing. The key will be to list the site and/or products in places where the largest potential market will see them. There is much more market research that needs to be done (and is scheduled for the next few months) before this issue can be adequately addressed.

MOZAMBIQUE

There have been impressive developments in the telecommunications infrastructure in Mozambique, mainly in Maputo, and development is beginning to take place in other parts of the country. Teledata, the State-owned Internet service provider, has installed at least one POP in every province. Access of 64 k is the norm for many businesses in Maputo and an inter-city fibre optic cable will provide high-speed links between Maputo and Beira in the near future. There are ten ISPs, some of which are in the process of installing wireless connections for corporate clients. There are around 8,000 Internet subscribers; this figure may, however, be misleading as the larger corporations and government departments make up the bulk of the subscriptions. There is only one fixed line and one cellular operator in Mozambique (State-owned), but plans are underway to issue a second cellular licence.

Banking in Mozambique is relatively advanced compared with the United Republic of Tanzania, Uganda and Ethiopia, with Banco Standard Totta offering full internet banking services to about 100 clients. Most of the larger banks have automated teller machines (ATMs) and debit card points of payment. Four banks have agreed to enter into a facility-sharing arrangement which will allow their clients access to a better distribution of ATM and to about 500 retail points of sale. Even credit cards appear to be in greater use in Mozambique than in other LDCs visited, with about 2,000 credit card holders and most of the hotels and many restaurants accepting credit card payment.

There are a few Internet cafes in Mozambique but they are not as widespread as in Dar-es-Salaam, and possibly less than in Uganda. The groundswell of popular use of the Internet as seen in the United Republic of Tanzania does not seem to have happened yet in Mozambique. Reasons could include a lack of awareness, cost of access and lack of local or Portuguese content on the Internet. The first information portal has only recently been launched (www.imensis.co.mz).

BANGLADESH

There have been some very promising initiatives over the past year to get e-commerce off the ground in Bangladesh, most notably Techbangla, an initiative of a few businessmen to develop Bangladesh into a billion dollar software exporter. They plan to leverage the non-resident Bangladeshi community based in the United States to create the demand for software development for export. A conference was held in the United States in early 2000 with a follow-up event in Dhaka towards the end of 2000. In association with Harvard University, JOBS-USAID and a number of companies and individuals, Techbangla has conducted an e-commerce readiness assessment for Bangladesh. Information on this assessment can be found on the Techbangla website www.itrc.techbangla.org.

Bangladesh's telecommunications infrastructure is poor, with limited fixed-line access, unreliable connectivity and low bandwidth (9K). Bangladesh use VSAT for international links, and missed out on an opportunity offered a number of years ago to join the undersea cable link. It is now considering joining that link, but will require an investment of about $100 million.

Bangladesh has around 600,000 fixed lines in use and around 257,000 cellular subscribers (as of November 2000). The cellular phone subscribership has grown by 70 per cent (between April 2000 and November 2000. There are four fixed-line operators - one State monopoly (BTTB) and three private sector companies that are licensed to service rural areas. There are four cellular operators: all are private, with Grameen Phone being the largest provider. There are around 50 ISPs: all of them are private and provide a range of ISP services. The Bandwidth offered ranges from 64k to 2mb gateway access. There are limitations as a result of the poor fixed-line connections (9k to 14k). Two ISPs now offer wireless links to overcome this problem. Dhaka and some of the other main centres have privately run Internet cafes available. Grameen Communications and Learn Foundation have projects to introduce Internet cafes into rural areas.

Bangladesh currently produces around 1,300 computer science graduates per year (computer science courses are oversubscribed) and about 12,000 students are trained each year in some category of IT by nine universities and 53 IT education institutions. The quality of some of the education gives cause for concern, and around 80 per cent of graduates and teachers have indicated that they would migrate to other countries if they could. Computer operators and programmers are the most common jobs.

The banking infrastructure in terms of electronic payments and inter-bank connectivity is poor. No local banks issue credit cards and very few companies accept credit card payments.

The Government is using the Internet for information dissemination to a limited extent, for example making official statistics available on the web (www.bbsgov.org). The Stock Exchange was fully automated, two years ago and is now linked to the global system.

Bangladesh is advanced in developing its policies affecting e-commerce. The deregulation of the private use of VSAT has helped ISPs, and the liberalization of the telecommunications sector is well underway. Voice-over IP is, however, still illegal. Also, generous foreign exchange and tax rulings have been made for IT exports, and 100 per cent remittance of capital gains and profits is allowed for foreign investors without approval. A comprehensive ICT policy is to be published shortly.

Many of the Bangladeshi companies that would qualify as e-commerce companies are hosted in United States. Products sold are books, music, flowers and small garments. Many of the sites aim at the Bangladeshi diaspora.

Bangladesh rightly believes that IT offers the most viable future business opportunity. In view of India's success, Bangladesh has reason to believe that it can offer similar services. Such services include coding, remote access server/systems maintenance and web-related work. The two greatest challenges in developing this type of industry are the lack of an international network to secure the work and an insufficient number of trained graduates. However, Bangladesh believes that it could create a billion dollar industry over the next few years. In general, the obstacles to developing this type of industry include the lack of

an international marketing network (many of the IT chief executive officers in the United States are Indians and they are channelling work to India), limited capacity (unlike in India), lack of project management skills. Sixty-two Bangladeshi IT companies are listed on a website (www.basisbd.org).

The Government has made an attempt to kick-start the industry by introducing an Entrepreneur Equity Fund of 1 billion taka. This fund has been underutilized so far by the IT sector. As a result, 50 per cent of it has been reallocated to the agro industry. IT managers claim that the administration of the fund was inefficient, that there were no clear guidelines and that many projects were rejected.

Bangladeshis have a particular aptitude for remote web-based services such as transcription and data input. Currently, India is the leading provider of these types of services. Many Bangladeshi companies are securing subcontracts from Indian companies. Those trying to secure contracts directly with United States companies are finding it difficult because of a limited international reputation and marketing infrastructure.

Company Sheet No. 1: Technosoft Transcription Ltd

Classification: Teleservicing model

Contact, staff and turnover

- Contact: telephone: +880 2 9669341; e-mail: techsoft@bdonline.com

- Managing Director: Mr. Sharif N. Ambia: snambia@bdonline.com

- Dhaka, Bangladesh, started in 1999.

- Number of staff and minimum/average qualification: employs 21 people; they are graduates, well versed in American English; they must know medical terminology, the names of drugs, and must have computer and typing skills, and an understanding of American culture and practices. For example, they must know on which side of the road people drive in the United States, and must know that people can get allergies from dogs (many people in developing countries are unaware of such problems).

- Revenues in 2000 (turnover) in $: 40 trained people can produce $200 000 if each transcripts 500 lines a day.

Main line of business

- Remote medical transcription

Line of e-business

- Contracted medical practitioners send audio files containing dictations of patient records, i.e. diagnoses and prescriptions. Operators transcribe the files to text.

Clients

- General practitioners, hospitals, clinics, health service providers, healthcare companies.

- Technosoft currently services 8 to 10 doctors and 200 health care organizations. It is the only company in Bangladesh that is able to contract directly with United States clients.

- Other companies are securing subcontracts from India.

Modus operandi of e-business

- Uses a marketing organization in the United States to secure contracts.

- Has established itself as a "performer" rated company (98.8 per cent accuracy). This rating could improve the turnover of the company tenfold over the next few years.

- Clients send voice files to a server in the United States.

- Technosoft then downloads the voice files from the server.

- Technosoft promises a 24-hour turnaround time.

- Once transcribed, the text files are sent back to the client.

Company Sheet No.1 (contd.)

Obstacles

- The biggest obstacle is marketing. Bangladesh does not have a positive image because of impressions that it is a very poor country.

- Bangladesh does not have a network, unlike India.

- Poor telecommunications, power supply and bandwidth.

- Banks are not very responsive. They are unable to provide finance without physical assets such as collateral. In this business, the intellectual property is the asset, and therefore there is a difficulty with the financing of training.

- Payments from clients are satisfactory, but money transfers to Dhaka are slow.

- It takes four to five months to train staff, although in the case of an emergency it can be done in a month. Internship lasts three months. In order to put 30 stations in place, an investment of $150,000 in training over six months is required, plus about $200,000 for equipment.

Potential business opportunities

- India estimates that it will earn about 300 billion rupees ($6.6 billion) by 2008.

- Bangladesh believes that it could achieve about 5 per cent of this projection ($300 million per year).

- Since this sort of business activity requires a good command of English, the Chinese are not contenders.

- Another reason for optimism for Bangladesh is that there are complaints against Indians by the United States as they have problems with under-capacity.

- The market for offshore transcriptions is growing as it is difficult to make transcriptions. Since transcription is not a pleasant job, people in the United States are moving to other jobs. This has created a worker shortage of 10 per cent.

- The market is also expected to grow because doctors are now being forced to keep records for insurance purposes.

- Technosoft expects to make about $200,000 this year. It aims to grow capacity to 70 stations over the next year.

- Technosoft could consider diversification into legal transcripting since the modus operandi would be similar; however, training would be required in order to become familiar with United States law and the Judicial Code etc.

Company Sheet No. 2: Bangla 2000

Classification: Teleservicing model

Contact, staff and turnover

- Contact: website: www.bangla2000.net; telephone: +88-02-9883642; e-mail: info@bangla2000.net
- Management (name of director): Mr. Mohammad Salimullah Raunak, Chief Technology Officer: e-mail: raunak@bangla2000.com
- Number of staff and minimum/average qualification: Software developers - average qualifications, graduate in computer service; 20 others
- Revenues in 2000 (turnover) in $: $100,000 12 to 15 contracts

Main line of business

- Web-based software development; web-based application development; information portal

Line of e-business

- Coding for software development. 10 per cent of charges of software developers.
- Design of software systems.
- Maintenance – Foreign companies in the United States, ensuring that services are running. Typical contract: $1,000 to $20,000. Its one tenth of charge in USA. Low-end websites Brand name trust is preventing getting high end; it is not an issue of technology, more an issue of capital investment.
- Consulting services for hosting local companies.
- Web marketing – two Swiss-based.
- 30 per cent of staff are dedicated to e-business, and this figure is expected to increase to 80 per cent by 2003.
- 30 per cent of turnover comes from e-business; this figure will increase to 70 per cent.

Clients

- $500,000 to 2 million turnover companies in developed countries, private companies, NGOs, community organizations.
- Potentially larger corporations, once trust is developed.
- Aims to secure as clients two or three Fortune 500 companies by 2005.

Modus operandi of e-business

- Has more than 10 foreign representatives in the United States, Europe and Australia. They make presentations, are trained via online modules, and help to find potential clients.
- The representatives foreign work as a team with a person in Dhaka to find clients.
- Clients complete a brief form on the website to indicate what they want; this helps in formulating proposals. Alternatively, forms can be completed by the representatives.
- Products are developed in Dhaka and are then tested and delivered online.
- Representatives collect payments.

Obstacles

- Trust is the biggest problem: companies still look for a brand name. There is a problem with Bangladesh's reputation.
- The time needed to establish a track record, and the cost involved.
- No venture capital system in Bangladesh.
- No IT policy, no IP law.
- Human resources are manageable.

Potential business opportunities

- In five years, Bangla 2000 will achieve a turnover of about $5 million.
- Bangladesh expects to earn $2 billion in software development by 2008. India is earning about $6 billion now, and is targeting $50 billion by 2008.

MADAGASCAR

Madagascar has a number of ISPs, including DTS (partly owned by France Telecom): which has 5,000 subscribers, Simicron, Network and about nine other small ISPs with a total of 1,000 subscribers. There are estimated to be 10,000 ISP accounts, and 20,000 people have access to the Internet. ISP costs are a fixed cost of about $5 per month and there are variable ISP/telecom costs of about US 9 cents per minute. There are a few Internet cafes in Antananarivo, including Simicron, which has about 6 PCs, and a few others with one PC each. Public access costs: about $8 an hour. Madagascar has access downtime of about 10 per cent (mostly owing to heavy rains).

The local post is said to be unreliable. DHL is reliable in terms of delivery. Internet telephony (i.e. using net2phone.com; delta3.com) is prohibited by law but frequently used by Internet specialists.

Very few people have credit cards and very few companies accept credit cards. Most people pay cash, despite the fact that the largest denomination of banknote is MF 25,000 (about $4). The only way for a Madagascar company to be granted a distance-selling merchant account is to open an affiliate in a country such as France or the United States and then try to get a merchant account through this affiliate. Only a couple of local companies have done that.

Company Sheet No. 1 : Generis Informatique

Classification: Teleservicing model

Contact, staff and turnover

- Contact people: Ms. Clotilde Ranaivoson, Director; Mr. Jaona Ranaivoson, Associate (also director general of ISCAM, a local business college).
- Address : Lotissement Bonnet 31 Ivandry, 101 Antananarivo, Madagascar
- Telephone: +261 20 22 497 00; fax: 261 33 11 022 68; e-mail: igeneris@igeneris.com; www.igeneris.com
- Established in mid-2000
- Number of staff: 7 employees

Main line of business

- Creation of websites for locally-based clients (including affiliates of foreign companies). By January 2001, about 12 websites had been created. Hosting is normally done in United States-based servers through a French company.

Line of e-business

- One intranet site (investment matching) for Fondation EMA (Geneva).
- About 6,000 contacts (name, title, e-mail, faxes) have been gathered from the web and sold to Fondation EMA (0.63 Swiss centimes per contact).
- Other sporadic assignments, initial contacts and projects.
- Most international orders have been obtained through a single personal contact (i.e. Dominique Flaux of Fondation EMA).

Potential business opportunities

- Generis is eager to expand in any promising Internet-related business segment. The most likely exportable services are: creation of relatively simple websites; and creation of customized databases (such as the ones for EMA).

Company Sheet No. 2: Lemurie Tours

Classification: Business-to-consumer model

Contact, staff and turnover

- Contact person : Mr. Haga Rakotoson Director (who is also the Secretary General of the Madagascar Tour Operators Association)

- Address : 119 route Circulaire, Antananarivo 101, Madagascar

- Telephone: +261 20 22 607 07; e-mail: lemurie@dts.mg; www.lemurie.com

- Number of staff: 12 employees

Main line of business

- Local tour operator, i.e. obtains the services of non-exclusive local suppliers (hotels, planes, excursions, rental cars)

Modus operandi of the business

- The company works with a wholesaler in France, who in turn sell its trips to travel agencies.

- It would be too difficult for the company to sell directly to travel agencies in France (lack of trust and financial guarantees).

- It does, however, wholesale directly to two corporate associations (*comités d'entreprise*).

- 30 per cent of its sales are generated by its website. In other words, about 200 tours per year are booked through the Internet.

- The company has about 100 visitors per day on its website

- 60 per cent of its online clients prepay (wire transfer), while the remaining 40 per cent pay upon arrival.

- The website is now in its third generation. The company says that its success is due to its having declared its website in key search tools.

- By selling on the Internet, it circumvents its wholesaler.

- To minimize conflicts, prices online are list prices of its suppliers (hotels etc.) Therefore, a tourist booking online with lemurie.com pays a little more than he would if he booked with a travel agency in France. However, the advantage of booking through lemurie.com is that travelers are free to set up their own agenda.

Clients

- The company's clients are young independent tourists who are somewhat (but not completely) price-sensitive.

NEPAL

Major ISPs include Mercantile and World Link. The estimated total number of Internet subscribers in Nepal is around 25,000 ISP accounts, and approximately 100,000 people have access to the Internet. ISP fixed costs for unlimited access are about $180 per year and variable telecom costs of about US 40 cents per hour.

