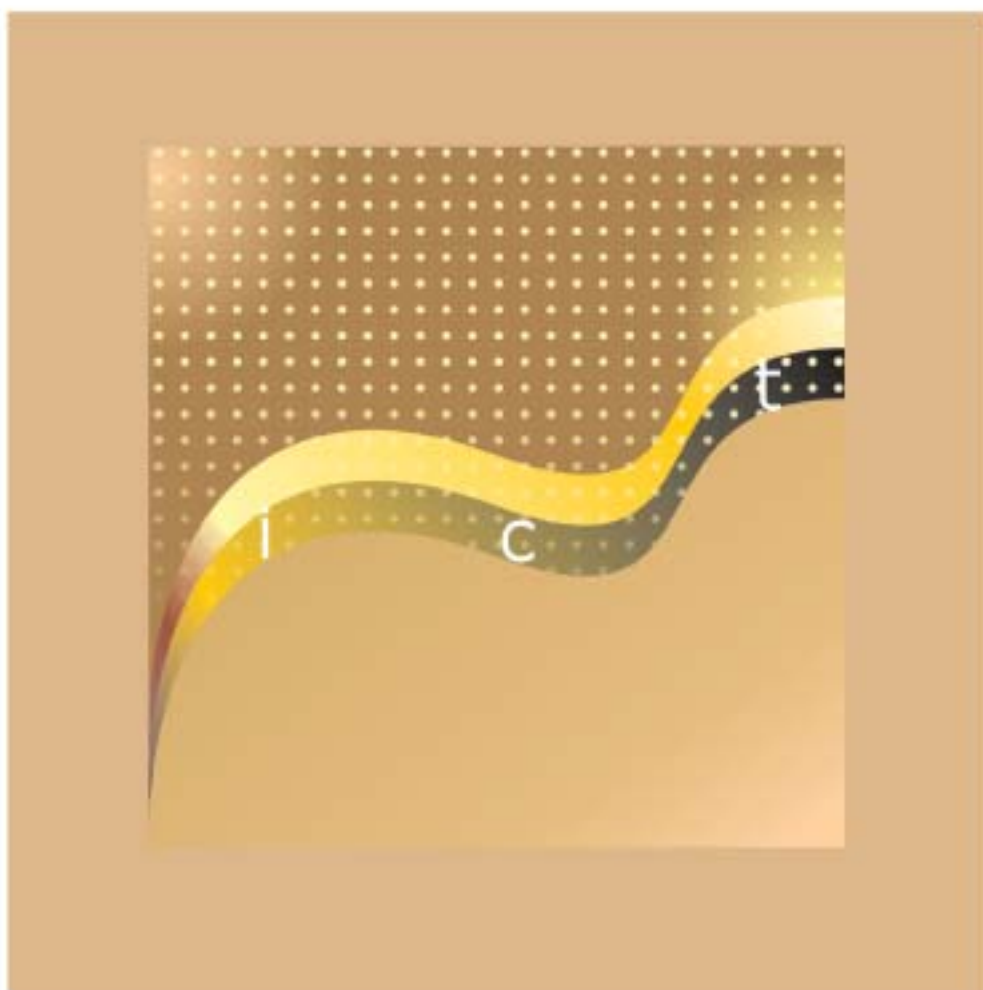


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E-COMMERCE AND DEVELOPMENT REPORT 2004

CHAPTER 5.



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Chapter 5

E-GOVERNMENT: E-PROCUREMENT AND DEVELOPING E-BUSINESS CAPACITY

A. Introduction

This publication addressed the issue of e-government in 2001 (UNCTAD, 2001) and provided a few starting points for countries to take into consideration when launching e-government projects. E-government initiatives have proliferated since then, and the wealth of related practical and theoretical information has increased exponentially. International attention to the subject was evidenced during the first phase of the World Summit on the Information Society (WSIS).¹ According to the WSIS Plan of Action, e-government strategies are needed to make public administration more transparent, efficient and democratic, creating an enabling environment for maximizing the benefits of the information society. E-government applications should also strengthen the relationship between Governments and citizens, in particular through the use of the Internet.

E-government aims to make the interaction between government and citizens (G2C), government and the business sector (G2B) and government institutions themselves (G2G) more convenient, inexpensive and transparent. In this sense, it is analogous to e-commerce, which allows businesses to transact with each other more efficiently (B2B) and brings customers closer to businesses (B2C). For the purposes of this chapter, e-government is Internet-based, providing solutions that link the back and the front offices of government, including by moving from paper-based to electronic processes, and always considering the best interest of citizens (citizen-centric).

Information and communication technologies (ICTs), in particular the Internet, have the potential to bring about profound changes in the ways that government is managed and organized, its services are provided, and its business is conducted. The Internet can overcome barriers of dis-

tance and time to bring together information from multiple sources, creating the possibility of reorganizing and networking government services to make them more efficient, transparent and user-friendly. In addition, the impact of e-government on the economic and social environment is being increasingly explored.

One important way in which the potential benefits of e-government can be realized is through procurement, by which government organizations procure/purchase goods and services from the private sector, advertise their needs, select vendors, manage service and fulfilment contracts, and effect payments. In most countries the public sector is the largest economic actor, whether in terms of employment, expenditure or revenue. Public e-procurement projects can significantly impact on the management of these vast resources, and thereby the overall efficiency of the economy and the competitiveness of local enterprises (public and private). However, although most countries have some kind of e-government initiative, many developing countries do not have the transactional capabilities needed for public e-procurement.

This chapter will first provide an overview of e-government, including services and transactions. It will then introduce e-procurement as a service of e-government and lay out some specific implications of public e-procurement for e-business in developing countries. Lastly, it will address how developing economies can maximize the potential benefits of e-procurement.

B. Overview of e-government

Companies and Governments use ICTs to deliver better services, and a web presence can add value through the provision of online services. However, the public sector has lagged behind the pri-

vate sector in embracing the Internet for this purpose. Early e-government visions were premised on the notion that online services would cost less and offer a more efficient and personalized service to citizens, but many of these visions lacked an effective implementation plan (Accenture, 2003).

The implementation of e-government and the consequent changes in or reorganization of the administration and bureaucracy require thorough deliberation and planning. Owing to the complexity of comprehensive e-government implementation, at one end of the spectrum several e-government efforts have been stalled at a basic level, with an online presence that is limited to providing information on government activities and services. At the other end of the spectrum some e-government initiatives have resulted in the bundling of services, accessed through a portal and delivered by the Internet. The ultimate goal is government service integration, seamless delivery and electronically mediated procurement of goods and services. In pursuit of this goal, Governments have realized that successful e-government requires a transformation in the way they operate and the administrative culture. E-government is not just about utilizing the Internet for delivering government information and services to citizens, but about taking the conventional structure of government and removing the barriers that prevent the efficient and integrated delivery of services. E-government combines technology, people and processes so as to deliver services in a citizen-centric manner.

Economic considerations play a role in the development of e-government. New technology may help reduce the cost of some government activities, but e-government aims to optimize internal administration costs while at the same time improving citizen services. Although in the short term e-government may increase some costs, since services have to be offered both online and offline, there are savings and other benefits from streamlined business processes, integrated operations and increased productivity. As the prevalence of online services grows in relation to over-the-counter transactions, which usually are costlier in terms of paperwork and staff time, cost reductions should become increasingly apparent. Other issues such as the opportunity cost of using offline services and facilities have also fostered the development of e-government. E-government is conven-

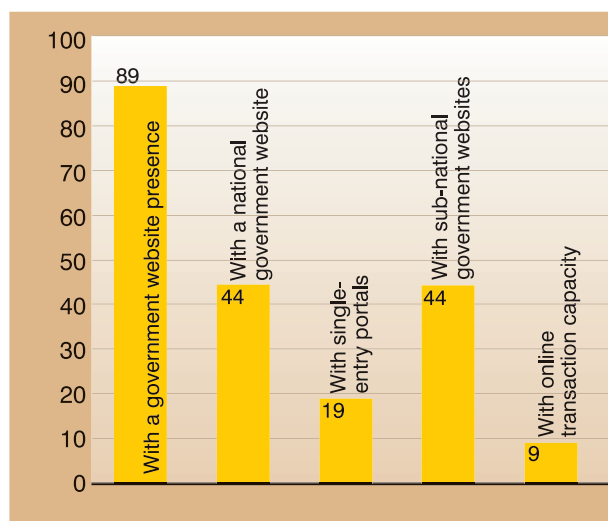
ient for citizens who have growing demands on their time and have difficulties in attending government offices.