There are about 2,000 Nepalese websites. None of them take online payments. Internet telephony is illegal in Nepal, but this regulation is not applied.

There are probably close to 1,000 Internet cafes in Kathmandu, many of them being in the tourist area, Thamel. This is a world record in terms of density. Access price is as low as 1 rupee per minute (i.e. about US 90 cents per hour). Access prices started at 30 rupees per minute and gradually dropped to 1 rupee. Many Internet cafes have loaded Asian (mostly Japanese and Korean) fonts. Access speed is typically 19 Kbps using dial-up lines. A few Internet cafes offer Internet telephony. Most have no way of making payment to foreign companies offering this service.

Very few people have (dollar-denominated) credit cards. Distant-selling merchant accounts are non-existent in Nepal; consequently, B2C e-commerce websites ask for prepayment by wire transfer, tourism-related websites take reservations but no online payments. In the case of bank-to-bank wire transfers, the receiving company pay significant banking commissions. Local companies usually need to have accounts in foreign countries to be able to make payments to foreign companies (e.g. web presence providers).

Postal services are generally unreliable, but private courier services are available, including the major international companies. People can move freely between India and Nepal, and work freely in both countries. The language, script and religion are similar. Many Nepalis are trained in India and many Indians work in Nepal.

Company Sheet No. 1: Mercantile Office Systems (MOS)

Classification: Teleservicing model

Contact, staff, and turnover

- Contact people: Mr. Sanjib Raj Bhandari, Chief Executive Officer; Mr. Jai Rajbhandari, Human Resources Manager

- Address: Post Box 876, Durbar Marg, Kathmandu, Nepal

- Telephone: 220 773; e-mail: sanjib@mos.com.np; jai@mos.com.np; www.mos.com.np

- Established in 1994 (but the Mercantile Group has been active as an IT solution provider since 1982)

- Number of staff: About 40 employees

Main line of business

- Since 1982 MOS has been a major local player as an IT solution company, and particularly as a database developer. It is part of the Mercantile Group, one of the pre-eminent industrial groups in Nepal.

Line of e-business

- ISP (since 1994): by the end of 2001, MOS plans to have 35 points of access (POPs), including in some very remote areas where no electricity is available.

- Online development of databases (i.e. clients have online permanent access to the progress made). Without the Internet, it would have been necessary to use a much more sophisticated technology such as a leased satellite line.

- Newly launched: distance learning programme (650 courses) based on the content of and certification from "American Distance Learning". Users pay $200 per year.

Potential business opportunities

- To be launched: Internet-based ASP (accounting, billing, reservations) for small hotels which cannot afford to build their own internal computer department. Goal: to reach 50 hotels within one year.

- In addition, Mercantile owns 50 per cent of Serving Minds (www.servingminds.com), a new multimedia centre (voice, e-mail, chat, co-browsing) which when completed should have about 250 stations and 900 employees.

Modus operandi of e-business

- It is not easy for MOS to sell value-added services (e.g. database development, multimedia centre) abroad owing to a lack of credibility and long-standing contacts.

- So far, international development has occurred slowly.

MYANMAR

There is essentially no web access in Myanmar. Only 15 private leading IT-related companies as well as half of the government agencies have restricted access to the web. Restrictions include the control of incoming content. Free e-mail sites such as Yahoo and Hotmail and free hosting community sites such as Geocities and The Globe are inaccessible. The objective of the Government is twofold: to protect the country from negative external influences and to keep its profitable monopoly in the telecommunication sector (including international phone calls).

Companies can apply to have e-mail access. There is only one e-mail provider namely Myanmar Posts and Telecommunications (MPT), a unit of the Ministry of Communications, Posts and Telegraphs. They have 3,000 to 4,000 clients. Fees are as follows: $150 to set up an account, $150 annual fees and $1 for each set of 1000 characters sent or received. MPT has the right to check the content of e-mails. Previously, an Australian company called Eagle offered email services (xyz@dataserco.com.mm) but has since been expelled from the country.

The Government has announced its intention to open up web access, but it is unclear when this might occur. Currently there are about 1000 Myanmar-related websites. However, only five are hosted by the Myanmar Posts and Telecommunications (TLD = mm). Hosting by MPT is costly (an annual cost of $200 per year for each set of 500 Kb). Many companies have their websites created/uploaded abroad. Some companies use local web designers working offline and then send completed websites by CD-ROM or by FTP to foreign countries from where sites can be uploaded. Most of the Myanmar-related websites are created by Burmese leaving abroad.

Myanmar companies with websites do not have access to the web. They must receive orders, reservations and inquiries through their xyz@mptmail.net.mm e-mail address. Alternatively, they receive information and orders by fax from their foreign-based affiliate.

There is at least one small Internet cafe in Myanmar, located in Ah San Nya University. However, since it does not have access to the web, websites are stored on local hard disks.

The Government is currently preparing a National Intranet, which should be ready in a few months. It should have major commercial, banking and government applications.

Company Sheet No. 1: Design Printing Services

Classification: Teleservicing model

Contact, staff and turnover

- Contact person: Mr. Aye Min Oo-Sonny, Managing Director.

- Address: No. 165/167, Room 4, 1st floor, 35th Street, Kyauk-ta-da Township, Yangon, Myanmar

- Telephone: 051 700 541; e-mail: dps@mptmail.net.mm; website: www.dps.com.mm, www.myanmars.net

- Number of staff: 35 employees

Main line of business

- DPS's main business is to create and distribute high-quality maps of Myanmar. Some maps are very detailed and are sold in small volumes. However, most maps are handed out free of charge to tourists and are financed by advertisements.

Line of e-business

- Most advertisers (i.e. 139) have asked DPS to build websites for them. DPS is therefore one of the leading web agencies in Myanmar.

- DPS also has a website used to promote its clients (i.e. www.myanmars.net).

Potential business opportunities

- DPS plan's to launch a portal site devoted to selling Myanmar local products. However, it is unlikely for many reasons, that it will succeed, the major one being that the Internet is not good for selling an unknown products to new customers.

Modus operandi of e-business

- Since DPS does not have access to the Internet, it loads their completed websites to a ftp site owned by MPT.

- Subsequently, the information is taken from a partner company in Yugoslavia which uploads the websites.

TOGO

About 30,000 people have access to the Internet in Togo. There are about 10,000 Internet accounts, 80 per cent of them being for companies and the remainder for private individuals. In Lomé, there are about 300 Internet cafes. Most of these cafes have one to three PCs while about 20 of them have about 20 PCs each at their disposal. Typical uses are Internet international telephony and web e-mail. Access for one hour costs about CFA 350-800 ($0.6 to 1.3). Major access providers are CAFE Informatique (private) and Togo Télécom (State-owned but likely to be privatised). There are a total of 26 ISPs in Togo.

There are about 1,000 Togolese websites, but few that can be considered to be professionally designed and maintained. Most are amateur sites hosted in free community sites such as Geocities.com and Multimania.com. Websites (excluding those hosted on free community websites) are hosted in Togo (CAFE Informatique), in the United States or France.

No local bank issues credit cards. Togolese owning credit cards obtain them from their foreign banks based abroad. No local bank issues distant-selling credit card merchant accounts. Very few companies (e.g. CAFE Informatique; see http://noel2000.café.tg) have this kind of merchant account needed to accept credit card online payments.

There are no national policies addressing e-commerce and there is a general lack of awareness and understanding of the importance and benefits of e-commerce. There are, however, indications that the Government is beginning to consider these issues. A Danish company has just conducted an IT infrastructure-oriented consultancy for the Ministry of Mines, Energy, Post and Telecommunications.

Company Sheet No. 1: CAFE Informatique

Classification: Teleservicing model

Contact, staff and turnover

- Contact person : Mr. Adiel Akplogan, Directeur du département "Internet et transmission des données"
- Address : Tokoin Casablanca, BP 12596 Lomé, Togo
- Telephone: +228 25 55 55; fax: +228 25 66 66; e-mail: cafenet@café.tg www.cafe.tg
- Established in 1994
- Number of staff: About 60 permanent employees plus at least 50 temporary employees

Main line of business

- ISP: 3,000 clients including 10 with leased lines.
- Website development
- Sales, installation, integration and maintenance of computer hardware and software

Line of e-business

- Telemarketing and data scrubbing using IP telephony (funded by the World Bank).
- The test phase has now been completed (employing 50 temporary employees at night).

Potential business opportunities

- It is hoped to get a major contract from large telecommunications companies.
- Expand to become a major multimedia call centre.

Company Sheet No. 2: Langues et Business

Classification: Teleservicing model

Contact, staff and turnover

- Contact people : Mr. Sylvester Elolo Kumodzi, Member of AIIC (International Association of Conference Interpreters), Rotarian (Club: Lomé Doyen)

- Address : BP 131, Hôtel 2 Février, Lomé, Togo; e-mail: langbus@bibway.com; no website

- Established in 1992

Main line of business

- English/French translation/interpretation (mainly from English to French).

- Texts are regularly transferred by e-mail.

- Four permanent translators and many freelances (about four of them are nearly permanent).

- Sometimes Langues et Business uses Ghanaian freelances for translation from French to English. One freelance can translate from German to French.

Modus operandi of e-business

- Because of its location in a leading hotel, the company can acquire many foreign clients among participants in international conferences.

- Payments are made using bank-to-bank transfers. Only one foreign (Belgian) client has not paid.

Clients

- Foreign clients include WHO (Geneva) and YMCA (Geneva).

CAMBODIA

About 5,000 people have access to the Internet. Most people use it in their office. Dial-up access is typical. There are about 20 Internet cafes in Phnom Penh, most of which have 5 to 15 PCs. Internet cafes tend to serve mostly foreign tourists and the more affluent young Cambodians. Access for one hour costs $2 to 4 (a 30 per cent discount is usually granted to students). Some Internet cafes offer late evening access for $1 per hour.

There are only two ISPs in Cambodia: Telstra's Big Pond (a private Australian-owned company) and Camnet (from the Ministry of Posts and Telecommunications, with the technical support of Canada's International Development Research Center). A third provider - Open Forum of Cambodia (www.forum.org.kh), an NGO - has a licence to provide only e-mail access.

Telstra's Big Pond Internet access fees are as follows: deposit: $100; start-up fee: $30; monthly fees: $50, 13 free hours per month; any hours in excess of the free hours are charged at $2.5 per hour. Camnet charges slightly lower fees.

In 2002, the Government may allow a third ISP. The Government (i.e. the Ministry of Posts and Telecommunications) restricts the number of ISPs as it believes the market is not large enough for more than two or three ISPs.

Voice-over IP is illegal in Cambodia. International calls are expensive (about $3 per minute). None of the four Internet cafes visited provide voice-over IP, which indicates that the Government enforces this law. Power cuts and surges are frequent (at least two power cuts per day). Local telecommunications are poor and relatively expensive.

A major handicap for Cambodians entering the digital economy is language. Very few people speak foreign languages. Most young people, even those active on the Internet, have a very limited knowledge of English.

There are about 100 Cambodian websites. Many of them are very simple and often outdated electronic brochure ware. By law, Cambodian domain name sites (.kh) must be hosted in Cambodia. International domain names (.com, org., net) can be hosted anywhere even though it is difficult for most companies to make payments to foreign registrars and/or to web presence providers.

Credit cards are rarely used in Cambodia. There are no distant-selling merchant accounts, and hence no local Cambodian websites accept online credit card payments. Most travel agencies sites have online booking facilities but payment is done offline, normally through advance wire transfer to a bank account in Cambodia or United States.

Chapter 10

CHINA'S ICT STRATEGY AND E-COMMERCE

A. Information and Communication Technology sector

From 1995 to 2000, China achieved remarkable progress in the ICT sector. The national economy grew at an annual rate of 8.3% while the average growth rate of the information technology industry was 31.4%, three times higher than that of traditional industry. Its contribution to the growth of GDP increased from 5.2% to 12.4% and its share of GDP rose from 2% to 4% in 2000. Exports of electronics and information technology products reached $55.1 billion, accounting for nearly one fourth of total exports. Total investment in the information and communication sector stood at $97 billion. Financing from the overseas stock exchange for telecom enterprises amounted to $20 billion (Xiang, 2001).

The development of e-commerce largely depends on the state of information and communication technology and is related to the growth of the Internet population. Thus, this chapter describes fundamental Internet demographics, the administration of the Internet and the ICT infrastructure in China.

1. China's Internet population[1]

China's Internet population has seen a remarkable increase over the past several years in absolute terms, although its size relative to the total population is still quite low. As of January 2001, China had 22.5 million Internet users and 8.92 million personal computers (PCs) connected to the Internet, representing a threefold increase in comparison with January 2000.[2] Between 1997 and 2000, the number of Internet users has been doubling every six months (see chart 20). There are 122,099 web sites registered under the .cn domain, including 96,221 web sites (78.8% of all registered domain names) that belong to commercial and financial organizations. The sharp increase in the number of web sites in the year 2000 indicates that many companies are becoming Internet conscious and are registering their own web sites with the strong intention of engaging in e-commerce.

The growth of the Internet population is closely related to access capacity. In 1997, China had a capacity of only 24.5Mbps for international Internet access, but this capacity had increased to 2.8Gbps by the end of 2000 (see chart 21). Thanks to the support and investment of the public and private sectors, the bandwidth of the domestic Internet Protocol (IP) phone network expanded from 56Mbps in mid-2000 to 213Mbps by the end of 2000 (CNNIC, 2001). Direct Internet interconnection has been established with the United States, Canada, Australia, the United Kingdom, Germany, Japan and the Republic of Korea.

However, conclusions on the overall impact should take into account the uneven geographical distribution of Internet access. Most Internet users (more than 31% of all Internet users in China) live in big cities, such as Beijing, Guangdong and Shanghai, and in the eastern coastal region. Vast parts of the country's western inland provinces are still not connected to the Internet (see chart 22). There are eleven provinces and territories with less than 2% of Internet users (see chart 23). This imbalance reflects regional disparities in general economic development and level of education.

Due to domestic constraints such as regional economic disparities, low level of disposable personal income and administrative restrictions on the operation of Internet companies, it appears that Internet subscribers are unlikely to sustain as high a growth rate as that experienced in the last several years. From a long-term point of view, a more realistic estimate may be obtained through a simulation model linking Internet user growth rates with average GDP growth rates. The simulation produces a scenario whereby China will have 67.9 million Internet subscribers in 2005, accounting for 5.12% of China's total population and 1.05% of the world total population (see table 28).
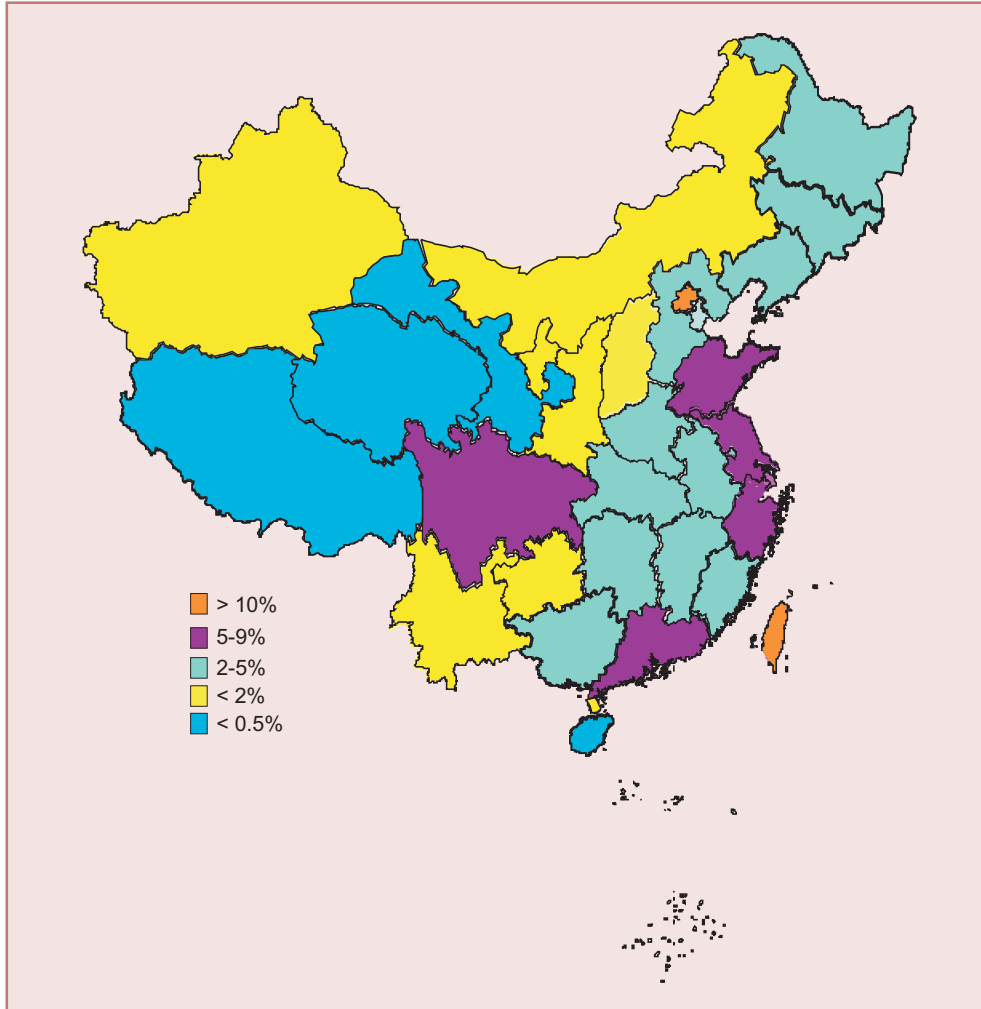
Chart 20
China's Internet market
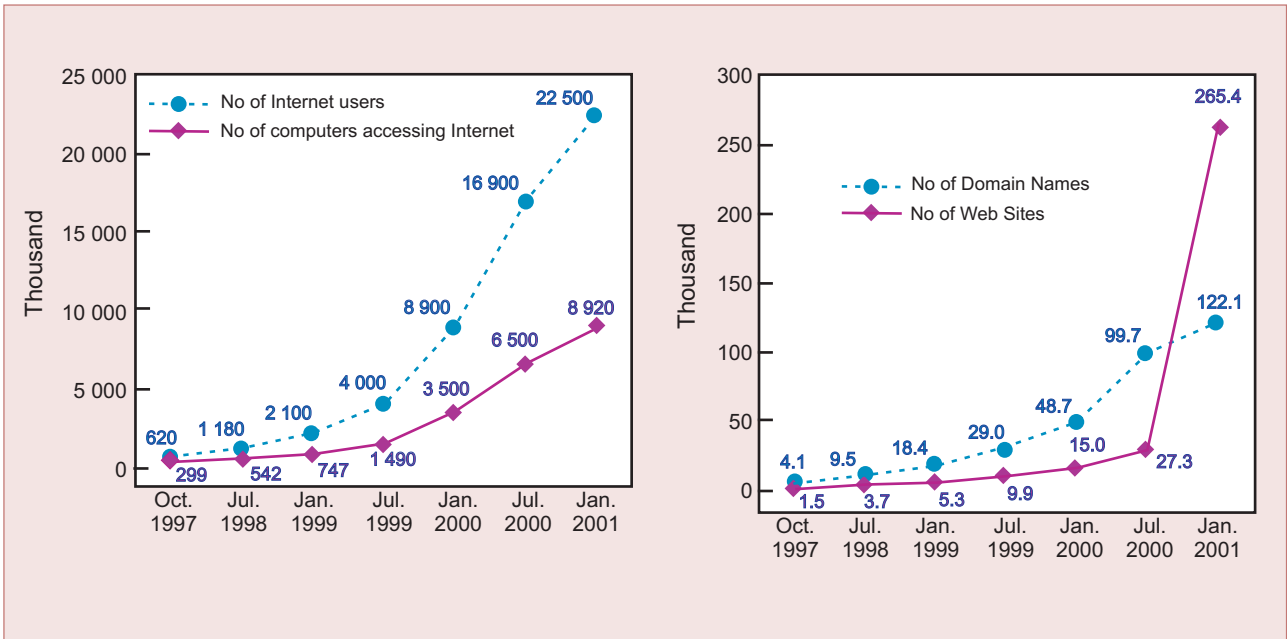
Chart 21
International Internet access capacity
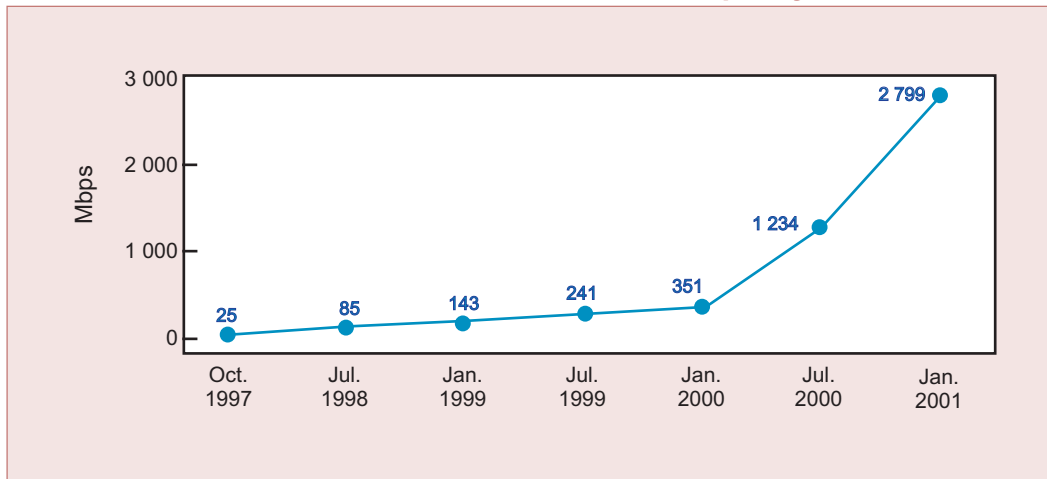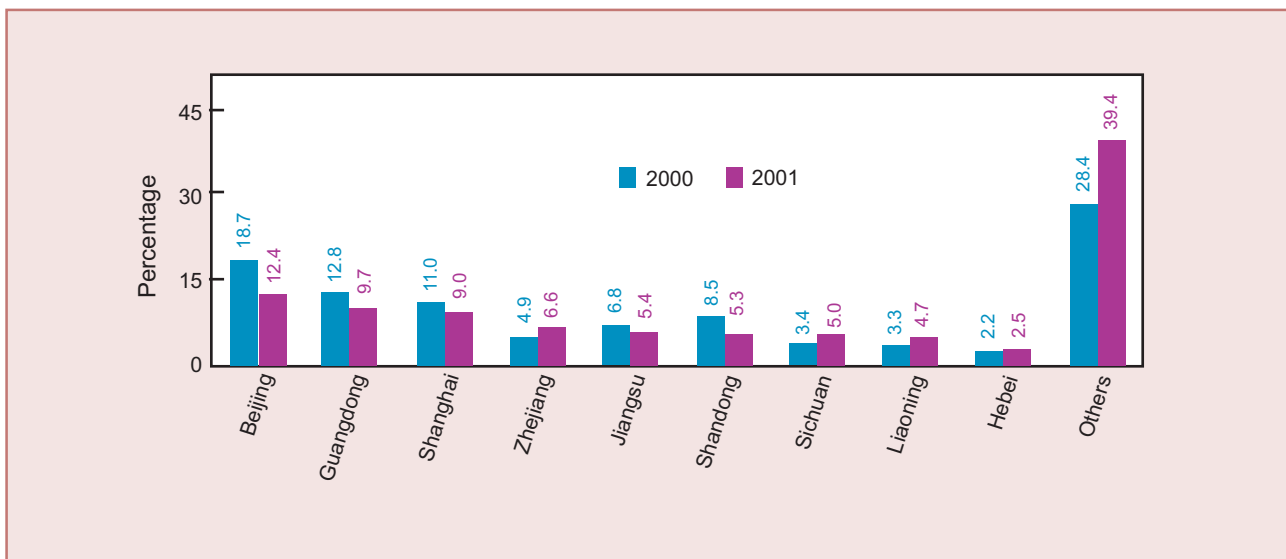

Source: CNNIC survey 1997-2001.

Chart 22
Geographical distribution of Internet users

> 10%
5-9%
2-5%
< 2%
< 0.5%

Source: CNNIC survey, January 2001.

Chart 23
Location of users, percentage share of total as of January 2001

	Beijing	Guangdong	Shanghai	Zhejiang	Jiangsu	Shandong	Sichuan	Liaoning	Hebei	Others
2000	18.7	12.8	11.0	4.9	6.8	8.5	3.4	3.3	2.2	28.4
2001	12.4	9.7	9.0	6.6	5.4	5.3	5.0	4.7	2.5	39.4

Source: CNNIC survey 2000-2001.

Table 28
Scenario of China's Internet users

Year	Internet users (millions)	Percentage of China population	Percentage of world total population
2001	28.2	2.21	0.46
2002	37.1	2.88	0.60
2003	46.7	3.59	0.74
2004	57.0	4.33	0.89
2005	67.9	5.12	1.05

Source: UNCTAD calculations.

Note: The trend was calculated by using equation: Number of Internet Users=101.23+0.146*GDP/Population. The data for GDP was projected by assuming GDP growth rates of 8% (on the basis of historical average growth rate). The data for population was calculated by using the growth rates for 1990-1998, which was extracted from the World Bank database.

2. Internet administration

The Internet administration in China is structured in four layers. The highest layer is the International Gateway Channel (IGC). It is the only way to connect to the World Wide Web from China and is operated by China Telecom under the control of MII. Each new connection has to be approved by the State Council, which originally issued only one licence to China Telecom. China Unicom and China Netcom have recently been authorized to build two additional IGCs to compete with China Telecom.

The next layer comprises the first ISPs, interconnected networks which provide international connections through the IGC. Currently, there are six authorized interconnected networks, namely ChinaNet (administered by MII), GBNet (owned by Jitong Corporation), CERNet (linking academic institutions), CSTNet (primary network for research institutions and scientists), UniNet (operated by China Unicom) and CNCNet (under construction by China Netcom). Of these, only ChinaNet, GBNet and UniNet are authorized to provide commercial services to the public, while CERNet and CSTNet are non-commercial nets.

China Telecom runs ChinaNet, the largest commercial Internet network, which is now the Chinese Internet backbone. It has 31 regional nodes covering all provinces and territories and had a capacity of 1.95Gpbs at the end of 2000. Another commercial network, GBNet, is a computer information communication network with a satellite network and a terrestrial optic fibre network. CSTNet was the first Internet service provider intended for scientific research in China. It has put eight major Chinese libraries and 23 large databases online, and provides the most extensive search services for scientific research and development. CERNet, the China Education and Research Network, is dedicated to Chinese colleges and schools. It covers 31 provinces and territories, with 24 regional nodes. It is linked to 750 education and research groups and has 4 million Internet subscribers. It aims to link over 1,000 colleges and 40,000 high schools, or over 10 million teachers and students, and will ultimately interconnect all campus networks to bring them to the Internet.

The second ISPs have to obtain link-up business permits and must pass through the first ISPs. The final layer comprises the subscribers, or Internet users, including individual consumers, businesses and organizations. Internet users may gain Internet access either indirectly via a second ISP or directly through one of the six interconnected networks.

3. Internet infrastructure

China's Internet infrastructure is made up of traditional land telephone lines and newly created mobile telephony optical cable trunks, digital microwave communication satellites and earth receiving stations. In coastal and south-east China, the communication network is formed by eight north-south vertical and eight east-west horizontal optical cable trunks. In the north-western and south-western regions, communication satellites and earth receiving stations dominate. Satellite communication is appropriate for these regions, because communication traffic is relatively small (see chart 24).

(a) Telecommunication market

The telecommunication industry was viewed as a sector of great strategic significance to the national economy, and the establishment of MII in 1997 reflected the central Government's desire to stream-

Chart 24
Optical cable trunks network

Source: Ministry of Information Industry, 2000.

line the governance of this sector. MII has been given the responsibility for overseeing and regulating national policy concerning China's communications, information technology and software products, initiating research and development programmes, and developing and managing public backbone networks, radio broadcast networks and television cable networks.

Official statistics published by MII demonstrate a significant improvement of the telecommunication infrastructure. China has the world's second largest telephone network capacity in absolute terms, rising from seventeenth place in the 1980s. By the end of 2000, China's teledensity stood at 20.1%, with a daily addition of 170,000 new telephone subscribers, boosting the total to 229 million by 2000. In urban areas, teledencity stood at 39% (Wu, 2001).

Among the new users, 35.6 million signed up for fixed-line service, up 32% from 1999 and increasing the total number of such users to 144 million. Thus, China had 14.1 telephone lines per 100 inhabitants at the end of 2000. In 1999, however, the penetration rate was only 8.6% which was higher than that of India

(3.2%) but lower than that of Brazil (14.9%), the United States (67.3%) and the United Kingdom (56.7%) (ITU, 2001). The number of Chinese mobile subscribers grew at an average annual rate of 88% between 1996 and 2000. There were about 41.97 million new mobile phone users in 2000, up 97% from the previous year and increasing the total number to 85.26 million. The nationwide percentage of mobile phone users reached 6.7% of the population (Wu, 2001; China E-commerce Association, 2001), which is much higher than the 0.35% in India but still lower than the 13.6% in Brazil, 40% in the United States and 67% in the United Kingdom (ITU, 2001).

China Telecom is constructing a fiber-optic transmission backbone ring by building 10 trunk lines to connect major cities in the existing grid of eight north-south lines and eight east-west lines. The company worked to extend the international fiber-optic cable network by cooperating with other international carriers to build submarine cables to countries in East and South-East Asia, to Europe and to the United States to handle increased data and Internet traffic. In 2000, 46,000 kilometers of long-distance fiber-optic lines were added, increasing the total length to

286,000 kilometers. Today, the total length of China's fibre-optic cables is 1.25 million kilometers (Wu, 2001).

Currently, seven public companies are authorized to operate in the basic telecommunication market. The process of breaking down the monopoly of China Telecom reflects the gradual liberalization of China's telecommunication market in recent years. Of these seven companies, three public companies account for the bulk of the basic telecommunication market.

China Telecommunication Corp. (China Telecom)

China Telecommunication Corp. (China Telecom) was the first and is still the largest telecom operator in China. It originally dominated the long-distance telephone and mobile phone markets and Internet access and was the monopoly supplier. In 1999, China Telecom was split into four companies: China Telecom, China Mobile, China Star and China Netcom. Each company is responsible for a different telecom service. China Telecom retains its name and is in charge of the landline and Internet services sector. It controls China's largest land-based telecom infrastructure, including the nationwide fiber-optic cable network and ChinaNet, which currently covers 70% of China's Internet market. China Mobile provides mobile communication services and is constructing the world's largest GSM network with a reported capacity of 65 million mobile users. China Star is responsible for developing its satellite communication services, while China Netcom, established in early 2000, concentrates on developing broadband Internet services. In 2000, China Telecom's business revenue was $20.64 billion.