Political considerations also play a role, as Governments re-examine the way they serve their citizens because of higher public expectations with respect to what the Government should provide and the expansion of the Internet. E-government increases the accessibility of public administration for the population, and allows citizens to become informed at their own convenience and on their own initiative. Although disparities of wealth in developing countries might limit the full benefits of e-government to some citizens (those that are "connected"), it can also be argued that increased citizen empowerment can free government resources for other purposes such as social development and increasing connectivity.

Governments around the world are pursuing e-government in one form or another. For example, most European Union (EU) member States have developed strategies for online government and the EU has stated that e-government is one of its main objectives for the e-Europe initiative. The European Commission also benchmarks e-government progress every six months. A recent United Nations report on benchmarking e-government confirms that e-governance initiatives around the world are increasing (UNDPEPA, 2002). Such initiatives promote the prospect of faster, less costly and more efficient citizen-driven online government services. E-government has allowed several Governments to use technology to enhance access to and delivery of services to citizens, business partners and employees (Deloitte Research, 2002). This confirms the notion that e-government is not a shortcut to economic development or savings but rather a tool for achieving these goals (I-Ways, 2002).

Chart 5.1 illustrates the e-government prevalence of UN member States in 2001 (UNDPEPA, 2002).² Although almost 89 per cent of countries have at least one governmental website, only 19 per cent have single-entry portals and 9 per cent have online transaction capacity. Forty-four per cent have a national government website that can serve as de facto single-entry portals, and the same percentage have local (sub-national) government websites. However, UNDPEPA indicates that over 25 per cent of official websites contained one-way information (often of a political and/or pub-

Chart 5.1
E-government prevalence
of 190 UN member States in 2001



lic relations nature) and did not deliver services to or obtain feedback from citizens.

E-government leaders (often industrialized countries) are focusing on delivering benefits through technology and a citizen-centric approach, providing government officials with customer service training and greater decision-making authority. The number of Governments around the world that are embracing Internet technologies to link legacy systems³ and track citizen information is increasing. This has helped to increase the prevalence of citizen self-service and the two-way flow

of information between the citizen and the Government (Deloitte Research, 2002). On the other hand, developing countries might face some factors that stall the progress of e-government, as shown in table 5.1.

1. E-government services and transactions

E-government projects may include an online capability for non-commercial services as well as for commercial transactions. Non-commercial services may be useful for gaining experience in the development of online systems. Successful online services in developing countries include public information (publication of academic results, information on nearby government facilities, tax self-assessment, online health information, public education content), facilitation of payments (electronic submission of tax returns, payment of fines), and other services (appointments for government services such as the collection of refuse, reporting of crimes). Government services that are well suited to online commercial transactions include applications for identification documents (passport, electoral card) and licences (driver's licence, motor vehicle registration, TV licence), as well as registration for the collection of taxes. UNCTAD's highly successful Automated System for Customs Data (ASYCUDA), which uses ICTs to improve the efficiency and transparency of customs operations in nearly 100 countries, provides an interesting example of the feasibility and impact of e-government initiatives in developing countries.⁴

Table 5.1
Factors stalling e-government

Factors	Symptoms	Consequences
Institutional weakness	Insufficient planning; unclear objectives	Inadequately designed systems; cost overruns
Human resources	Shortage of qualified personnel; lack of professional training	Insufficient support; isolation from sources of technology
Funding arrangements	Underestimation of project costs and recurrent expenditures	Unfinished projects; higher maintenance costs
Local environment	Lack of qualified technical support (vendor representation, back-up systems and/or parts)	Implementation and maintenance problems are difficult to resolve
Technology and information changes	Limited and/or inappropriate hardware and software	System incompatibility; overreliance on customer applications

Source: UNPAN (2004).

Each of these transactions has an associated process that might be initiated electronically and concluded manually. However, to maximize the benefits of the electronic transaction, an electronic response would be ideal. For example, an electronic application for a passport should result in an electronic communication acknowledging the application as well as an electronic communication informing the applicant of the outcome (which may be that the passport was posted at a specific time).

The basic level of e-government (providing information) is primarily a one-way communication and does not include any automated transactional capability. The response of the citizen or firm still requires that they visit a government office to collect and complete a form, or telephone a contact centre for further information. At the next level, forms may be made available online for downloading and printing, but they must still be subsequently completed in the traditional way and then delivered to an office for processing in the traditional way. Specific inquiries could also be made by e-mail or telephone.

Already at this level of the evolution of e-government, financial transactions may be possible. These make use of facilities provided by commercial banks to enable payments to government accounts against personal account numbers, or payments by Governments to suppliers and others using Internet-enabled electronic banking. Of course, these are only available to individuals and firms with bank accounts and access to the Internet, and forms of payment such as credit cards will not be available to everyone.

Two-way information transactions become possible when forms are available for completion online. Government provides information about the services offered or the obligations of citizens or firms, and additionally provides the means to make applications or comply with obligations electronically. Organizations can then go through several stages of sophistication in the way that they process this electronically submitted information. At the most basic it may be printed out by a government official and acted on in the normal way. This is no different from receiving the application through the post or by fax. But if administrative processes have been re-engineered and automated, the submitted information can be automatically entered into databases, processed or

routed to relevant officials for authorization. If such authorizations can be made electronically, using digital signatures or some similar approach, processing can be speeded up still further. Individuals can be informed of the progress or outcome of their application by e-mail. Certificates or licences can be collected in person, posted or even delivered in a secure electronic format.

Even if individuals do not themselves have access to the Internet, they can still interact with service agents at contact centres by telephone or in person – in each case the service agents can themselves use electronic forms and access customer information databases to initiate service requests on behalf of citizens.

At its most sophisticated, a single website may provide access to a wide selection of government services, not just those of a single agency. Information and financial transactions are possible, with the system collecting all relevant information from the user and then processing it seamlessly through a number of interlinked systems of the various departments or agencies concerned.

A recent study by Brown University indicated that only 16 per cent of government agencies around the world are offering online services (West, 2003). While this represents an increase from the previous version of that study, research shows that Governments have much room for growth in order to realize the promise of e-government. On the other hand, some Governments have developed briskly. Italy, for example, had no high-level targets in 2000 with respect to e-government service delivery (UNCTAD, 2001), but in 2003 it was cited as a model for e-procurement to be exported to other countries. On the basis of an estimated 23 billion euro (\$28 billion) of public money spent on acquisition of goods and services in 2003, it was reported that e-procurement in Italy would help save an estimated 3.7 billion euro (\$4.5 billion), 21 per cent more than the savings achieved in 2002.⁵

The decision to place government services online, as well as which services, must be the subject of a number of criteria. For example, the state of New York (New York State Office for Technology, 2001) uses a set of criteria that serve as useful general guidance for other Governments. They include the impact and visibility of the service (expected number of transactions and customers),

Box 5.1**Singapore: Best practice for e-government services**

"The vision of the Singapore Government is to be a leading e-Government to better serve the nation in the digital economy."
Deputy Prime Minister Tony Tan at the launch of Singapore's e-Government Action Plan, June 2000

Singapore's e-service portal <http://www.ecitizen.gov.sg/> is a clearinghouse for citizen services and information, with links to practically all Singaporean government websites. The "eCitizen" site provides over 100 services, while other sites contain a large amount of press releases, speeches and databases. The relative prevalence of privacy statements, audio and video clips, and PDA access also puts Singapore's websites ahead of those of other nations in technical sophistication. Two other notable websites are those of the Housing and Development Board and the Singapore Police Force, offering 38 and 17 e-services respectively.

E-government initiatives directly linked to e-business include Singapore's G2B portal <http://www.business.gov.sg/>, which is the first entry point for all local and international businesses to access a full suite of aggregated and integrated G2B information and services. The portal provides easy and convenient online access to government agencies at all times and saves money and time for businesses. For example, incorporating a new company through the business portal now requires a flat fee of 300 Singapore dollars (\$175) and two hours, whereas previously it took from 1,200 to 35,000 Singapore dollars (\$700 to \$20,400), depending on company size, and two days. This is in line with the Government's drive to promote a pro-enterprise environment and facilitate business growth in Singapore.