China United Telecommunication Ltd. (Unicom)

As the country's second largest telecom operator established in 1994, China United Telecommunications Ltd. (Unicom) was initially given a license to provide mobile service in 65 cities to break the monopoly of China Telecom. Now, Unicom operates mobile telephony businesses, as well as long-distance, data and Internet businesses. The company is the only operator other than China Telecom licensed to offer domestic and international long-distance telephone services. Unicom has been granted sole rights to build and operate a nationwide Code Division Multiple Access (CDMA) network. Unicom has increased its mobile phone market share to 22%, which amounts to about 10 million current users. It has become the biggest paging operator in the country, with a 59% market share and 43.5 million paging subscribers. It is also aggressively developing fixed-line and Internet businesses.

China Unicom successfully launched its initial public offer (IPO) in New York and Hong Kong in late June 2000 and raised $4.92 billion, the largest IPO in Asia excluding Japan. The IPO of Unicom reflects a new policy trend by the Government of China that aims at restructuring key public enterprises through overseas stock offerings. China Unicom generated revenue of $24.5 billion in 2000.

China Railway Telecom (Railcom)

In December 2000, the Ministry of Railways received a licence to turn its internal telecom network, China Railway Telecom (Railcom), into a commercial system to compete with China Telecom. Railcom was a stand-alone internal telecommunication network (a kind of Intranet) serving the railway sector. It already services 1 million users, mostly railway workers, on a fibre-optic fixed-line network spanning 120,000 kilometers and connecting 500 cities. Railcom provides fixed-line phone, voice-over-Internet protocol (VoIP), paging and Internet access services and will cover 28 of China's 31 provinces.

Future development

China has made initial commitments to progressively liberalize its telecommunication services upon accession to WTO. In value-added and paging services, foreign service suppliers may hold a 30% equity share upon accession, 49% after one year and 50% after two years. Foreign service suppliers can provide e-

Table 29
Multiple service providers

	Fixed line	wireless	IP telephone	Data service	ISP
China Telecom	✓		✓	✓	✓
China Unicom	✓	✓	✓	✓	✓
China Railway Com.			✓	✓	✓

Source: News reports.

mail, voice mail, online information and data base retrieval, EDI, enhanced/value-added facsimile services, code and protocol conversion, online information and data processing, and paging services. The geographic restriction on the above services to the three cities of Beijing, Shanghai and Guangzhou will be lifted two years after accession. In mobile voice and data services, the foreign service supplier will be able to provide all analogue/digital mobile services and personal communication services and hold a 25% share one year after accession, 35% after three years, and 49% after five years. Further, foreign service suppliers can provide services nationwide five years after accession.

In value-added telecommunication services, including the Internet and e-commerce, China's big market is attractive and promising. In the telecommunication hardware market, many foreign telecom companies like Ericsson, Motorola, Nokia and Siemens have decided to further expand their business operations in China in anticipation of China's entry into WTO. In March 1999, AT&T joined two Chinese companies to offer IP services in Shanghai. Until now, it is the first and the only foreign partner allowed to provide telecom services in China. The joint venture is an experimental operation allowing foreign investment in previously restricted network business. In early June 2001, the Chinese computer manufacturer Legend Group and AOL of Time Warner signed a $200 million agreement to establish a joint venture specially for e-commerce.

China's entry into WTO should have a positive effect on e-commerce. It will open the market for foreign investment and create a competitive environment that should bring down the access cost and improve service quality. It will also provide Chinese enterprises with opportunities for cooperation leading to faster adoption of e-commerce practice.

(b) Mobile market

Currently, China has about 85.26 million mobile phone users, much more than the number of PC owners. Accessing the Internet through mobile phones may partly solve China's problem of low levels of PC penetration. Because mobile phone costs are much lower than the price of a personal computer, this approach is more affordable. As mobile phone manufacturers such as Motorola and Ericsson have established production facilities in China, the prices for mobile phones are likely to drop further.

Beginning May 2000, firms throughout China started to offer wireless application protocol (WAP) services to enable more mobile phone users to tap into the Internet using their handsets. China Mobile, China Telecom and China Unicom unveiled their WAP services in the major Chinese cities. But WAP mobile phones have their drawbacks: low speed, lack of a keyboard, small text-only displays, limited security and limited memory are the key problems. The drawback in practical usage is that the WAP services present a graphic display on a small screen and it is especially difficult to enter Chinese characters with the small mobile phone keys.

While WAP has lately been criticized for not meeting the users' needs, General Packet Radio Service (GPRS) should allow for speedier, always-on Internet access. China Unicom is already in the process of rolling out GPRS in major cities throughout China. China Mobil also plans to deliver its GPRS network to four cities (Hangzhou, Chengdu, Tianjin and Beijing) to serve 110,000 subscribers by the middle of 2001.

(c) Computer market

China has a rapidly developing PC market, although there are only about 30 million computers currently in the country. While the growth in demand for PCs in industrialized countries is slowing down, China's demand for PCs has been accelerating. Several factors are at play here. Corporate spending on office automation and individual purchasing was encouraged by retail prices that dropped to a level below the affordability threshold ($1,000). The need for computers in the banking sector for automation and system integration and the modernization of the customs administration and the transport industry also had positive effects. In addition, the decision by the Government to introduce computer courses as a compulsory part of the official school syllabus also had a pulling effect on computer demand. Finally, the surge in enthusiasm in China for the Internet by itself has spurred new demand for PCs. The Chinese market accounted for 36% of the Asia-Pacific market, with 7.17 million PCs sold in 2000, a 45.1% increase over 1999 sales (International Data Corporation, 2001).

The annual production capacity for PCs was 8.6 million units in 2000 (CCID Consulting Co., 2001). Efforts to give online education, training and computer education in schools and initiatives by government and enterprises to go online should stimulate

China's PC sales to 17 million units in 2004 (see chart 26).

In spite of the rapid growth in sales, the computer penetration rate is still very low. In the cities, only 5% of Chinese homes have their own PCs, and the figure is less than 3.2% for the whole of China, compared to 105% for TVs, 80% for refrigerators, and 50% for air-conditioners (Merrill Lynch; 2000). Low computer penetration hampers the development of e-commerce in China (see table 30).

Table 30
China's PC penetration rate

| Country	%
Per urban household	
China	5
USA	49
Per population	
Mainland China	3.2
Taiwan, Province of China	14
Republic of Korea	15
Hong Kong, China	30
Singapore	36

Source: Merrill Lynch, September 2000 and China E-commerce Association, 2001.

Chart 25
2000 PC shipment growth rate
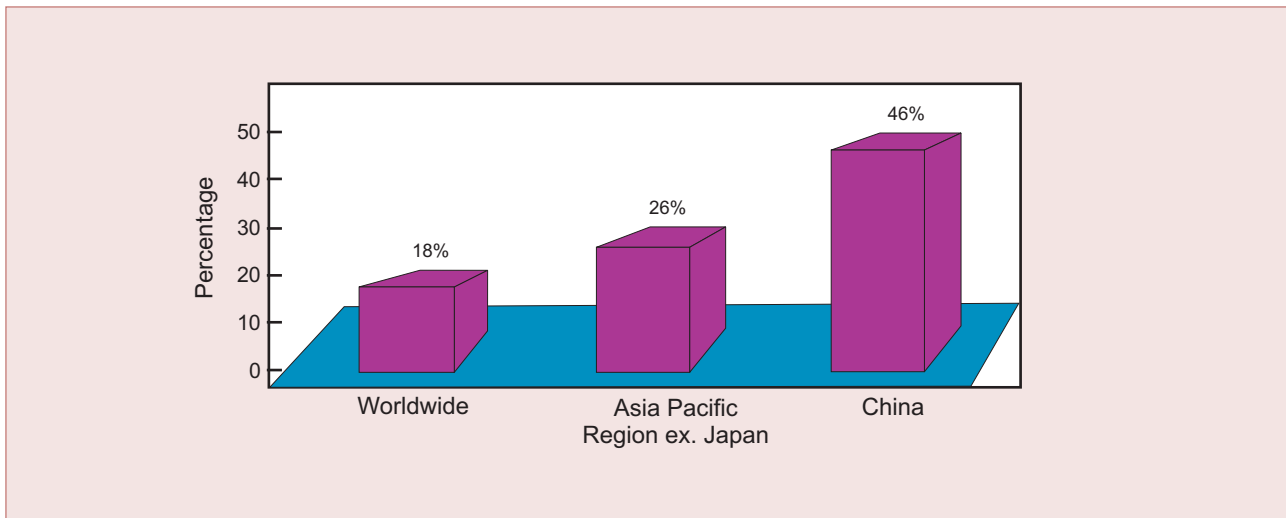
Source: IDC, 2001 and Merrill Lynch, September 2000.

Chart 26
Unit shipment growth of China's PC market
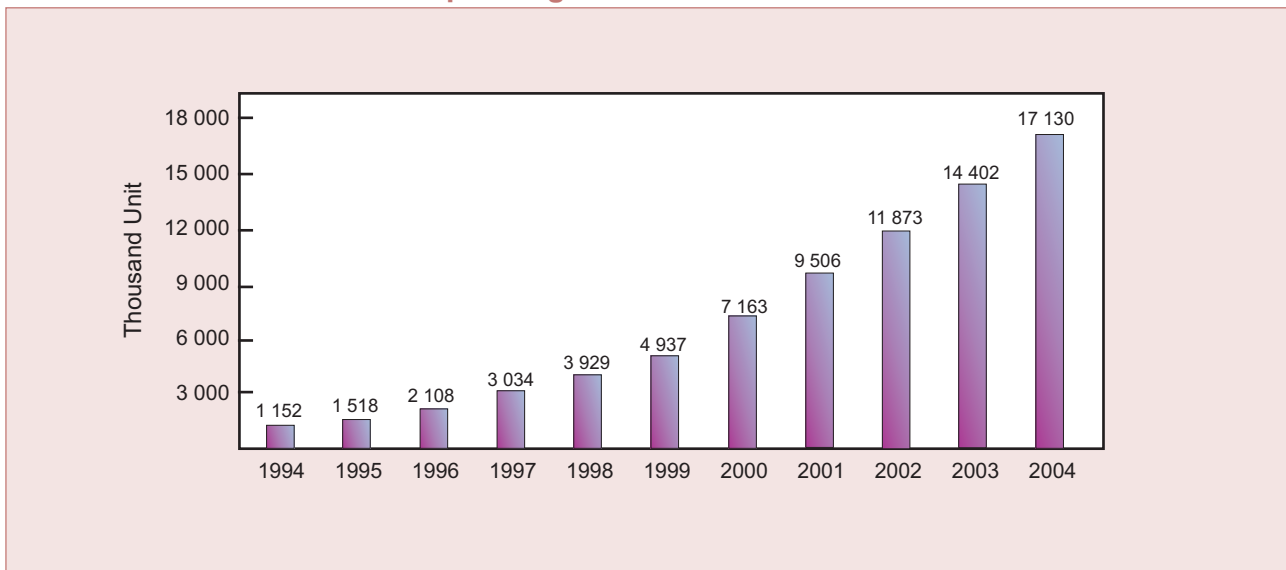
Source: IDC, 2001 and Legend Annual Report, 1998-2000.

B. Government initiatives

In the mid 1980s, the Government launched a comprehensive science and technology development programme that included an information highway development strategy. This early science development programme prepared the way for current initiatives to get electronic commerce off the ground. In 1999, the Chinese Government initiated the "Government Online" and "Enterprises Go Online" projects, and it declared year 2000 the "Year for Chinese Businesses to Go Online". In addition, the Government[3] hosted five sessions of the China International Electronic Commerce Summit in Beijing from 1996 to 2001. Senior government officials and chief executives of prominent multinational enterprises had the opportunity to exchange views in round table discussions. Furthermore, the China E-commerce Association[4] was established in June 2000. These initiatives have undoubtedly contributed to raising awareness among government officials of the implications of e-commerce and provided a forum for discussion on co-operation in e-commerce between Chinese enterprises and foreign enterprises.

1. Golden Projects

China's first move in the direction of building up a national information infrastructure was the initiation of the Golden Projects that aimed at simultaneously developing an information economy and building administrative capacity. The projects, which are supported by a high-level body under the State Council, namely the National Economic Information Council, have the goal of building a national information highway as a path to modernization and economic development by developing information technology in China.

The Golden Projects initially consisted of three elements: the Golden Bridge, the Golden Card and the Golden Gate. Later they expanded their scope to cover other areas (see table 31).

The Golden Bridge project produced the GBNet (described in Section A). Proposed in March 1993, the GBNet is a network composed of satellite and landline networks that tie together 31 provincial and regional nodes with a central hub in Beijing. Designed primarily to serve the finance and business sectors, it plans to cover 180 cities nationwide in 2002 and will link the databases of the national economic management sector, large and medium-size enterprises and

major national engineering, scientific and educational bases. By 2000, it had nodes in 60 cities and 15 international lines that connect it to the Internet backbone of China Telecom, AT&T and Global One.

The Golden Card[5] is an electronic money project that was designed to accelerate the development of banking and credit card systems in major cities in China. The project set up a credit card verification scheme and an inter-bank, inter-region clearing system. It plans to issue 200 million credit cards in 400 cities within China by 2003. The total cost for the Golden Card project was estimated to be over $12 billion. By 1999, the progress made was as follows:

- A bankcard information exchange centre and network has been established in each of the 12 trial cities;

- The ATM system had been linked up in 10 of the 12 pilot cities;

- 17 to 20 banks had issued a total of over 140 million bankcards in China. The Industrial and Commercial Bank of China had issued 45.3 million debit cards — the highest issuance rate in China — and covered half of China's debit card market.

First proposed in June 1993, the Golden Gate project is a foreign trade information network. By linking the Ministry of Foreign Trade and Economic Co-operation and the Customs Bureau, it aims at improving import-export trade administration and developing an information network to accelerate China's foreign trade activities. The recent progress will be discussed in Section C.

After the initial three golden projects, a series of other programmes has also been proposed and implemented. The Golden Intelligence project, better known as CERNet (described in Section A), is the vehicle for the Internet's entrance into China by interconnecting campus networks and then connecting them to the global Internet. China's electronic taxation project began in 1996. In the first phase, about 368 tax offices in different cities and regions were connected. At the end of 1996, the second phase of the project was launched, aiming to upgrade and connect tax authorities at the provincial level. In 1998 an e-mail system linking provinces, cities, and local tax bureaus was opened by the State taxation administration, which broadcasts information on tax policies, news and technologies to all tax offices. By 1999, the Golden Tax's network covered 400 cities and 3,800 counties.

The Golden project is an initiative taken by the Government to mobilize all parts of society to prepare to adapt and face the challenge of revolutionary changes that have been foreseen as a result of the application of information technology. It involves almost all economic sectors, i.e. manufacturing, agriculture, services, banking and financing, commerce and international trade, transportation, education and vocational training. It aims to introduce a fundamental reform of the government structure and it touches upon all government institutions. However, many of the activities in the project are still in the process of being implemented, and there is no comprehensive information on which to base an assessment of project performance.

2. National informatization

The Government has an important role to play in building the basic ICT infrastructure and facilitating the development of electronic commerce. At the same time foreign capital is being allowed to participate in the development of e-commerce and to gradually liberalize the information and communication technology industry and create a competitive environment for Chinese and foreign enterprises alike. The Chinese Government has also taken initiatives in term of pushing national informatization. The national informatization programme is given high priority in the 10th Five Year Plan (2001 to 2005). During this period, the information industry is expected to become the pillar industry to spur the national economic growth.

The deployment of city informatization is an important component of national informatization. Several city-based IT projects are under way. Beijing started its "Digital Beijing" project in the experimental zone of Zhong Guan Village, the "Silicon Valley" of China. Shanghai was the first city to embrace the concept of "inforport" and "city informatization". By June 2000, the aspects of Shanghai's city informatization plan that had been completed included:

• Multiple ISPs and broadband Internet access;

Table 31
Summary list of the Golden Projects

Name	Full title	Major ministries, departments
Golden Bridge (JinQiao)	National Public Economic Information Communication Network	Ministry of Electronics, State Information Center, Ji Tong Co.
Golden Card (JinKa)	Electronic Money Project	PBoC, Ministry of Electronics Industry, Ministry of Internal Trade, Great Wall Computer Co.
Golden Sea (JinHai)		State Statistical Bureau, PBoC, State Information Center
Golden Macro (JinHong)	National Economic Macro-Policy Technology System	China ExIm Bank , Ministry of Finance, State Information Center
Golden Tax (JinShui)	Computerised Tax Return and Invoice System Project	Ministry of Finance, Ministry of Electronics Industry, National Taxation Bureau, Great Wall Computer Co.
Golden Intelligence (JinZhi)	China Education and Research Network (CERnet)	State Economic and Trade Commission
Golden Enterprise (JinQi)	Industrial Production and Information Distribution System	State Economic and Trade Commission
Golden Agriculture (JinNong)	Overall Agricultural Administration and Information Service system	Ministry of Agriculture
Golden Health (JinWei)	National Health Information Network	Ministry of Health
Golden Info. (JinFeng)	State Statistical Information Project	State Statistical Bureau
Golden Cellular (GoldenFeng)	Mobile Communications Production and Marketing Project	Ministry of Electronics Industry
Golden Switch (JinKai)	Digital 200 Switch Systems Production Project	Ministry of Electronics Industry, Ministry of Posts and Telecom

Source: Peter Lovelock, 1999.

- Business portals that support electronic certification and online payment;

- Completion of the virtual *Nanjing Road* department store.

C.   E-commerce development by sector

1.   Internet application and the growth of e-commerce

According to the Ministry of Information Industry (MII), by March 2000 China had 800 online shopping sites, 100 auction sites, 180 remote education sites and 20 remote medical sites. It also had 300 Internet service providers and 1,000 portals. B2C e-commerce was in the start-up phase in 1999, with the total volume of online shopping reaching $3.8 million, accounting for only 0.018% of China's total retail sales. However, recent reports indicate that China's e-commerce transactions in 2000 totaled $9.33 billion, which included $47.17 million in B2C transactions and $9.29 billion in B2B transactions, the latter accounting for more than 90% of total e-commerce in 2000 (Xiang, 2001; CCID Consulting Co., 2001a).

Due to administrative, legal, infrastructure and financial constraints, e-commerce constitutes a small percentage of online activity. Only 31.67% of Internet users actually made online purchases in 2000, although this was double the number of 12 months before

(CNNIC, 2001). This shows that China's e-commerce is still in its infancy stage. However, an MII study finds that close to half of all Internet users have expressed interest and enthusiasm for online stores, schools, and brokerage services. In addition, many Internet service enterprises stay in operation without profit with the strategic goal of capturing a market share of the potentially large Chinese market. Anderson Consulting made a forecast that by 2003, China's e-commerce revenue would reach $4.2 billion (see chart 27).

2.   Financial services

The People's Bank of China (PBoC) is the country's central bank. The commercial banking system is composed of the main public commercial banks, i.e. the Industrial and Commercial Bank of China (ICBC), the Bank of China (BOC), the Agricultural Bank of China (ABoC) and the Construction Bank of China (CBC), as well as various public and private commercial banks such as the China Merchants Bank (CMB).

PBoC has been cautious in applying Internet-related technologies to financial transactions. PBoC did not begin to make plans for the development of Internet-based technology applications until 1997. In 1998, the PBoC Science and Technology Department and the Beijing Municipal Governments Infoport Office jointly initiated the Beijing Electronic Commerce Project. Since then, PBoC has put the development

Chart 27
China's B2B and B2C market estimates
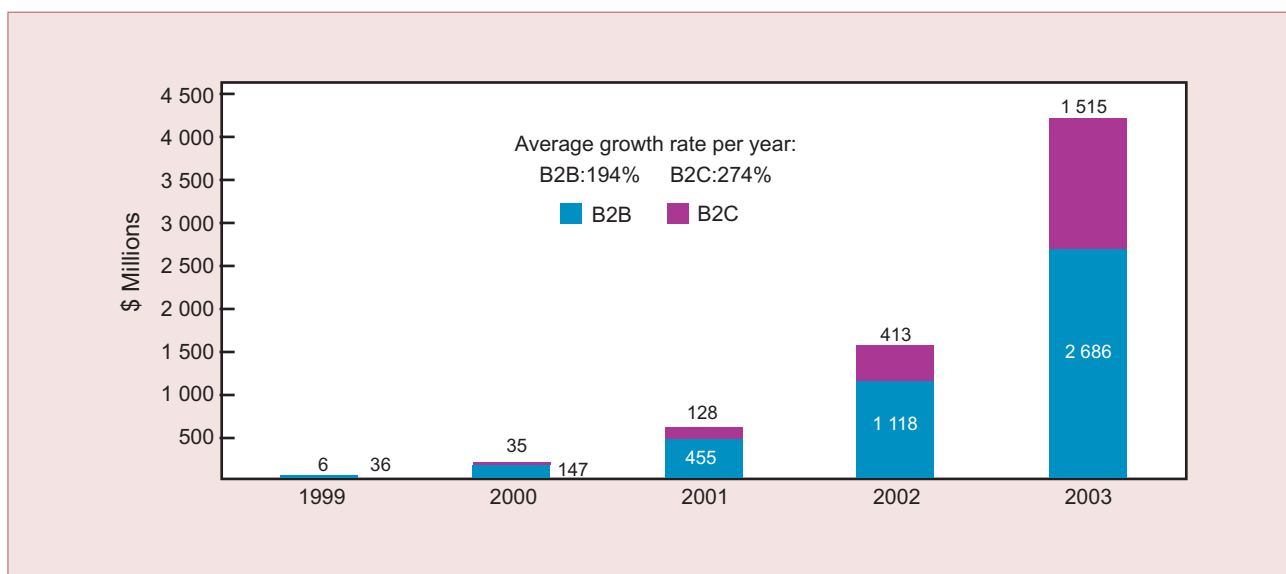
Source: Anderson Consulting, 2000.

of online trading and electronic payment on its agenda.

Meanwhile some commercial banks have also realized the need to develop online services. By March 2000, CMB and four state commercial banks, namely ICBC, BOC, CBC and ABoC were providing online banking services (see table 32).

The five banks provide online services at the basis of two different models. The first is a centralized model. The bank headquarters maintain a centralized web site and all transactions are concluded by the headquarters' Local Area Networks, while the local branches are authorized to accept applications from customers, open accounts for them and distribute software and hardware information. BOC and ICBC follow this model. With the second model, both the headquarters and the local branches have their own web sites, which are interconnected. Local branches complete transactions independently, then transfer the data to headquarters. CBC, ABoC and CMB use this model.

Of all the commercial banks in China, CMB was the first to provide online banking services, Since it launched its B2C online banking service in 1997. Currently, CMB has over 100 million individual customers and 10,000 online institutional customers. Eighty per cent of the e-commerce companies in China prefer CMB's All in One Net card.[6] In the first half of 2000, online institutional customers completed 80,000 transactions.

As the largest commercial bank in China, ICBC has competitive advantages. It runs 8.1 million industrial

and commercial business accounts, over half the total for China's financial sector, and has 420 million individual customers. In June 2000, ICBC's online banking service was available in 31 cities, and 500 well-known companies applied for this service. By the end of 2000, online transfers reached $840 million. At present, ICBC has a complete set of e-banking business services, including online corporate banking, personal money management, and B2B and B2C payments.

A number of banks with the intention of entering in the Internet banking business are hesitating for fear of lack of technological capacity to cope with possible hacker attacks and the misuse of customer information and fraud. Some banks have opened special accounts for online banking customers and have set limits on amounts that can be withdrawn to mitigate risks. The establishment of the Certificate Authority (CA) Centre may partly resolve these problems. So far, there are three national CA centres in China, namely the China Financial Certification Center (CFCC), the China international e-commerce CA center, and the China telecommunication CA center.

Initiated by PBoC, along with 12 commercial banks, CFCC was set up in July 2000. The CFCC grants security certificates and digital signature verification to online traders and thus enables secure inter-bank payments and transactions. The security certificate confirms the identity of electronic retailers and online shoppers through a database containing identification information and an encryption system. The CFCC has already completed its first-generation system and is able to issue annually 50,000 corporate

Table 32
Online services provided by China's banks as of March 2000

Services	CMB	ICBC	BOC	CBC	ABoC
To individual customers					
Account inquiry	✓		✓	✓	✓
Inter-transfer	✓		✓	✓	
Securities deposit transfer	✓			✓	
Mortgage calculation	✓				
Lost report	✓			✓	
To corporate customers					
Account inquiry	✓		✓	✓	
Inter-transfer	✓	✓		✓	
Capital transfer	✓	✓		✓	
Int'l declaration	✓	✓	✓		
On-line shopping	✓	✓	✓		

Source: Din (2000).

digital certificates valid for 10 years and 200,000 individual digital certificates.

Two years after China's accession to the WTO, foreign banks will be permitted to conduct Chinese yuan wholesale banking. Finally, five years after China's entry, foreign banks will be entitled to serve individual Chinese customers and also to set up Sino-foreign banks. Foreign banks, with their advanced e-banking systems, capital and experience, are often seen as a future threat to domestic Chinese banks, in particular in the online or e-banking market. This emphasizes the need for good bank supervision and a legal framework that regulates online financial activities, thus supporting fair and competitive market conditions.

3. International trade

Foreign trade is one of the major growth areas in the Chinese economy. In 2000, total international trade was valued at $474.3 billion, an increase of 31.5% over 1999 (MoFTEC, 2001). International trade remains high on the Chinese economic agenda, and there have been persistent attempts to use the Internet as an export market place for Chinese goods and services.

The Ministry of Foreign Trade and Economic Co-operation (MoFTEC) set up its web site in 1998, offering trade information and publicizing China's foreign trade policies. Its web site registers about 700,000 users per day, mostly from overseas. MoFTEC uses the Internet to enhance China's trade transparency and efficiency in trade administration procedures. It established the web site for the China Commodity Trading Market,[7] where business deals can be made online. The China foreign investment databank[8] has also been opened to the public and provides information on China's foreign investment policies, regulations and laws, project invitations, Chinese enterprise profiles, and technology and commodity information. The Chinese Export Commodities Fair, which is China's largest and highest-level trade fair, has also launched its web site[9] covering all sectors of the national economy. Since the initiation of the Golden Gate project in 1993, the computer networks of MoFTEC, the Customs Bureau, the China Foreign Exchange Administration Bureau, the commercial banks, the China Statistical Bureau and some companies have been connected. These provide the tools to substantially simplify trade procedures, cut transaction costs and shorten transaction times.

The China International Electronic Commerce Center (CIECC) was established in 1996. CIECC is administratively managed by MoFTEC, the aim being to assist Chinese enterprises in the use of e-commerce to conduct international trade. Major MoFTEC branches, local offices, and six trade associations are all connected to CIECC (see chart 28). CIECC has the overall responsibility for the construction and operation of electronic trading networks in China and for planning in respect of the role of e-commerce in China's economic development and international trade.

It appears that the main concern of the CIECC is foreign trade administration efficiency and transparency. The following are the main activities of CIECC in promoting trade (Dougan and Fan, 1999):

- Electronically linking with the databases of other countries' customs authorities in charge of textile quota administration;

- Conducting the MoFTEC-Customs trail for online inspection and administration of import-export licences;

- Operating an electronic open bidding system which ensures fairness, openness and transparency, improves efficiency and lowers costs. In October 1998, the introduction of textile export quota electronic bidding saved the bidding enterprises $2 million;

- Harmonizing foreign trade statistics between MoFTEC and the Customs Administration (more than 60 standard trade forms are electronically available) and setting up an import-export statistical database which provides efficient data analysis for China's foreign trade policy makers and for enterprise leaders;

- Launching the electronic certificate of origin nationwide to issue, inspect and manage certificates of origin;

- Setting in operation an electronic inspection and management system for materials processing and manufacturing, a foreign trade practice widely adopted in China;

- Standardizing the coding system for China's export-import enterprises and launching electronic processing, inspection and management systems for a variety of exports and imports from January 1998.

Some commercial web sites concerning foreign trade such as ChinaTradeWorld.com and Chinaproducts.com

Chart 28
CIECC's data communication system
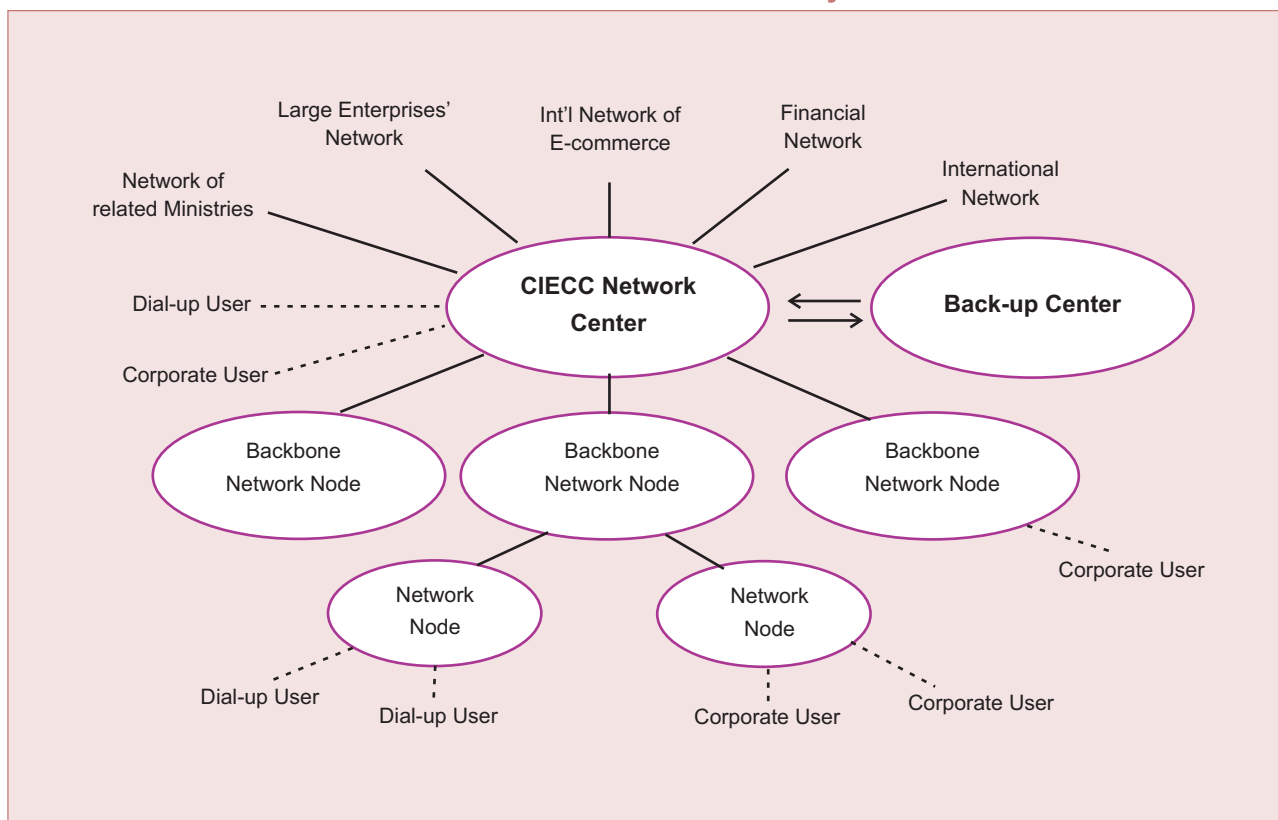
Source: Ministry of Information Industry, 2000.

operate in this sector. Supported by CIECC, ChinaTradeWorld.com aims to become the trade facilitator for China with the rest of the world. Mainly sponsored by the China Council for the Promotion of International Trade (CCPIT), Chinaproducts.com is a B2B trade portal designed to create a market-place linking China's exporters and manufacturers directly to buyers around the world. These business web sites can normally spread large amounts of trade information covering vast areas and provide a more flexible way of trading than traditional methods.