In addition, Singapore's e-procurement portal, the Government Electronic Business Centre (GeBiz) at <http://www.gebiz.gov.sg>, is an integrated, end-to-end online procurement system for the public sector, developed for efficiency/cost saving as well as for strategic reasons, and open to both local and international suppliers. In addition to providing greater consistency and transparency in public procurement practices, the Singaporean Government sees GeBiz as a stimulus to the development of e-commerce in the country. In 2002, more than 3,800 tenders were issued and 6,500 quotations were published, and the total value of electronic transactions during that year was approximately 262 million Singapore dollars (over \$152 million). The number of public sector users exceeds 12,000 (up from 3,000 in 2001) and GeBiz suppliers number approximately 8,800.

Sources: Pascual (2003); West (2003); <http://www.egov.gov.sg/g2b.htm>.

the ease of implementation (level of difficulty, length of implementation, staff requirements), revenue and cost and, equally important, the impact on the citizen (does it impact economic development, improve the quality of life, promote health/safety?). This last criterion is essential to the citizen-centric vision of e-government, which is exemplified in box 5.1 by Singapore, a best practice for e-government services.

2. E-business systems and infrastructure

As is the case in other large organizations, e-business systems can improve the exchange and management of information within Governments, as well as their delivery of services. E-business systems that are particularly relevant to e-government are those that help integrate the front and back office of government, namely communication and collaboration systems, internal business systems and e-commerce systems.

Communication and collaboration systems, such as e-mail, voice mail and conferencing, are relatively easy to introduce. E-mail is ubiquitous and available to anyone with a computer and an Internet connection. Participation in discussion forums or the use of chat systems, which can be used for propagating knowledge within government offices, does not require additional capital expenditure. Digital communication in government allows rapid distribution and sharing of documents at almost no incremental cost, as well as storage and retrieval, with a high potential for reduction of costs such as paper distribution. Widespread adoption of communication and collaboration systems in the public sector requires that employees have access to the necessary tools – networked computers, digital telephone systems, and so forth. In addition, portals providing information about and access to government services can form the basis of transactional systems, starting with customer requests for information (including inter-agency), and progressing to the

electronic distribution of forms and the online submission of applications.

Internal business systems include resource planning, customer relationship management and human resource management systems. These improve the management of information within government by centralizing access and storage of data in a single network. Updates are shared, and information is distributed along standardized workflow paths. Analytical and other procedures such as invoice generation or reporting can be automated. Internal business systems are particularly useful in organizations such as government that operate from multiple locations. However, Governments may find such systems costly when there are paper-based processes that work and there might be other pressing developmental needs. In addition, the success of such systems requires the reengineering of entrenched bureaucratic procedures. The benefits derived can only be justified if there is an accepted need to treat the public as customers, improve service delivery and improve internal efficiency.

E-commerce systems enable G2B or G2C transactions, the former of which may include electronic order placement and payments to suppliers. An appropriate transaction processing system can help Governments to, for example, overcome lengthy procedures for payment to suppliers and facilitate the payment of taxes and other levies by citizens.

The costs involved in establishing e-business systems in government organizations, including the cost of related infrastructure, should be counter-balanced by the interests of the community, ensuring that effective delivery of services is achieved at the lowest optimal cost for users. Like businesses, Governments must make difficult resource allocation decisions: how best to make use of limited resources to achieve defined goals. Developing countries may prioritize other demands on resources, such as poverty alleviation programmes, low-cost housing or public health issues, which may overwhelm arguments for investing in e-business systems, even if such systems will contribute to managing those governmental priorities.

In addition, developing countries will be concerned about the relevance of e-business systems for placing services and transactions online, when

significant numbers of citizens may not have ready Internet access. Therefore, an e-government strategy should also consider the development of the implementation environment (the level of public access, the ICT sector, and e-government skills), and the enabling of alternative information and communication channels. Citizen access to e-government may be provided by "gateway" call centres (single point of access) and walk-in centres distributed throughout a country. Box 5.2 showcases the example of Tshwane Metro, a municipality in South Africa that made a successful decision to invest in e-government infrastructure.

Cost-saving justifications for adopting e-business systems in government are also supported by some intangibles. The implementation of e-government implies benefits from process re-engineering in terms of efficiency, from developing/improving capabilities in forecasting and planning, and from the learning opportunity related to management skills and technologies. In addition, it may be argued that the failure of developing countries to adopt e-government will further exacerbate the notorious digital divide and reduce the global competitiveness of their economies.

Therefore, key principles that e-government must adhere to are that: (i) services should be built around citizens' choices; (ii) government services should become more accessible; (iii) social inclusion should be facilitated; (iv) information should be provided in a responsible manner; and (v) government resources should be used effectively and efficiently (UNDPEPA, 2002).

C. E-procurement

Private procurement and public procurement have a fundamental difference. While a private company may wish to have a fair and open process in order to obtain the best possible price, the public sector has a duty to its citizens to use open and transparent procedures that can bear scrutiny for fairness.

Therefore, an open public procurement process should seek to ensure that all interested suppliers are aware of tenders, and that no one respondent has any kind of advantage as a result of, for example, inside information. Transparency requires clear and unambiguous requirements for a tender submission to be considered, and the evaluation

Box 5.2**South Africa: Successful investment in e-government infrastructure**

Tshwane Metro is a municipality of Pretoria, South Africa. It has more than 15,000 employees spread across multiple geographical locations. In 2001 as a part of its e-government strategy, it began to rationalize its telecommunications network and reduce reliance on Telkom, the national telecoms provider, through network consolidation and reduction of administrative and technical overheads. Prior to the rationalization project it had separate management of its voice services (supplied by Telkom) and data networks (WAN links also from Telkom), as well as electricity telemetry networks, mobile phone routers and other infrastructure. The Administration had more lines than it needed and an unacceptable level of costs.

The Administration adopted a far-reaching strategy based on user needs, legal options opened up by the terms of a Private Telecommunications Network (PTN) licence available from the Independent Communications Authority of South Africa (ICASA) and technology developments. All Metro facilities (buildings) are linked in a single, privately owned network that carry all traffic; thus no "internal" traffic (between Tshwane Metro staff and information systems) crosses the Public Switched Telephone Network (PSTN). Technical and administrative control is greatly enhanced.

A single switchboard (PABX, which is a private automatic branch exchange or voice server) was established for all incoming calls into Tshwane Metro, which greatly simplifies both administration and technical management. User policy is also uniform across the organization. Outgoing calls are routed to either the PSTN or directly to mobile phone networks as appropriate. A single 4MB Internet connection is used for e-mail to third parties and web browsing. Internet Protocol is used to carry voice calls within the Metro network.

Net cost savings of approximately 5 million rand (\$790,000) per month were realized through a combination of reduced Telkom costs, removal of redundant systems, more efficient management, better uptime and associated improved productivity. Network rollout has been funded through these cost savings. Despite reduced cash flow during the installation period, operational expenditure savings have recovered the initial capital expenditure. The estimated payback period for the 80 million rand (\$12.6 million) investment is 24 months. Other benefits are a faster service (bandwidth prioritizes voice applications), which is more flexible and user-friendly (every council employee is available on a extension; the phone number directory is directly linked to the HR database and published on the intranet), and has allowed for operational rationalization. In other words, Tshwane now has a major asset rather than a recurrent expense.

With such telecommunications infrastructure in place, Tshwane and places like it are in a far better position to attract investment in the form of new companies or the expansion of existing facilities. E-government telecommunications networks and related facilities, accompanied by local ICT service providers, can thus make cities and regions more attractive business locations by helping government to function and supply services more efficiently, including e-procurement, and contribute to an environment for business competitiveness.

Source: Interviews with Herman Claassen, Facilities Manager (Telecommunications Networks), City of Tshwane; and Michael Smales of Bytes Communication Systems. February 2004.

and awarding of subsequent contracts must follow an established, consistent and documented procedure. The requirements should be reasonable and capable of being met by any qualified respondent, and the individuals responsible for evaluation should have no pecuniary or other personal interest in the outcome. Additionally, procurement processes should strive to be responsive by delivering prompt decisions and communicating these decisions to all concerned parties in reasonable time. Providing feedback about winning bids is an important market signal that enables prices to be continually adjusted and so ensures a competitive market. E-procurement systems can help to ensure that public procurement meets these standards in the following ways.

E-procurement is one of the first areas in which Governments entering into the transactional phase of e-government tend to venture. The transactional phase is when the Government is capable of making services available online and transacting with other parties (World Bank, 2002). There are incomplete statistical data on the e-procurement market worldwide, although it can be generally asserted that government is usually the largest purchaser in an economy and that the value of the market is of significant importance to national economies (see subsection 5 below, "E-procurement as an enabler of e-business"). Data are available for some e-government leaders, namely for the North American markets and the European Union. For example, in 2002 the total EU public

procurement market was worth 1.5 trillion euro (\$1.8 trillion) or over 16 per cent of EU GDP (European Commission, 2004). According to the Organisation for Economic Co-operation and Development (OECD), the ratio of total procurement (consumption and investment expenditure) for all levels of government in OECD countries was estimated at almost 20 per cent of 1998 national GDP (or \$4.7 trillion), and at approximately 14 per cent (\$816 billion) for non-OECD countries (OECD, 2002). The OECD estimated that total government procurement worldwide in 1998 was roughly equivalent to 82 per cent of world merchandise and commercial services exports.

1. Developing an e-procurement strategy

With respect to the difficulties related to the implementation of public e-procurement, it should be noted that success is always the result of a broad consultation with representatives from government agencies and the private sector. A key objective of a strategy for all countries is to ensure that e-procurement is approached consistently across all spheres of government and costs to suppliers are minimized. Furthermore, the process of developing an e-procurement strategy should go through a series of phases, each of which requires careful consideration.

Phase 1 – Goals and vision. A strategy for public e-procurement needs to establish its main goals and vision, which might approximate the following:

- To automate the Government's procurement process and reduce duplication in purchasing;
- To achieve procurement transparency and accountability from an open system;
- To reduce procurement costs and ensure that government obtains better value for money from its suppliers;
- To increase the number (and thus the choice) of government suppliers;
- To provide all enterprises, including small and medium-sized enterprises (SMEs), equal access to government procurement information and equal opportunity for participation.

The formulation of goals ensures that e-procurement strategies have a valid rationale, clarifies the establishment of their "business case" and will help identify expected benefits. Explicit goals determine the scope and nature of the e-procurement strategy, as well as of its development and implementation.

Phase 2 – Regulatory framework. Once the goals and vision of an e-procurement strategy are clear, there needs to be stocktaking of the procurement regulatory framework, including statutes, case law and administrative laws (Steinberg, 2003). The identification and analysis of the regulatory framework will identify any bureaucratic impediments to e-procurement or conflicts with public sector purchasing laws.

Phase 3 – Analysis of existing processes. A review of existing procurement processes must include an assessment of the procurement needs of the Government and determine its readiness to implement e-procurement. It should also include an audit of government spending, an analysis of the items procured, an analysis of supplier profiles, and an assessment of staff capabilities and skills.

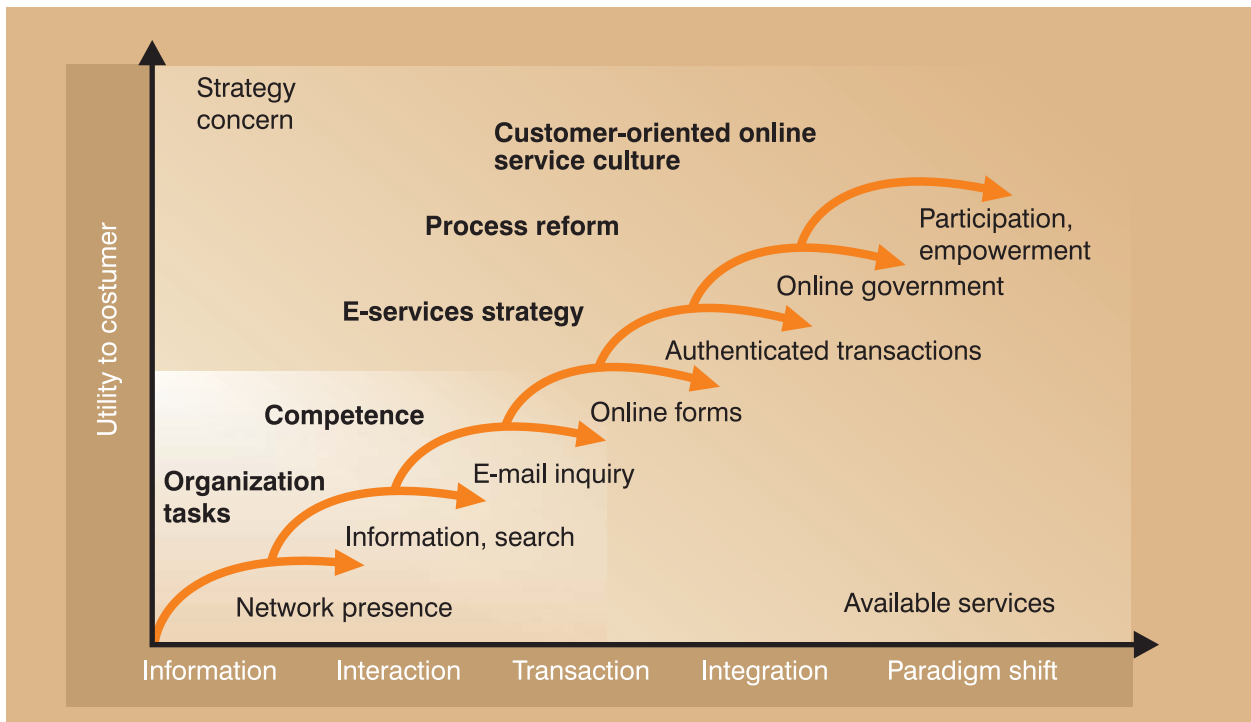
Phase 4 – Process re-engineering. Following the review of existing procurement processes and the identification of bottlenecks or inefficiencies, a re-engineering plan should be drafted with a view to achieving the goals and vision defined in phase 1. Such a plan requires a decision on areas or processes that can or should be automated as a priority, as well as item categories that are suitable for e-procurement.

Phase 5 – Choosing a solution and platform. Choosing the correct solution and platform will require a cost-benefit and/or risk analysis to compare various e-procurement solutions and their impact. Developing countries may benefit from exploring open system solutions and non-proprietary software, which are interoperable and scalable through all government agencies. A business case must accompany the solution chosen, and must consider among other things the implications of charging a fee for suppliers to access the e-procurement system.

Phase 6 – Formulation and implementation of a plan. The formulation and implementation of the chosen e-procurement solution will include the allocation and management of adequate resources

Chart 5.2

Steps to e-government and e-procurement: The Finnish model



(financial and human resources). In addition to technical training of human resources, implementation will often entail empowering lower-level management to take decisions (thus training for new responsibilities is also needed). Training is particularly important in order for government users to understand the benefits of the system and to change management cultures related to previous procurement processes. Cost savings could be undermined if a system is not utilized to its full potential. In addition, the solution must be promoted among current and potential suppliers.

In order to implement its e-procurement strategy, the Government of Finland applied a model that follows seven steps towards e-government and e-procurement, in which each step is associated with a level of transaction capability, as shown in chart 5.2 (Finland Government, 2003).

The Finnish model shows the increased sophistication of each level of e-procurement, from network presence providing only tender contact information online (step 1) through to allowing the electronic application/submission of tenders and authentication of transactions (step 5), and their administrative follow-up (step 6). In step 7, fully supported and seamless e-procurement allows end-to-end electronic automation of all previous steps,

and there is optimal participation and empowerment of all users (purchasers and suppliers).

However, it should be noted that an initial e-procurement strategy for a developing country does not necessarily entail a comprehensive e-procurement solution – such as an electronic tendering system, an electronic market place for the procurement of goods and services online, or a government website that provides a single point of entry to all government business opportunities. The implementation of e-procurement may begin with a single improvement, such as posting online updated tender information.

2. The role of open technologies and proprietary solutions

To be sure, any e-procurement system will require a high level of interoperability, which can be enhanced by the use of open technologies and is consistent with the aims of making those systems more cost-efficient, open, transparent and accountable (Dravis, 2003). Interoperability in the design of e-procurement systems helps to ensure that no potential bidder is excluded because it does not use the same computer systems and applications as the Government.