4. Tourism

Tourism is one of the fastest growing industries in China. In 2000, the number of foreign visitors reached 10.19 million, an increase of 20% over 1999 and China's tourism industry foreign currency revenue amounted to $16.2 billion, up 15% (China National Tourism Administration, 2001).

By the end of 2000, there were over 300 tourism web sites in China. China Travel Network Co. Ltd. (CTN)

is one of China's biggest tourism e-commerce web sites. Cost reduction is achieved by attracting more customers by improving the quality of services significantly because, based on real time statistics on customer travelling trends, market analysis reports are provided monthly. CTN differs from other travel agencies in that it provides e-commerce consulting service to more than a thousand travel agencies.

There are three factors that impede the development of etourism. First, e-commerce and tourism cannot be integrated very well at present because some traditional travel agencies are still not aware of e-commerce, while some tourism web sites do not own traditional tourism resources. Secondly, some travel agencies currently limit their services to online air ticket booking and hotel reservation only. Thirdly, since people are still not used to booking online, the ratio of online booking to telephone booking in most travel agencies is 1 to 4 or even less, thus making some online travel agencies actually telephone book-ing centres.

Table 33
Selected etourism companies

	CTN	Ctrip*	eLong Beijing Ltd.	China Youth Travel Online
Web site	www.ctn.com.cn	www.ctrip.com	www.lohoo.com	www.cytsonline.com
Established	Oct. 1997	May 1999	April 1999	June 2000
Hits/day	300 000	400 000	30 000	N/A
No. of employees	110	323	230	70
Revenue in 2000 ($)	..	12 million	14.5 million	4.8 million
Adv. expenses in 2000	..	0.6 million	0.2 million	0.1 million
No. of hotels included in database	1 100	1 100	3 000	600

Source: Tourism, 2000

* *Ctrip Computer Technology Shanghai Ltd.*

5. Government Online project

In a structural reform launched in 1998, the Chinese Government reduced the number of ministries from 40 to 29 and cut civil servant staffing by half with a view to combating bureaucracy and enhancing efficiency. Achieving this objective should be facilitated by moving much of the administrative work online, which substantially improves transparency and reduces the chance for corruption.

In January 1999, China Telecom and 29 ministries and commissions initiated the project "Government Online". Under the project, more than 80% of the ministries and commissions and all levels of local government will set up web sites on the Internet. The project is to be implemented in three phases. First, both national and local government agencies will put the basic information such as government structures and regulations online. The second step will be to publish rules and regulations, as well as administrative procedures online. The third step will be to operate government administration online. By having different government ministries, offices and information centres nationwide interconnected by an advanced network system, government offices will raise their work efficiency, enhance their policy transparency, improve government procurement and provide better services to the general public.

To date, 4,615 of the 122,099 domain names, i.e. 3.78%, are registered as .gov.cn (CNNIC, 2001). Although the absolute number of registered .gov.cn web sites has increased rapidly after two years of effort, the contents of some web sites are updated slowly and the services offered by most web sites are limited to providing information or reporting news.

6. Enterprises Go Online project

Chinese enterprises are working with poorly developed information technology systems and management. By the end of 1999, there were 15,000 enterprises in China with their own web sites, representing less than 0.1% of Chinese enterprises. Most of them just have a web site with basic contact information and an e-mail address. Few local enterprises are using information technology for enterprise resource management, client-based analysis, or supply-chain management. Furthermore, computers are mostly used for word processing and documentation (96%), followed by e-mail (84%), data processing (79%), and other (less than 50%) (Dougan and Fan, 1999).

In order to help to increase the use of Internet among Chinese enterprises, especially SMEs, the State Economic and Trade Commission, working jointly with MII, launched the "Enterprises Go Online" project at the end of 1999. They intended to get 1 million small enterprises, 10,000 medium-size enterprises and 100 large enterprises online by the end of 2000, and planned to double the number every year in the following three-year period.

7. Online school and distance education

Traditionally, Chinese universities have offered distance learning courses via satellite TV to M.A. and Ph.D. candidates in remote cities, to complement the audio or visual university courses for undergraduates offered by the Central Television. The China Central Radio and Television University (CCRTU) is currently the largest distance education school in China, covering the entire country and targeting adult education and training. The number of graduates totals 2.4 million.

In June 2000, 31 Chinese colleges and universities were permitted to start online classes by the Ministry of Education (MOE). The MOE announced that it would spend $4.8 million on training online teachers and supporting the creation of college-level online teaching materials in 2000. The State Council also allocated $43.5 million to Internet construction for distance education and wants to expand the backbone capacity of CERNet and transform the CCRTU's satellite transmission backbone. In October 2000, the MOE unveiled a satellite-based broadband and multimedia communication platform for distance education. And the distance education programme went into trial operation. The platform will upgrade the satellite TV education system to real-time digital transmission.

Most online high schools and universities are extensions of conventional schools, such as the Beijing High School No. 5 and Beijing No. 101 Middle School, which are known for high rates of university entry. Traditional universities have also allied themselves with some companies to launch online education programmes. In November 2000, CCRTU joined the TCL Group to establish the Modern Distance Learning Cooperation Project in Beijing. The Legend Group has also signed an agreement with the National Higher Education Self-learning Examination Committee to offer e-commerce training courses through its web site FM365.com.

Distance learning is gradually gaining popularity in China for several reasons. First, in the current 10th Five Year Plan, the Government has allocated $1.2 billion for research on crucial technologies and for building an enabling environment for distance education. The target is to equip schools with PCs for education purposes. Administrative regulations require high schools to provide a fixed number of hours of computer instruction per week. Second, only 9.1% of high school students can go on to university, while most parents hope their children will go to university. Parents invest heavily in their children's education, and those who can afford it will not hesitate to buy computers for their children and pay expensive Internet access charges and online tuition. In Beijing at present, 20% of students are attending online high schools. Third, online education for adults is also popular in terms of providing better job opportunities in the rapid transition towards a market economy system.

However, Internet access quality is affecting online education because multimedia applications have to be transmitted over the Internet. Many universities employ several kinds of network combined instead of just a single network. The People's University distance-learning network, for example, has had to send its multimedia course to its twenty-plus instruction locales via satellite and the Internet does the rest. The Tsinghua University uses both a satellite network and a CATV network.

D. Case studies of e-commerce companies[10]

It was not until 2000 that many Chinese traditional companies embraced e-commerce. Several big Chinese companies such as Legend, Haier and Changhong etc. launched their e-commerce operation in that year.

1. Traditional companies

Legend Holdings Limited (Legend)

Incorporated in 1988 and listed on the Hong Kong Stock Exchange in February 1994, Legend Holdings Limited (Legend) is China's largest information technology company and the manufacturer of China's best-selling PCs. For the past few years, Legend has engaged in the design, manufacture and sale of Legend brand PCs, distribution of foreign brand IT products, and the systems integration business. It has already built up a well-known, unique brand name.

Foreign brands such as IBM, Compaq and HP have been competing in China for a long time. However, their aggregate market share declined from over 30% in 1996 to 20% in 1999, while three other local computer manufactures, namely Legend, the Founder and the Great Wall, hold a 30.9% market share (see chart 29). This happened because foreign brands aimed at the corporate sector, while local companies targeted the consumer market, which is the high growth area. Legend built up its market share mainly by selling PCs to Chinese consumers at prices 10-15% lower than comparable foreign brands. In 2000, Legend's PC sales grew by 96% to 2.1 million, which made Legend one of the largest PC manufacturers in the Asia-Pacific region. The operating profits from exports of PCs to North America and Europe represented 5.5% and 5.7% respectively of total operating profits for 2000 (Legend's Annual Report, 2001).

Recently, Legend has been aggressively diversifying its business into the Internet and e-commerce areas. To develop its Internet business, in April 2000 Legend reorganized its existing business into two groups: Legend Computer System Ltd. and Legend Digital China Ltd. On 11 June 2001, Legend and AOL established a joint venture to provide consultancy and technical support for interactive services by using AOL's technology and Legend's mass PC marketing position.

Legend Computer Systems Ltd. is mainly responsible for Internet-related hardware products, wireless devices and Internet services over its web site. Legend has bargaining power with component suppliers because of economies of scale so that it enjoys a pronounced cost advantage over its competitors. In terms of distribution, Legend has been building up a network of its own stores to further cut middleman costs, and it owns over 2,000 distribution points and 70 Legend 1+1 franchise shops. In fiscal year 1999, profits from its Enterprise Resource Planning (ERP) systems were remarkable: online order sheets amounted to over $1 billion. The average period to complete one transaction decreased to 4.5 days from 9 days in 1995, similarly, average inventory days decreased from 30 days in 1998 to 18 days in 1999.

Digital China mainly distributes IT products and provides e-commerce and overall integrated systems planning and servicing. Digital China has so far opened a web site called "E-bridge" and has set up trading platforms in nine major cities in China. Clients can obtain commercial information and complete business transactions through this web site. By the end of 2000, online business had reached $12 million (in three months), representing 22% of total business. Currently, more than 500 different products can be ordered online.

Based on ERP systems, Legend is building its e-commerce model by creating an e-distribution network for IT product vendors, currently focusing on developing a B2B market, and a nationwide logistics system which includes delivery, customs clearance, electronic payment, etc. The full model is expected to be implemented by the end of 2000 (see chart 30).

Like Legend, some local enterprises have also entered the e-commerce market. As one of the most famous consumer electronic manufacturers in China, the Haier Group (Haier) has enjoyed 83% average annual sales increases over the last 15 years. After a pilot e-commerce operation, it set up Haier E-commerce Co. Ltd. in March 2000. Customers could order 456 different products and get their goods within two days through Haier's 10,000 sales points in big cities nationwide. With the biggest CTV market share in China, Changhong Group is integrating its information network, logistics network, service network and settlement network for e-commerce.

Chart 29
China PC market shares in 1998 and 1999
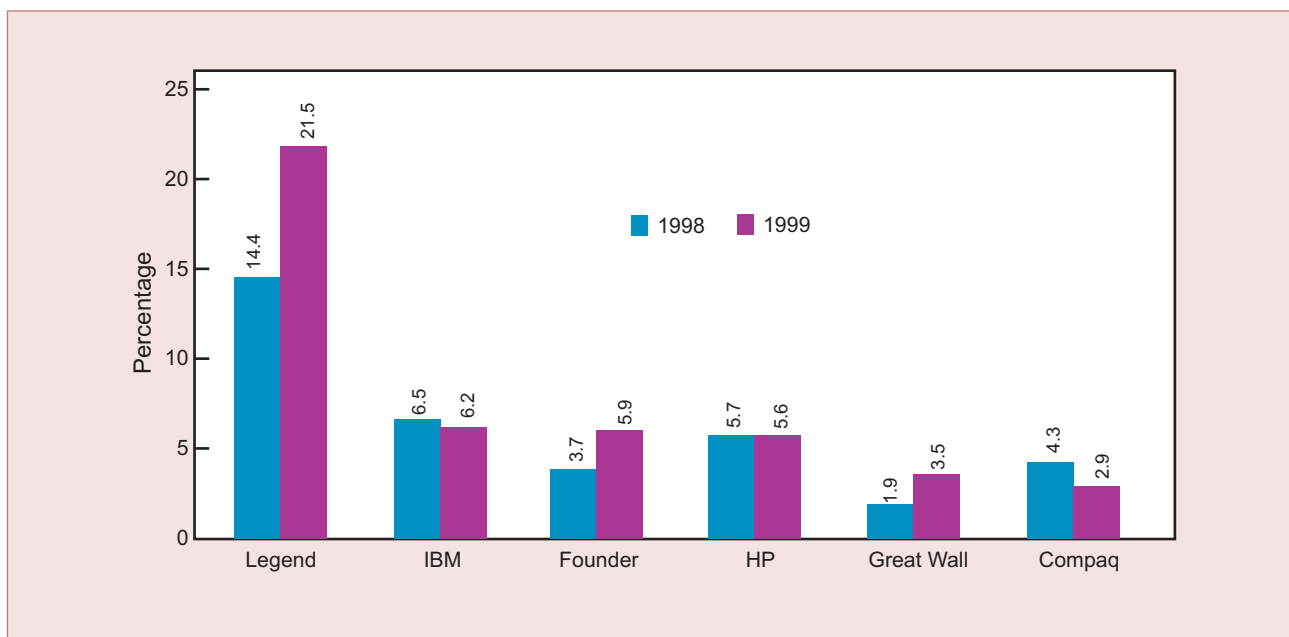
Source: Legend Annual Report 1998-2000.

2.   Three portals in China

Sina.com, formed in December 1998, is widely considered the world's largest Chinese-language web site. The company offers Chinese Internet users a range of services from news and information to online community services. E-commerce facilities consist of an online shopping mall, online ticketing and a co-brand debit card with China Merchant Bank.

Sohu.com's initial web site was launched in February 1997. Soon after, the company developed the first Chinese language online directory and search engine. The company's new focus is on the e-commerce platform for B2C and B2B auctions. In September 1999, Sohu.com announced the construction of its e-business commercial network.

Founded in 1997, Netease.com is largely known for its e-mail and community services. In July 2000, Netease.com launched the first online auction in China on its own software platform.

All three portals generate revenues from software licensing and related integration projects, advertising services, and e-commerce related services in China. Although none of these three portals is profitable yet, they are optimistic that they may break even by 2002 or 2003. The portals chose to stay in operation without profit with a long-term objective of capturing a big share of the potential market growth.

Table 34 shows that the three portal companies, and particularly Sohu.com relied heavily on advertising as the major source of revenue.

The three portals are all B2C focused. Sina.com and Netease.com focus on online shopping malls and online auctions respectively, while Sohu.com concentrates on both. In the short term, e-commerce is unlikely to be the main source of revenue for the three portals. The percentage of e-commerce revenue in total revenue in the first half of 2000 for Sina.com, Sohu.com and Netease.com was 1.2%, 6% and 13% respectively. All three talk about new initiatives and will probably reveal new e-commerce revenue models during 2001. They have all shown their interest in potential e-commerce growth rather than immediate profit. They apparently hope that their active promotion of e-commerce will eventually be rewarded by their capturing a major share of the new market as a result of being among the early entities in this field.