Box 5.3

The e-GP portal: A guide for developing countries

At the beginning of 2003, an electronic government procurement (e-GP) working group was created under the Multilateral Development Banks (MDBs) Procurement Harmonization Process. The e-GP website at <http://www.mdb-egp.org/> was launched in March 2004 and is jointly sponsored by the Asian Development Bank, the Inter-American Development Bank and the World Bank. It provides a single point of entry to all the information developed and all the tools created under the e-GP Working Group. Such information, including a tool kit, is aimed at helping countries plan and benefit from their e-procurement strategies and achieve benefits.

The e-GP tool kit provides strategic guidelines on the planning, management, implementation and support of public e-procurement. The planning guidelines refer to the development of a country's institutional base, making a diagnosis of the current procurement environment, the elaboration of a strategic plan, the selection of adequate standards, and the elaboration of a road-map for the implementation of public e-procurement that incorporates best practices from around the world. The website also has an e-procurement interactive map that provides country-specific information on e-procurement practices, including success stories and lessons learned.

Source: <http://www.mdb-egp.org/>.

An example of successful use of open standards for e-procurement may be found in the United Kingdom.⁶ The Office of Government Commerce (OGC) recently launched a single IT language for government suppliers to conduct business with the public sector. The language is based on the OGC interoperability requirements and an open standard (BASDA eBIS-XML or the Business Application Software Developers Association's e-business interchange standard extensible mark-up language) and will be used by public sector bodies for electronic invoicing and ordering. It should be noted that adaptations of BASDA eBIS-XML are currently being used by over 100 organizations across Europe. The adoption of a single standard in the United Kingdom has helped overcome difficulties in exchanging information and conducting business effectively between suppliers and public sector customers who used different IT systems. Government departments and their suppliers found the technology very easy to implement and use. Other benefits from using e-procurement in the United Kingdom include contractual savings, current financial information on what is being spent with each supplier, lower levels of irregular purchasing, and improved commercial relationships with suppliers.

There have been some examples of in-house development of e-procurement systems within government. The Manchester City Council in the United Kingdom is engaged in in-house development of an e-procurement system with a direct ordering facility.⁷ Australia's Department of Public Works

(DPWS) successfully developed its own e-procurement system, which was put at the service of Sydney Water, the country's largest water utility service provider (New South Wales Government, 2002).

Furthermore, free and open-source software (FOSS) used by Governments for e-procurement processes does not require suppliers to adopt or convert their data into a proprietary format, which may increase the costs of suppliers and constitute a barrier to smaller companies. FOSS has other features that are worth considering when investing public funds in e-procurement systems, such as availability to the public, maximal choice, no royalties or inflexible licences, and reduced discrimination against users. In addition, the use of FOSS may encourage ICT spending with local companies, support local SMEs in the ICT sector, enhance local knowledge of "primary source" material (i.e. source code), and impact on the application of broad standards and mechanisms for collaboration, quality assurance and the distribution of ICT products (i.e. software standards). FOSS is also adaptable to user profiles, such as in the case of adapting to local languages (e.g. www.translate.org.za). A detailed analysis of the implications for FOSS for ICT policy and development can be found in chapter 4 of the *E-Commerce and Development Report 2003* (UNCTAD, 2003).

Of course, proprietary e-procurement solutions remain an option for Governments. For example,

the Philippines' government has entered into an agreement with Microsoft for the acquisition of products and licences.⁸ The agreement provides government agencies with a simplified way of ordering and acquiring Microsoft products and licences while being able to track software licence acquisitions through online order confirmations and summaries. For the Government, acquiring original, proprietary software and licences symbolizes support for intellectual property rights legislation and a stand against software piracy; it also allows it to benefit from Microsoft advice and the latest technology. In this case, the vendor becomes a strategic partner in e-procurement that will assist in the development of the system and enable the Government to properly manage and maximize its resources. Annex I contains a brief overview of the main e-procurement vendors worldwide and their products.

The cost of commercially available e-procurement solutions will depend on whether the solutions involve applications that are focused on sourcing activities (e.g. bidding, supplier registration, tender management) or purchasing activities (e.g. electronic invoicing and payments), or both. When building an e-procurement solution, the following costs will have to be considered: licensing (software costs are believed to be only 10 per cent of the overall project costs), external and internal resources, implementation and maintenance, integration into existing resource planning solutions, process design, configuration and customization, training and communication, internal systems and bandwidth, software upgrades, and reorganization costs (Buy IT, 2002a). From the point of view of infrastructure, however, e-procurement solutions can be stand-alone, with no more than a data interface with back office systems. This is often seen as an interim solution until integration of all resource planning platforms has been achieved, such integration providing the greatest transaction cost benefits. Of course, the size of the public sector, in particular national budget and expenditure, must be large enough to sustain (make viable) the implementation of an e-procurement system.

An option for financing the implementation of e-procurement is a build-operate-transfer (BOT) scheme, such as the one adopted by the Government of Malaysia in order to set up its e-procurement system e-Perolehan.⁹ The system allows the Government of Malaysia to purchase goods and

services over the Internet and currently offers four modules (central contract, direct purchase, request for quotation and request for tender) as well as access to an electronic catalogue. E-Perolehan was financed through a BOT scheme involving an e-commerce joint venture company bringing together Puncak Semangat Sdn. Bhd. and NTT Data Corporation, which undertook the total financing of the project in exchange for exclusive service operator rights to the Malaysian supplier community. Suppliers can host their products and prices online free of charge, thus reducing their overhead costs, while the Government benefits from a streamlined procurement process and readily accessible pricing information.

In the first quarter of 2004, e-Perolehan had approximately 51,000 registered suppliers, of which about 12 per cent were ready to conduct business with the Government. It is expected that by the end of 2004, there will be 60,000 registered suppliers, 39 per cent of which will be ready to conduct business with the Government. The value of transactions by the end of 2004 is estimated to reach 1 billion Malaysian ringgit (\$260 million), with expected growth as adoption of the system expands. The average cost per transaction has been reduced from \$250 to an average of \$17.

3. Costs and benefits

Certainly, there are tangible benefits flowing from e-procurement in terms of reduction of prices (through competitive bidding and transparent negotiation with suppliers) and process costs. Nonetheless, the achievable return on investment (ROI) of e-procurement projects remains an elusive equation. Early corporate adopters of e-procurement claimed savings of between 8 and 15 per cent and returns on investment in under a year; however, these figures are now becoming more realistic (Buy IT, 2002b). Initial annual savings may be roughly twice the investment costs, but once strategic sourcing starts to mature and is factored in, cost savings are reduced. The main savings drivers for public e-procurement are the same as for corporate e-procurement (transactional benefits, compliance benefits, management information benefits, price benefits and payment benefits), always compounded by the imperative of serving the citizen. Users of e-procurement systems could maximize short-term benefits by limiting initial deployment, focusing on smaller categories first (e.g. office supplies) and on helping suppliers by,

for example, offering payment upon receipt of notice of shipment.

Other benefits of e-procurement are in the areas of governance and administration. With respect to governance, e-procurement facilitates the implementation of transparent public decision-making and is an impediment to lack of compliance and to corruption. In terms of administrative processes, e-procurement may reduce bureaucracy (including "overheads", or money spent on administration of services rather than their delivery) and save expenses and time. It will also impact on the level of ICT skills among all system users.

The development and implementation of e-procurement in an e-government strategy depends on public stakeholders being able to tap into appropriate ICT skills. The skills needed for any IT implementation include ICT strategy development, master systems planning and project management, business modelling and process analysis, requirement analysis and system specification, application design, application development, including implementation and testing, configuration and change management, and deployment and impact assessment. These high-level skills are a prerequisite for any programming or implementation. Since government is often already the single largest employer in a country, it may also be the single largest purchaser of IT and has considerable potential to stimulate the development of IT skills (whether employed internally or by contracted suppliers) through e-government projects. For example, a procurement policy that requires applications to make use of open source software will stimulate the development of open source skills and the adoption of open source business models in the local IT industry.

Human resources for the development of e-procurement (or an e-government strategy for that matter) may be permanently hired and so reside inside the organization, or be contracted from the private sector as needed. Each approach has merits: large organizations may be sufficiently diverse and of a scale to be able to make use of the full range of skills on a full-time basis and avoid the premium charged by contractors. But even large organizations are unlikely to be at the "cutting edge" of all ICTs, and so may find themselves unable to identify or make use of the most current or appropriate skills and technologies. On the other hand, those that choose to contract skills as

needed are able to draw from a larger pool of talent, and to choose the most appropriate ICTs for each project. This will come at a higher cost, but the quality of each project should be better. The development of ICT skills for e-procurement should be driven by expected functionality and needs, to be translated into system specifications and requirements (i.e. the "mechanics" of e-procurement).

4. Mechanics of e-procurement

There are four basic elements to e-procurement, as follows:

- **Online tenders:** Potential bidders should be able to search and identify tenders easily. Online tenders enable suppliers to have real-time access and the Government to reduce paper and printing costs. Tender forms might also be available online and might be submitted electronically, or through an automated process.
- **Electronic invoices:** Where regulations and resources allow it, invoices might be received electronically.
- **Electronic payments:** Electronic funds transfers may require the approval of payments through authenticated digital signatures and a process management system.
- **Automated process integration:** End-to-end e-procurement requires electronic automation of all of the above elements. See annex I for a list of the major suppliers of these systems.

Electronic communication can help to ensure that all interested suppliers are aware of tenders. Tender notices can be posted on a website (rather than a physical notice board or published in a newspaper) that is accessible at all times, without the need to physically visit a government office or subscribe to a publication. Tender notices can be categorized on such websites to help potential bidders easily find those that they are most interested in. More proactively, tender notices can be sent by e-mail to registered suppliers who have previously expressed an interest (and proven capability) in specific categories of tender – construction, training, or consulting, for example. Tenders should facilitate the registration of bidders, including for those geographically distant from government offices. Electronic communications methods can

Table 5.2
Best practice in e-procurement functions

Function	Best practice	Alternative
Quoting/tendering process	Open tender – buyer advertises the business opportunity online free of charge. Closed tender – buyer advises selected suppliers of the inquiry/tender. Buyer makes the tender information available online and (where applicable) allows the suppliers to submit their tender documentation electronically.	Buyer accepts inquiries and sends tender documentation by e-mail.
Ordering from the supplier	Buyer transmits orders to the supplier using open standards (agency must negotiate a contracted rate with supplier that is lower than the once off ordering price)	Buyer orders directly from a catalogue (e.g. from supplier website or e-mail offer) using e-mail, fax or hard copy. Agency negotiates a contracted rate with supplier that is lower than the one-off ordering price.
Making payment	Buyer pays suppliers by electronic means, e.g. through direct transfer – receipt sent electronically.	Payment made electronically and receipt sent by post.
Liaising with suppliers	Buyer and supplier liaise via secure e-mail.	Buyer and supplier liaise via e-mail and fax.
Browsing supplier catalogues	Supplier maintains an online catalogue, which can be browsed electronically (self-hosted or within an e-marketplace).	If supplier cannot establish an online catalogue, a buyer (government agency) may accept catalogue data electronically and upload then into shared internal systems, if cost-effective.
Internal approval process	The approvals process is automated and implemented electronically.	The internal approval process should be documented and objective criteria put in place for approving orders.
Receiving invoices/statements	The agency requires all suppliers to submit their invoices electronically and the invoice is then matched with the order. Invoice approved electronically.	Objective criteria implemented for approval of payment to suppliers on receipt of paper or e-mailed invoice.
Accessing e-marketplaces	Buyer accesses supplier catalogue in an open marketplace (open access, based on open standards).	Buyer accesses supplier catalogue in a closed marketplace (using a closed marketplace will make accessing the information more cost-effective for the agency concerned).

also be used to distribute tender documents, making them available for download and instantly reducing the waiting time for a bidder to receive such documents. The websites for tender notices and documents should provide information about procedures, so that everyone can be confident that they are being treated equally, and officials can be held to a common standard.

The submission of tenders can be more complex as it may involve the bidder in including certificates or other documentation proving competency or compliance with some other requirement, such as tax affairs being up to date. This potential problem can be reduced by requiring bidders to register as approved suppliers so that they do not need to prove their competency every time they submit a

tender. Once this is done, it should be reasonable for tender submissions to be submitted digitally. Provided that they are in the required format (preferably non-proprietary), this presents no technical problems other than the competent use of e-mail and an electronic filing system.

Once suppliers have been contracted, e-procurement systems can also be usefully employed to ensure compliance with procurement policies. Doing so enforces standardization throughout an organization, with resulting benefits through lower prices because of guaranteed volume; reduced costs and better service because of standardized maintenance of a reduced range of equipment; and reduced overheads associated with dealing with a limited number of suppliers.

E-procurement systems are best used for the purchase of those goods and services that are needed by all departments across the organization. These are typically commodities and include office supplies, computers and related equipment, maintenance services, and such items as meeting rooms and travel. Those things required for the operations of specific departments – civil engineering services for the construction of a new road, for example – are more specific and specialized, and cannot benefit from the economies of scale that an e-procurement system requires in order to justify its cost.

E-procurement systems typically run on an intranet,¹⁰ on which catalogues of goods and services can be made available, purchases requested and approved, purchase orders generated (for external vendors) or works orders (for internal services) routed through the intranet or by e-mail to the appropriate supplier. Once supplied, delivery notes are reconciled with purchase orders and invoices, and payments are made and allocated. Purchases and moves can also be linked to asset management systems to keep track of the location and condition of assets, and depreciation costs allocated accordingly.

As explained above, Governments in developing countries must be aware that e-procurement does not necessarily mean a comprehensive e-procurement solution; rather, it could entail cost-effective process improvements that steer a government department in the direction of e-procurement and are tailored to the available resources. For example, orders can be placed by e-mail, or via an integrated online order management system that extends across the length and breadth of the supply chain. Table 5.2 lists a number of procurement functions viewed from a “best practice” and “alternative” perspective.¹¹ The “best practice” column will generally require the implementation of a comprehensive e-procurement system with an ideal level of resources, and the “alternative” column can be an option for countries with more limited resources.

5. E-procurement as an enabler of e-business

Since there are limited data on the e-procurement market, there is little evidence regarding the impact of e-procurement on e-business. Nonetheless, increasingly there are indications that e-procure-

ment plays a role as an enabler of e-business, including for SMEs. In an European survey, firms with 50 or more workers felt that electronic media and e-procurement were the solution to the heavy procedural costs involved in bidding for public tenders, but small firms did not mention electronic solutions as a way out of the problems they faced in these markets (European Commission, 2004). The EU promotes the use of e-procurement in order to achieve cost reductions for firms and authorities, increase transparency and procedural efficiency without prejudice to competition, and allow easier cost comparisons and examination of tenders within the European Community. At the same time, it warns that the upfront costs of shifting to e-procurement should not be underestimated either for firms or authorities and may represent an obstacle for smaller firms, and that national uncoordinated e-procurement solutions could “fragment” the market.¹²

As a large purchaser, government is an attractive customer for large and small suppliers alike. The introduction of effective e-procurement systems by Governments may impact on the local economy both internally and in the way that it trades with others. Procurement processes that are open and transparent can help to set lower market prices and drive down costs, favouring efficient producers. This might attract low-cost producers into the market to the benefit of all consumers and encourage local suppliers to improve their competitiveness (quality and efficiency) in the domestic and/or international trade.

Part of the developmental role of government is to ensure the provision of key economic infrastructure – roads, electricity and other utilities, ports, health facilities, and so forth – that enables or supports business formation, investment and growth. As Governments – especially at the local level – move more of their own processes online, they also find it attractive to build telecommunications networks to link buildings and other facilities (see box 5.2). It can be argued that open and transparent procurement processes can help free funds to be channelled into economic infrastructure, ensuring that it is of good quality and has been purchased on the best conditions and/or at the best price. Finally, efficient online transactions with government agencies can act as incentives for businesses of all sizes to install computers, improve networks and build up basic ICT infrastructure and skills. If more business processes are

Box 5.4**A local, low-cost and open solution in South Africa**

The Knowledge Economy E-Government branch of the Western Cape Government in South Africa uses both traditional and new electronic channels to advertise tenders and reach a broader range of suppliers, especially SMEs in the ICT sector. Companies that collect tender documents register in order to provide a contact, receive information on the tender and ensure an audit trail. The webpage <http://capeonline.org/cmstender> contains the tender documents and instructions on how to use them. Tenders are submitted through the traditional process, while invoices are submitted electronically and printed out. The printed uoriginal" is processed through the traditional process. A small local software development company provided the solution used by the Western Cape Government, which turned out to be a cost-effective alternative to imported "customizable" software since the system could be built up using open source software. The Government incurred little or no extra cost for the use of the technology in the enhanced procurement process. All the staff had access to e-mail and the organization already owned a couple of Internet-connected web servers, which was all that was required.