Meanwhile, all three portals have already developed WAP pages for mobile operators (wap.sohu.com; wap.sina.com.cn; wap.163.com). An alliance has been

Chart 30
Legend's e-commerce model
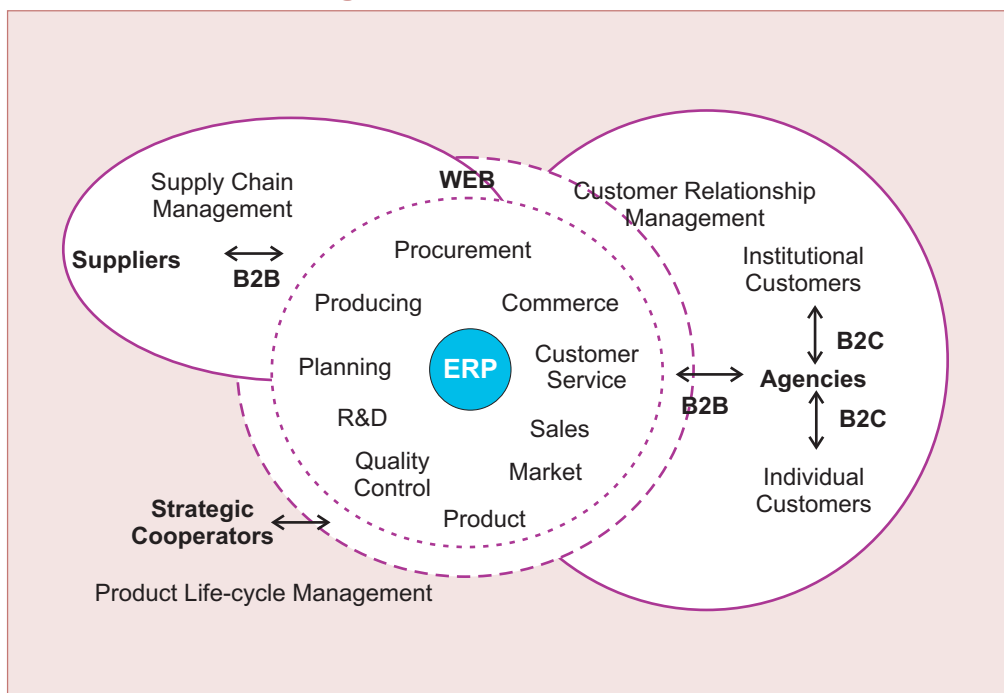
Source: Ministry of Information Industry, 2000.

formed between equipment producers and mobile operators. In July 2000, for example, Sohu.com was able to offer WAP Internet access in nine provinces by working with Nokia, Siemens and regional telecom companies.

Sina.com, Netease.com and Sohu.com were listed on the NASDAQ in 2000. The IPOs raised $68 million for Sina.com, $69.75 million for Netease.com and a total of $59.8 million for Sohu.com. Before the IPOs, they chose to move offshore and spin off China-based assets in order to avoid conflict with Chinese Government restrictions on foreign investment in Internet content providers (ICPs), which fall within the category of value-added services. ICPs in China need approval both from the securities regulators and from MII in order to list overseas. The capital raised by the three portals fell far short of expectations. In the fact of the share-price collapse of Internet companies listed in the NASDQ exchange, investors are questioning the sustainability of Internet ventures. Asian Internet start-ups are subject to even greater scrutiny because of concerns about government regulation, consumer buying power, and the physical and financial infrastructure of developing countries.

3. Chinese dot companies

E-commerce in China began with B2C. The major products sold over the Internet are books, gifts and flowers, CDs, computer hardware and software, communication and office devices, toys, ticket reservations, stocks and travel services. E-commerce companies generate revenue through different business models and bypass current obstacles in e-commerce by employing a number of creative solutions discussed below.

8848.com

8848.com began operation in May 1999 and soon became the largest online store in China. It now offers approximately 300,000 different items. To solve the online payment problem, beginning from June 2000, 8848.com supports 19 methods of payment such as CMB's All in One Net Card, credit cards, debit cards, deposit books of ICBC, VISA and Master Card, etc. It offers cash on delivery service in 470 cities. 8848.com also promises to deliver goods to customers in 78 cities in China within 48 hours by establishing strong alliances and partnerships with professional express forwarding companies such as China Post, National and Overseas EMS, and also manufacturers.

8848.com generates revenue from B2C and B2B business and advertising. In November 2000, 8848.com's B2C business volume increased 12 times over the previous year. In April 2000, it stepped into B2B e-commerce to provide e-commerce services and solutions to Chinese traditional enterprises, especially for small and medium-size enterprises (SMEs). By 2000, its B2B business represented 80% of total earnings.

Yabuy.com and Eachnet.com

Established in June 1999, Yabuy.com owns the largest Chinese auction platform, with 15 categories and 5,000 subcategories of auction products. It provides both online and offline auction. Yabuy.com does not get involved in the financial transaction process, but provides the auction services, thus getting commissions. Yabuy.com hopes to break even in 2001.

Eachnet.com began its B2C and C2C second-hand goods online auction business in September 1999, and six months later it increased its market share to 50% of China's auction business. To solve logistical and credibility problems, Eachnet.com encourages customers to do business within the same city so they can meet before exchanging goods and cash. 40% to 50% of the average monthly turnover of $2.5 million involves transactions where the buyer and seller actually meet physically.

Table 34
Revenue breakdown for fiscal year 1999

Year ending 31 Dec. 1999	Sina		Sohu		Netease	
	($ 000)	% of total	($ 000)	% of total	($ 000)	% of total
Advertising	3 544	47	1 504	93	1 303	64
Software sales	3 936	52			424	21
Others	92	1	113	7	297	15
Total	6 574	100	1 617	100	2 204	100

Source: Company Annual Report; financial year-end is June 30 for Sina.com.

Yestock.com

Yestock.com is a pioneer in technology involved in remote security trading via short message services (SMS) of mobile phone operators. Mobile phone operators in China normally charge $0.012 per SMS message or $3 per month for unlimited use. Yestock.com has different revenue sharing schemes with different mobile operators in different provinces. Started in 1999, Yestock.com's network covers 14 provinces and 110 brokerages in China. Yestock.com makes money by charging stock brokerages installation, connection and maintenance fees and by sharing mobile phone operators' short message revenue generated through its trading platform.

Alibaba.com's Global Trade Information Network

E-commerce platforms create many opportunities for SMEs to access international markets directly without the mediation of trading companies and offer SMEs easy access to information about international trade.

Alibaba.com is an online B2B marketplace for global trade and plays host to China's trade communities. Its web sites allow users to browse company information and to trade in 27 industrial categories and 700 product subcategories. The membership of Alibaba.com comprises 500,000 enterprises in 202 countries and regions, and more than half of the exchange's participants are based in China. Based on an online survey in December 2000, Alibaba.com claims that 31.6% of its members have successfully made deals since January 2000, while 97% of the offers posted have received feedback.

Alibaba.com's revenue comes from four sources:

- Revenue sharing from third party services: Alibaba.com shares revenues with shipping, insurance, hotel and travel services. Recently, Alibaba.com contracted with four international logistics companies and planned to provide international transportation services to all members in 2001.

- Online business promotion and advertising: this includes web hosting services, priority placement on Alibaba.com searches, banner link advertising and other related services.

- Premium membership services: while basic services on Alibaba.com will remain free, members will be charged for certain premium services in the future, such as the ability to post additional trade leads and product samples.

- Transactional revenues: when the e-commerce market matures, Alibaba.com will derive revenue from service charges for facilitating transactions among members.

MeetChina.com

Founded in 1998, MeetChina.com is a B2B e-commerce platform and consultancy that offers international retailers access to an expanding database of over 76,000 Chinese suppliers, especially SMEs, and their products. MeetChina.com allows online negotiations and hosts virtual "storefronts" for manufacturers.

However, the low penetration of personal computers in China hinders the company's business expansion. While half of MeetChina.com's first group of manufacturers had e-mail accounts, few checked them regularly, so MeetChina.com had to call or fax its clients, which was costly and inefficient. Motorola and MeetChina.com devised a relatively primitive paging service for Chinese companies with few computers, allowing messaging directly to factories without having to use the Internet. In addition, the company worked with Motorola and China Wireless Information Network to broadcast purchase inquiries and trade leads via mobile phones. This would allow MeetChina.com to reach some 2 million manufacturers that do not have PCs.

Although its operations in mainland China broke even in 2000, it has not been able to make many online transactions. MeetChina.com's revenue still comes mostly from membership fees and from site hosting and advertising. The company hopes to move to a transaction-based business model, whereby firms pay a referral fee of 2–6 % for using the site to make deals.

It is worth mentioning that China's government procurement sector began to cooperate with some e-commerce companies in order to save cost, enhance work efficiency and transparency, and accelerate government informatization. Founded in December 1999, sunbuyer.com reported that it can shorten the government procurement purchasing cycle by 50–80% and cut procurement costs by 5–50% via its new government procurement model. At the moment, government procurement business accounts for 20–30%

of sunbuyer.com's total business volume. The application of e-procurement could save substantial transaction costs and make a major contribution to combating bureaucracy and corruption.

E.   Internal regulatory environment

China's international trade law has incorporated the basic principles and rules prescribed by the WTO and WIPO, as well as other relevant laws and regulations from developed countries. As the Internet and e-commerce are relatively new, there has not been a comprehensive law addressing all aspects of e-commerce to date. The rapid growth of Internet applications has found many government institutions without a mandate to address many of the legal issues arising from the emergence of e-commerce. All government institutions that come across such issues have to take the initiative and propose to the State Council (cabinet) rules and regulations on issues within their responsibility. As a result, enforcement of regulations relating to the Internet and e-commerce is shared by different institutions. The major government agencies involved are shown in table 35.

1.   Internet-related regulations

In general, the *Interim Provisions on the Administration of Computer Information Networks and the Internet*, published by the State Council in 1996, provide the basic organizational and administrative structure for China's information networks. To address issues relating to the establishment of interfacing networks and their connection to the international computer network, the *Implementation Procedures* for the above provisions were revised in 1997 and issued in 1998; they set out the four-layer system of international

linkups of China's computer network (described Section A).

In September 1998, the State Council issued the *Notice on Relevant Issues Concerning Implementing A Business Permit System for Operating International Connections to Computer Information Networks*, which requires approval for business permits from relevant government agencies for engaging in Internet-related services. MII and its local branches are directly responsible for examining and approving business permits for operators engaged in networking at all levels.

The State Council issued the *Telecommunications Administration Regulations* and the *Internet Information Service Management Regulation* on 25 September and 1 October 2000 respectively. The new regulations do not change the existing rules but clarify them further and eliminate ambiguity. The regulations empower the MII to regulate both ISPs and portals.

Content restriction

To ensure Internet security, the Ministry of Public Security issued the *Circular Concerning the Record of Computer Information Systems Linked to Foreign Networks* in December 1997, which requires all Internet users to register with the local public security bureau within 30 days of the establishment of a subscription with an ISP. It also empowers the public security authorities to shut down computer network operators that engage in any acts which jeopardize the safety of any other computer network.

The Provisions on the Administration of the Maintenance of Secrets in the International Networking of Computer Information Systems, which was published by the State

Table 35
Government agencies involved in Internet regulations

Name	Areas of responsibility
Ministry of Information Industry (MII)	Examination and approval of licenses for ISPs and portals, and overseeing the listing of Chinese firms.
Ministry of Public Security (MPS)	Network security State.
Administration of Industry and Commerce	Registration of ISPs and portals.
Ministry of Culture	Supervision of media and Internet content.
State Press and Publications Administration	Overseeing Net publishing and book selling.
State Administration of Radio, Film and Television	Monitoring online video and sound.
State Encryption Administration Commission	Registration of encryption technology.
China Securities Regulatory Commission (CSRC)	Overseeing IPOs of dotcoms and regulating online security brokerage services.
Internet News Administrative Bureau of the State Council's Information Office	Formulating regulations and overseeing content of web site news.

Secrets Bureau and came into effect in January 2000, regulates information flows through the Internet related to state secrets. Anyone who places information on the Internet must take responsibility for that information, including e-mail and chat room discussions, to ensure that there is no violation of the law.

In November 2000, MII issued new rules to control content in Internet public forums. *Rules on Net Bulletin Board Systems* provided that anyone posting information on Internet bulletin board systems (BBS) will be held responsible for the content. The regulations require that BBS providers keep records of content, posting time and referred Internet protocol addresses or domain names cited in the posts. Backups of this information must be kept for 60 days and surrendered to the authorities on demand.

Contract law and dispute resolution

The new *Contract Law*, which came into effect on 1 October 1999, incorporates a new provision recognizing electronic contracts. It expressly provides for electronic messages, including telegrams, telexes, faxes, electronic data interchange (EDI), and e-mail, to be considered as instruments that parties may use to enter into contracts. The law also includes provisions tailored to e-commerce on the formation and validity of contracts. However, there are no provisions governing electronic signatures and dispute resolution online.

To meet existing needs until a more complete regulatory environment for e-commerce is established, the central bank has set up the Finance Certification Policy and Management Direction to help settle e-commerce disputes.

In March and April 2000, the China Securities Regulatory Commission (CSRC) issued the *Provisional Administrative Measures on Securities Brokerage Commission Over the Internet and the Verification* and *Approval Procedures for Securities Brokerage Commission.* These two standards set the guidelines that must be met by securities companies planning to offer online security brokerage services. At the beginning of 2001, the CSRC had certified 23 security brokers to trade online, which marked the first time that brokerage houses had been allowed to trade online since the regulations were issued. The companies are required to inform the CSRC of any major changes, including technical upgrades, to online trading systems, as well as operational or management changes.

In addition to national authorities, local government authorities have also issued rules and regulations. In March 2000, the Beijing Municipal Administration for Industry and Commerce issued the *Circular of the Beijing Municipal Administration for Industry and Commerce Concerning E-commerce Activities Registration* which requires e-commerce dealers to apply for e-commerce operations registration. The *Provisional Measures of Shanghai Municipality on the Price Administration of E-commerce* strengthened the management of the pricing of e-commerce digital certificate authentication and standardized service charges in relation to the authentication of digital certificates.

In April 2000, *Draft Guidelines for China's E-commerce Development* formulated by MII were submitted to the State Council for approval. The guidelines will cover a wide range of issues such as permission for foreign businesses to enter China's Internet market, e-commerce operations logistics, transaction security, IPR protection, consumer privacy, tariffs and taxes. This reflects a strong attempt by the Government to develop a comprehensive regulatory framework. There is need for a uniform state law to ensure certainty and transparency and avoid undue administrative interference in the development of e-commerce.

2.   Foreign investment

The progressive liberalization of China's telecommunication services culminated in the promulgation of *The Telecommunications Administration Regulations* in September 2000. The regulations clearly define basic service and value-added services. Private investors involved in basic telecom services in China can hold up to 49% of shares and must get official approval before investing. The regulation provides greater possibilities than the previous situation, where foreign investments in telecommunication services were prohibited. Opening China's Internet market to the outside world will benefit e-commerce companies in terms of gaining access to foreign venture capital, and will thus foster economic growth.

3.   E-commerce taxation

China has not yet developed full tax regulations for e-commerce. The present tax regulations do not explicitly state how to tax economic activity on the Internet. China's State Administration of Taxation (SAT) was considering taxing e-commerce in the same way as traditional business. In its view, the electronic form of e-commerce does not change the nature of

trade. A research group created by the SAT to examine the issue is expected to work out new measures.

F.   Obstacles to e-commerce development

1.   High Internet access costs

The high cost of Internet access and of telephony has long been a point of contention for Internet users and operators in China. The Internet access fee is composed of a connection service fee and a telephone communication fee. The communication fee is currently $0.14 per hour, while the connection service fee is $0.48 per hour. Given the low level of personal disposable income, the access charge is extremely high. Communication services users argue that the high connection fee charged by ISPs is caused by China Telecom's monopoly of the basic telecom services.

Hosting charges for web sites with sufficient bandwidth are so high that most e-commerce service providers can only afford to rent narrow bandwidth, leading to long waiting times to download. 46.4% of users are not satisfied with the slow access speed, and 20.8% complain about high Internet access fees (CNNIC; 2001). Even if the hardware and connection are available, consumers will most likely choose not to engage in e-commerce if transmission is slow. Often it is more efficient and enjoyable simply to walk to a store and purchase the desired goods or services.

In 1999, connection service charges were considerably reduced by administrative decision, and there were substantial improvements in service. But costs still remained far too high to allow for a rapid expansion of e-commerce. Responding to domestic consumer complaints, the MII lowered Internet connection fees again in March and October 2000. By launching a new half-price Internet Access Card (IAC) in August 2000, China Telecom has been trying to expand its Internet business. The IAC charged customers on the basis of the actual time they use the Internet and their phone charges for access to the Internet, which are half those for the regular local phone calls. Furthermore, beginning January 2001, long-distance charges were also reduced. Domestic long-distance calls were reduced to $0.08 per minute, with an average 25% decrease. Interna-

tional calls are $0.96 per minute, down 45.8% from 1999.

In fact, some problems of China's e-commerce development stem from China's Internet population itself. For people using the Internet on a regular basis, their purpose in getting online has a direct impact on the prospects of e-commerce growth. The main purpose of 68.8% Internet users is to get the latest information from the Internet, while 13.3% go online for education (CNNIC, 2001). In addition, the monthly personal incomes of Internet users are still pretty low. They do not have enough purchasing power to have an impact on e-commerce. About 51% of Internet user have a monthly family income of only between $61 and $241 (see chart 31).

2.   Lack of credit cards and a nationwide credit card system

A major obstacle to the development of e-commerce in China is the limited availability of credit cards and a nationwide credit card system. As described in section 2, most Chinese bankcards issued by commercial banks are actually debit cards, drawing money against previously deposited funds. The cards charge a high fee for an overdraft, and some cards simply refuse an overdraft. At present, people with a foreign currency deposit with BOC, ICBC and Guangdong Development Bank are eligible to apply for an international credit card, but only a few such cards are actually issued.

In addition, a nationwide financial network is still in the preparatory stage, as the financial industry has not yet become fully electronic. Commercial banks issue their own bankcards and most bankcards are only linked to their own issuing banks, thus requiring a retailer to connect to each of these facilities one by one. If a merchant does not set up a mechanism to clear transactions with the specific bank which issued the card, then purchase is impossible. Although MasterCard and Visa operate in China, the absence of a central clearing house prevents them from becoming a popular financial instrument.

Although many commercial banks have ambitious plans to develop online banking services and invested have heavily, the currently available services are still limited and most online banking services are only operated in a few cities where the Internet is much more popular than in other areas. Only CMB has begun to service customers in some inland cities such

Chart 31
Average monthly income of user's family
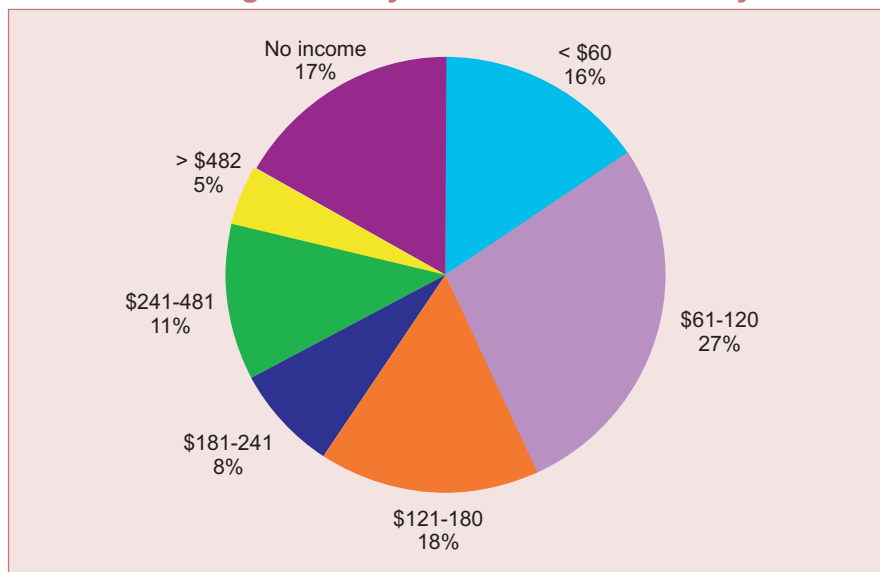
as Xi'an and Shengyang. Most companies continue to employ offline payment methods such as cash on delivery (COD), account transfers through banks, or remissions through banks or post offices for online purchasing. As chart 32 shows, COD accounts for the most important part of the payments for online transactions. Account transfers and remittances from banks and post offices make up the remaining small fraction of payments.

3. Transportation infrastructure: slow and uncertain delivery

Although most Chinese online shoppers prefer fast delivery, some of China's web sites do not provide 24-hour delivery services, and most of the time a product can only be delivered in three days, sometimes even taking more than a month to reach the customers. Though partly due to delays in the interbank transfer of payments, late delivery is mainly caused by an inefficient national postal system. E-commerce companies have developed a number of alternatives to the postal system to meet distribution needs. Like most e-commerce companies elsewhere, companies in China usually sign contracts with a number of delivery firms. National couriers such as China Postal or EMS are regularly used. Companies also rely on their own door-to-door delivery teams or on the services of smaller, specialized, local delivery systems. They thus currently rely on hybrids of online shopping and traditional labour-intensive delivery systems. Several Chinese companies, for example Legend, Haier and Changhong, have already

built up their nationwide distribution network, so that they can distribute their products to customers by their own sales teams in most big cities in China. Most newly established pure-play e-commerce companies, like 8848.com and Yabuy.com, rely heavily on specialized local delivery companies.

A local delivery company, Eguo.com, has set up a delivery station and over 50 substations around Beijing and guarantees delivery in one hour within central Beijing. With a 400-person delivery team, Eguo.com provides service 24 hours a day. It delivers larger or more distant orders by truck and smaller local orders by bicycle. Another approach is to use a taxi company to deliver goods purchased online. The San Francisco-based MyWeb Inc. entered into an alliance agreement with Beijing YinJian Taxi to deliver goods ordered online.

Having developed its Physical Delivery Postal Network, the Green Card financial network and the Postal Integrated Computer Network[11], China Post also has an important role in the development of e-commerce; using these networks for e-commerce activities may partly solve the above-mentioned financial and logistics problems.

4. Network security

Although government departments attach great importance to the security of information systems, in practice network operators suffer from insufficient budgets. Moreover, considerable security problems

Chart 32
Payment methods
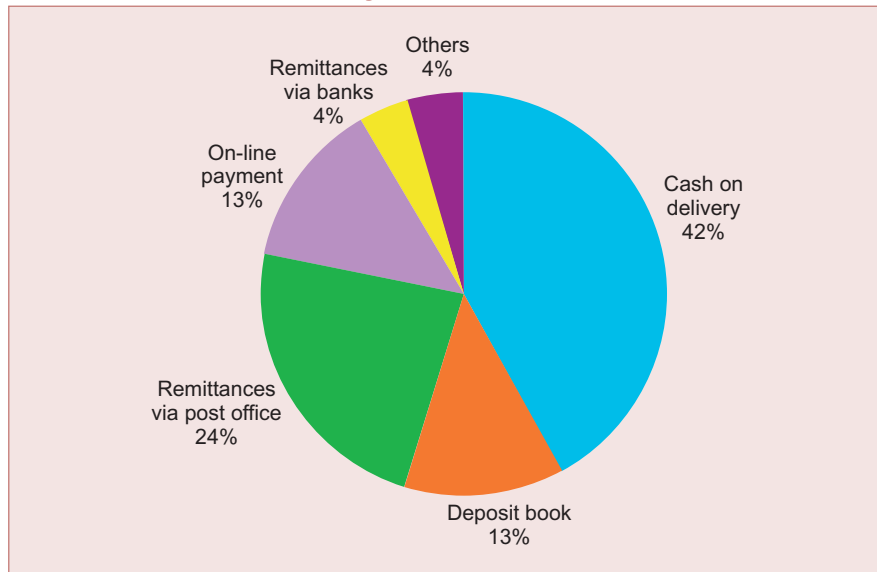
Source: CCID Consulting Co., 2001a.

remain in certain industries. For example, some computer networks use open operating systems with low security, making them vulnerable to hackers. The information systems of some industries were developed entirely without security safeguards. Because security has lagged behind systems development, some national communications network equipment has not been tested. In financial services, some units' security systems are primitive and unprotected.

Government agencies have already taken a number of steps to address the network security problem, including:

• In August 1997 the National Committee of Information Technology and Standardization established an Information Technology Security Subcommittee;

• The State Council Automation Leadership Team Office announced the establishment of the China Internet Security Products Authentication Center. Tests on the first batch of products have been completed;

• The State Technology Supervisory Bureau and the Ministry of Public Security (MPS) established the MPS Computer Information Systems Security Product Quality Supervision and Testing Center. Over 60 products have been tested to date, providing a reliable technological basis for the MPS to issue sales permits for information security products.

5. Trust

What hinders the development of full-fledged B2B in China is the large amount of accounts receivable and the non-performing loans between companies. The uneasy relations between industry and commerce make this the only way for commercial corporations to pay back manufacturers after they actually sell products. This circumstance makes the advantages of online purchase and payment systems irrelevant.

In China, an abundance of counterfeit and low-quality products are already on the market. In addition, some of China's e-commerce vendors cannot provide the services that customers are expecting: reduced prices, usually lower than those found in conventional stores; 24-hour, 7 days per week service; reliable delivery systems; a better selection of products; and a no-risk return policy. Consequently, many Chinese enterprises and consumers are skeptical of the price and quality of online products, as well as of the promises regarding post-sales service and the reputations of online retailers. Most consumers want to see and touch to ensure product quality prior to purchase. Lack of mutual confidence is why most Chinese consumers do not favour online payment but prefer the COD method so that they can check the quality of the goods before paying. Most enterprises are used to becoming trust-based partners and do business only after engaging in face-to-face discussions, visiting the factory and inspecting product samples.

To establish conditions of trust, it is necessary to create a legal and regulatory environment that defines standard norms of e-commerce practice.

6. Lack of human resources and key technologies

The promotion of e-commerce can be achieved by educating people at different levels about the Internet and e-commerce technology and resources. China lacks a professional IT workforce, and only 12.5% and 6.25% of workers in the information industry are software and hardware engineers respectively (MII, 2000). Enterprise computerization is still in the initial phase. Many pioneers in the e-commerce market, like Legend, have to design special courses and provide free training to their agents and customers, and try to convince them to accept the use of online ordering systems.

Other factors such as lack of self-developed core technologies and lack of sufficient investment and human resources to promote e-commerce are also problems. Although Chinese enterprises such as Datang Telecom Co., Huawei Technology Co., Great Dragon Co., Jinpeng Co. and ZTE Corp. have entered the mobile switch and base stations market, some key technologies and equipment are still imported. In 1999, the market share of China-made base stations, mobile phones and switching systems stood at 2%, 3% and 4% respectively.

7. Content restriction

Content restriction on national security grounds may affect business in the field of information services, such as the media and the entertainment sector. Since the Internet grows especially fast in this sector, Chinese business may not be able to take fully advantage of these new opportunities, even though the same restrictions apply to offline services. These regulations will also add to the administrative burden of ISPs or portals and increase their operating costs.

G. Conclusion

Over the past few years, the Chinese Government has made a considerable effort to promote the development and use of information technologies across the country and hence laid an important foundation for the growth of e-commerce in China. In particular, heavy investments in the country's telecommunications infrastructure have resulted in steep growth rates in the number of telephone, mobile phone and — particularly — Internet subscribers.

Nevertheless, with less than 2 per cent of the population connected to the Internet and online transaction values accounting for less than 1 per cent of GDP, e-commerce in China is still in its infancy. Business-to-consumer e-commerce volumes remain very small, and only very recently did a number of mainly larger companies start to move their transactions online. Despite the Government's efforts to gradually break up the monopoly of domestic telecommunications service providers, access costs to the Internet remain high and the quality uneven and often poor. The lack of credit cards or other online payment systems makes it difficult for Chinese businesses and consumers to engage in domestic and international e-commerce. Lack of knowledge about the Internet and its potential business opportunities, combined with limited foreign language skills and a business environment that favours trust-building through interpersonal rather than online contacts, further contributes to the low level of e-commerce.

A number of developments and initiatives currently under way indicate, however, that significant changes may be expected in the short to medium-term. For example, the exponential growth rates in the numbers of Internet subscribers during the past year and predictions for the following years suggest that a large number of Chinese (in absolute terms) will be connected in the near future. China's accession to the WTO, to be expected by the end of this year, will progressively liberalize the domestic telecommunications sector and thus create a more competitive environment. This is expected to result in cheaper and higher-quality Internet services - although some of the commitments will come into operation only after five years. Continuity in the Government's current policy of gradually breaking up the monopoly and encouraging competition in the telecommunications sector would therefore be important in order to achieve faster results in this area. This, combined with efforts to improve access to the Internet throughout the country and to move the financial sector towards incorporating online payment systems, will greatly facilitate the growth of e-commerce in China. Further improvements are needed to lower the administrative burden for ISPs, to put in place a harmonized legal framework for conducting business online, and to provide the Chinese with the skills needed to use the Internet and new information technologies in their businesses.

Notes

1   The figures in this chapter do not include the data on Hong Kong, Taiwan Province of China and Macao.

2   China Internet Network Information Center (CNNIC) seventh semi-annual survey on January 2001. According to CNNIC, the statistics of its semi-annual survey are collected by software-driver online searching and posting online.

3   MII, the State Economic and Trade Commission, and the China Council for the Promotion of International Trade.

4   China Electronic Commerce Association (CECA) is a non-profit association, which aims to be the bridge for e-commerce cooperation between China and other countries.

5   A related project is Green Card Engineering which began in 50 cities in 1996 and was administered by the State Postal Bureau. The planned target of Green Card Engineering in the 9th Five Year Plan was that a nationwide network be installed in 500 large and medium-sized cities of 31 provinces, municipalities and autonomous regions by 2000. More than 10,000 post-depositing network offices distributed in 500 cities, counties and some rural and township will be online to permit depositing and withdrawing money.

6   The main functions of All in One Net card are: foreign currency deposits, telephone banking, account inquiries, inter-transfers, online payments, money withdrawals, securities transactions, and long-distance telephone calls.

7   http://www.chinamarket.com.cn/E/

8   http://www.chinainvest.gov.cn/

9   http://www.cecf.com.cn/e_cecfol/e_index.asp

10 Companies' information and statistics are derived from their web sites and/or interviews with these companies in China from Dec. 2000 to Jan. 2001.

11 The Physical Delivery Network covers almost every city and county in China. There are 236 postal centres forming a physical distribution network linking up urban and rural areas. There are 67,000 post offices and bureaus, and 2,200 cities with EMS services, which make up the largest delivery network in China. By the end of 1999, as the result of the Green Card Engineering project, 800 counties in 31 provinces were connected to the Green Card financial network and the Computer Network of Postal Savings and Remittances which has 7,200 points allowing cross-region savings deposits and withdrawals. The Postal Integrated Computer Network is a backbone network system supporting informatization of exchange technology in China Post. Applications of ATM technology in the platforms of LANs enables online transmission of data, voice and video. The network covers 31 capital cities and 205 regional cities (State Post Bureau; 2000).

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