Source: <http://capeonline.org/cmstender>.

computerized, automated or moved online, this might encourage a virtuous circle of investment in ICTs accompanied by more efficient local businesses. In fact, an e-procurement strategy should explicitly promote the use of the Internet and e-business systems among potential suppliers. The potential to win government contracts could act as an incentive for firms to adopt ICTs for business purposes and to go online.

E-procurement systems could also force local players to face foreign vendors that might compete on financial or strategic terms. That said, many multinational vendors have sought to establish partnerships with local companies in the more attractive markets, so that some of the implementation costs

can remain in the local economy. In addition, public sector procurement could favour open source solutions, as these tend to better encourage local skills as well as costing less. Box 5.4 illustrates the use of open source principles for an e-government content management system that enhances existing processes and promotes local ingenuity. Table 5.3 outlines the implications of e-procurement for e-business.

E-procurement allows more fair and equitable access to government contracts by a wider range of companies, as tenders and other requests for supply are more likely to be seen by potential suppliers. In addition, submission of responses is less onerous and more convenient for the potential

Table 5.3
Implications of e-procurement

Implications of e-procurement for:	
Development of e-commerce and a national electronic marketplace.	The incentive for building an electronic marketplace is reciprocal with (and proportional to) increasing IT penetration and capability (Oliveira and Amorim, 2001).
Local business promotion	The selection of local suppliers can be encouraged, including SMEs.
Public resources	Internal coordination costs can be reduced and public resources freed to serve citizens in other areas.
Bureaucracy	E-procurement will help to expedite and/or overcome bureaucratic procedures.
IT readiness	E-procurement will require a scaling up of the IT readiness of government and enterprises.
Transparency	All vendors have equal bidding opportunities.
Business processes and regulations	E-procurement might require changes to business processes (e.g. regarding vendor minority participation) in order to comply with public sector purchasing laws and regulations.

vendor. In this context, increased SME participation in the supply of goods and services to government agencies should contribute to reducing the power of monopolies or favoured suppliers. The use of e-procurement systems could also reduce the bias towards urban businesses and open doors to suppliers in rural areas or non-capital cities/towns.

6. Case studies in e-procurement

Brazil

COMPRASNET is the Brazilian Government's e-procurement system, set up by the Secretariat of Logistics and Information Technology in the Brazilian Ministry of Planning, Budget and Management.¹³ The system is a Web-based online procurement system used by all Federal Government procurement units. It enables online price quoting and reverse auction commodity purchases, and it has a client/server architecture. The process is as follows:

- Federal Government organizations register their procurement needs (i.e. goods and services they need to buy).
- The system automatically informs registered suppliers by e-mail and the supplier may download the bidding documents.
- The procurement officer uses a Federal Catalogue to specify the description of the good or service required. If the item is classified as a commodity, the whole process may be carried out through the Internet, using the price quoting system (which is a two- to three-day purchase posting site for non-competitive small purchases).
- For more substantial procurement of general-purpose goods and services (such as building maintenance services or office supplies and equipment), a reverse auction procedure is used. In the reverse auction the bids (prices that the suppliers will charge for that item) are submitted on the Web. Each supplier reduces its bid price competitively with others during the auction and the one offering the lowest price at a pre-agreed end time for the auction will be the one awarded the contract.
- Auctions and prices are open for inspection by the public, and auction results are posted immediately.

COMPRASNET was introduced to automate the Government's procurement process, in order to make it uniform without centralizing the buying process of the Federal organizations. It was also intended to reduce procurement costs and give more transparency to the process. Other aims were to increase the number of government suppliers; to reduce participation costs for these suppliers; and to increase competition among suppliers, which should result in cost reductions and better quality of goods and services acquired.

Stakeholders include Federal Government agencies and organizations, as well as the suppliers of goods and services to the Federal Government (over 150,000 registered suppliers). Citizens are indirect stakeholders insofar as e-procurement is intended to provide an instrument for social control of public expenditure, through its public transparency.

During COMPRASNET's first three years the Federal Government spent about \$7 million on system development and maintenance. During the first two years of online reverse auction use, the Federal Government is estimated to have saved up to \$1.5 million. Besides this positive return on investment, the system enables better and more transparent procurement, as well as reducing the bureaucratic process. For example, a normal procurement process takes more than two months, while the online reverse auction may be completed in less than 15 working days. The use of online procurement has also increased the participation of small businesses in government supply. So far, the system has been judged to be largely successful, bringing an estimated average 20 per cent reduction in final price for goods and services acquired through reverse auction and price quoting. In addition, suppliers are guaranteed timely payments since COMPRASNET is linked to a financial payment system.

The enabler/success factors of COMPRASNET identified by the Brazilian Government were political will, external pressures from citizens for greater transparency and efficiency in government spending, and acceptance by suppliers of transparency. The constraints faced have been technological, causing the occasional and temporary unavail-

ability of the system, and legislative, since new legislation and rules were needed to allow for new forms of procurement. The lessons learned were: (i) the need to identify the right technology, namely a robust platform, scalability and a basis in open systems, with heavy investment in back office sustainability; (ii) the need for intense training of users on both the government and supplier sides; and (iii) the need to adopt a phased approach, since successive modules would serve as system demonstrations and develop/encourage usage and interest.

South Africa

In 1995, the government tender board in South Africa decided to outsource the advertising and processing of tenders in order to reduce the costly and time-consuming publishing and advertising of small public tenders. Previously only large companies had the time and capacity to sort through and comply with the many tender advertisements published in various government gazettes and local newspapers. Automation also enabled tenders with a lower financial value to be processed and approved more rapidly by giving junior members of management the authority to award the tender.

An outsourced system provider won the tender to provide an electronic purchasing system and to publish the purchasing requirements issued by all spheres of government, including national, provincial/state and wherever possible local/city government organizations. The aims of the e-procurement system were as follows: to automate the Government's procurement process; to achieve procurement transparency and accountability from an open system; to reduce procurement costs; to increase the number of government suppliers; and to empower SMEs by ensuring that they participated in the tender process.

The stakeholders of this e-procurement system include both buyers and suppliers. Buyers include the State and provincial tender boards, State departments (Agriculture, Education, Finance, Health, Housing, Public Works, Support Services), various State hospitals, regional councils and municipalities, the Navy and Army, the Police, prisons and the Post Office. Suppliers include all types of service providers, from consultants to tree-felling companies, and are categorized in a way similar to the tender advertisements, by Standard Industry Classification (SIC) codes.

The system collects (and provides) tender information on a national basis, so that buyers and suppliers throughout the country can interact. Smaller tenders, within the minimum value threshold, are transacted online and may be "open" or "closed". A tender is considered "open" when the buyer is able to send it to all the suppliers that have subscribed to the system (and also subscribed to the particular categories that a tender may be allocated to), while a "closed" tender is made available to a selected group of suppliers. The system also allows buyers to add a supplier who may not already be a subscriber to the system. These additional suppliers then receive by fax the information about the tender. The system keeps tender applications "unseen" until after the closing date, and is designed to capture all the information in a secure, confidential environment and to provide the results of previous tenders that have been awarded and the pricing. Larger tenders (greater value) are advertised in the system but must be dealt with in a paper-based format (documents and applications are not submitted electronically).

Suppliers have to pay a monthly charge in order to gain access to the tender requests and advertised information via a website. The information is categorized into various product groups according to the standardized SIC categories. A supplier will only receive tender opportunities that are relevant to its SIC category. The information on the e-procurement system in general and tenders is made available through the Web, e-mail or fax. Subscribers may quote online using a Web-based form, by fax or by traditional physical delivery. The lessons learned so far from the South African experience are the following:

On transactional capability:

- Regardless of the level of automation, the e-procurement system requires supervision to ensure that a critical mass of diverse suppliers can bid for tenders.
- A barrier to access to the system is created when suppliers have to pay a fee to subscribe. Because of this, buyers were allowed to add specific suppliers in order to include and target SMEs. The idea is for buyers to share the costs for suppliers to subscribe.
- If a paying subscriber may be able to receive e-mails, then so should a specified supplier. A constraint was created because specified

suppliers could only receive tender information by fax.

- Usability should be enhanced (for example, allowing inputs in different grammatical characters).
- Making use of technology does not necessarily make the tendering process more accessible. The system still requires a good tendering practice – for example, if the details or description of an online tender are not included, the supplier must still use various traditional ways to ascertain the nature of the tender; this is inefficient and can be frustrating to the supplier.

On the process of posting and responding to tenders:

- The system for receiving bids needs to be improved, namely by expanding the possibilities of delivery (for example, by providing several fax numbers or establishing longer deadlines).
- Guarantees should be given regarding the security, reliability and scalability of Web-based forms (and other technology functionalities).
- The use of postal systems and fax machines to obtain copies of tender information creates delays in the tender award process. Therefore, the submission and reception of tender proposals by electronic means should be increasingly promoted.
- Suppliers are frustrated by having to re-enter information at different points in the process.
- Regular reporting and feedback from suppliers should be monitored to ensure that the outsourced system provider is providing adequate service.
- The system requires close monitoring to ensure that suppliers use it as a tender-enabling tool rather than as a technology; that is, wherever possible, all the tender information – and at a minimum – the tender description must be included in the details.

On transparency:

- Suppliers must be informed of the outcome of a tender process.

- Tenders that are cancelled should not be reinstated for a specified period of time, so as to avoid undermining the "closed bid" principle.
- Tenders should be traceable to the people who are responsible for awarding them.

The system has been able to partially realize the benefits initially envisaged. It has reduced administration costs through automation and has increased transparency and accountability. It has been adopted by approximately 1,500 government organizations and has become a learning opportunity in those organizations. There are still delays caused by postal systems, by the need to recapture data and by the process of creating, recording and storing paper documents. Some steps involving the physical interaction of stakeholders (waiting in line, going to multiple offices) still have to be overcome.

D. Conclusion

There appears to be no doubt as to the benefits of at least a basic adoption of e-government for all countries insofar as it strengthens the relationship between government and an increasing number of citizens. E-procurement, as an application at a higher level of e-government (the transactional phase), has already brought benefits to public procurement in several countries through cost savings, streamlining and increased transparency. However, in order to elucidate the suitability of any e-procurement strategies for developing countries, developing countries may need to consider more than the efficiency benefits, carefully evaluating the level of public and private sector e-readiness and the relevance of partial or fully integrated e-procurement to their own e-government and business development strategies. The potential of e-procurement as an enabler or promoter of e-commerce in the economy might be an incentive.

On the one hand, it can be argued that there is little point in proposing e-procurement in countries where only certain suppliers will be in a position to take advantage of it, and where for a variety of reasons (size, ability to fulfil orders, management capabilities) SMEs will still be excluded from the public procurement market (offline and online). On the other hand, it can be argued that e-procurement can lead to the development of ICT and transactional capabilities in government that can

be applied to other activities such as receipt of payment of taxes and duties or disbursement of grants and social benefits, as well as in the business community competing to participate in government tenders. Transitional measures can be adopted so that local suppliers that initially may not be able to access e-procurement systems are not excluded. More research into benchmarking public e-procurement in developing countries still needs to be done.

In any case, it is necessary that Governments planning to adopt e-procurement carefully guide their plan through the phases outlined in section C, sub-heading 1, of this chapter. Developing countries should bear in mind that the adoption of e-procurement can be a scalable process that will limit the waste of limited resources and will allow users to gradually build up the relevant capabilities. To maximize initial adoption, the World Bank (2002) proposes that e-procurement plans begin by targeting agencies and suppliers that will

have immediate use for e-procurement, enlisting their support and addressing the concerns of government workers whose role might change as a result of innovation. This is applicable to any e-government project.

In order to ensure sustainability, it should be recognized that return on investment would be achieved over time in terms of cost savings and increased revenue. In the context of their e-government strategies and regardless of transactional capabilities, developing countries that have not already explored e-procurement could envisage the enhancement of G2B interaction by posting tender information and forms online, and promoting awareness within the business community and the registration of potential suppliers. A portal for transactional services can be a longer-term goal that will result from a general process reform that will entail consolidating, streamlining and enhancing the transparency of public procurement and related government processes.

ANNEX I

The following are the six main global companies that provide e-procurement platforms, selected according to market share and revenue (Forrester, 2004). The companies are listed in alphabetical order.

- **Ariba.** Ariba was founded in 1996, is regarded as one of the largest vendors in the e-procurement market and states that it has 30 per cent of the Fortune and Global 100 companies as its customers. The **Ariba Buyer** application is able to deal with complicated processes, including complex approval processes, order aggregation and supplier communication needs for purchasing indirect materials. It is also able to deal with large implementations that require linkages to back end enterprise resource planning systems. See www.ariba.com.
- **Clarus.** Clarus was founded in 1992 and through various acquisitions entered the e-procurement market. It aims its products at the mid-market. It currently has approximately 70 customers using its e-procurement product around the world. **Clarus Auctions**, **Clarus e-Procurement** and **Clarus Settlement** are products that focus on a particular component of the e-procurement process. The applications are regarded as having strong sourcing and payment settlement features. See www.claruscorp.com.
- **Commerce One.** Commerce One has more than 500 customers using its e-procurement application. It also has vendor partnerships with four large systems integrators, namely Accenture, Cap Gemini Ernst and Young, Pricewaterhouse Coopers and Compaq. **Commerce One Buy** and **Commerce One Source** do not offer advanced procurement features such as complex pricing and order aggregation but are well positioned to satisfy the demands of budget-conscious firms that want to automate the whole procurement process from sources to payments. See www.commerceone.com.
- **i2 RightWorks.** The company has approximately 55 customers using its e-procurement application and at least four partnerships with leading system integrators. The **i2 RightWorks** application is best suited to firms already using i2 technology. The product is regarded as a good fit for firms that are looking to automate their indirect procurement processes now and their direct procurement processes in the future. Further testing by Forrester has shown that the product has strong workflow and purchase order processing capabilities which are beneficial for firms that want to automate and centralize complicated purchasing processes. See www.i2.com.
- **iPlanet.** The company has financial backing from Sun Microsystems and AOL Time Warner. In 2000 iPlanet's E-Commerce Solutions, a Sun/Netscape Alliance, unveiled the industry's first complete business-to-business commerce platform. This included buying, selling, billing, market-making and trade facilitation software. The **iPlanet BuyerXpert** application is regarded as a leading application for firms that wish to automate basic purchasing processes for indirect goods for a large number of users. The application also offers self-service requisitioning and pricing capabilities and integrates with other iPlanet applications for basic sourcing capability. See www.sun.com/software/.
- **MRO.** The vendor has more than 5,000 customers and is actively seeking partnerships with key systems integrators such as IBM and AT Kearney. It also has an established partnership with i2, which is regarded as one of the leading e-procurement vendors. Its **MAXIMO Buyer Solution** is targeted at firms with specific industrial procurement needs. Testing by Forrester showed that the product has strong order-processing capabilities such as importing and aggregating orders from enterprise resource planning systems. See www.mro.com.

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Notes

1. See <http://www.wsis.org/>.
2. The chart does not include Timor Leste, which was not a UN member State in 2001.
3. An existing system, usually a computer system, that must be accommodated in building new systems.
4. See www.asycuda.org.
5. See http://www.innovazione.gov.it/ita/comunicati/2003_05_07.shtml and <http://www.acquistinretepa.it/>.
6. See <http://www.ogc.gov.uk/>. UK Office of Government Commerce, "Government announces success in search for common IT language", 3 February 2004.
7. See <http://www.manchester.gov.uk/index.htm>.
8. See <http://www.procurementservice.net/>.
9. See Pascual (2003) and <http://home.eperolehan.com.my/>.
10. A restricted network used internally by an organization. It uses the same concepts and technologies of the World Wide Web, such as web browsers and servers running on Internet protocol.
11. Adapted from the Australian Government Information Management Office (2000).
12. For these reasons, the European Commission will present in 2004 an action plan for the introduction of coordinated e-procurement in the EU aimed at reducing procurement costs and contributing to further integration in European public procurement markets and to the improvement of their performance.
13. Ozorio de Almeida (2002). See also <http://www.comprasnet.gov.br> and <http://www.is.cityu.edu.hk/research/ejisd/vol9/v9r6.pdf>.