E-Government in Singapore — A Swot and Pest Analysis

HUONG HA

Department of Management, Monash University, Australia
Huong.Ha@BusEco.monash.edu.au

KEN COGHILL

Department of Management, Monash University, Australia
Ken.Coghill@BusEco.monash.edu.au

ABSTRACT

This paper aims to review and evaluate the vision, the objectives and the strategic framework of e-Government in Singapore. Rapidity, Reliability, Efficiency, Cost-effectiveness, Customer-orientation and Accessibility are the main guidelines for the development of e-government in Singapore in order to provide quality services to users in the digital economy. There are five thrusts and six programs of e-governance in Singapore. The development of e-Government involves three main relationships: Government to Citizen (G2C), Government to Business (G2B) and Government to Employees/Public Servants (G2E). This paper employs the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and PEST (Political, Economic, Social and Technological) determinants to evaluate the current state of e-Government in Singapore and its preparedness.

In short, Singapore has successfully developed a strong foundation for e-Government. Many strengths and opportunities fuel the development of e-Government in Singapore such as sound economic policies, political willingness, robust educational system to generate tech-savvy future employees and low cost of phone calls. Singapore has continuously improved in order to prepare to deal with new threats and challenges such as the significant increase in the number cyber crimes, security and privacy concern.

KEYWORDS: e-Filling, e-Government, e-Information, e-Litigation, e-Payment, e-Procurement, e-Service, e-User, G2B, G2C, G2E.

Introduction

E-Government is one of the most important applications of the Internet. It has emerged as a new platform upon which the public sector may serve the people and the nation more effectively and efficiently. The Singaporean Government claims to have created a "world-class e-Government" that enables citizens to "be involved, be empowered, and be a pacesetter" (Infocomm Development Authority of Singapore (IDA) 2000). Residents in Singapore are thus said to have equal opportunities to be involved in and to access e-Services and e-Users, to be empowered through IT knowledge and skills, through online feedback, by being treated as customers[1] and by being able to set their own pace and time for accessing e-Services.

The process of transforming traditional public administration to modern public management has materialized through the development of e-Government. As a result, the Singaporean government has changed the ways it looks, thinks and acts. Its determination was rewarded when the country was ranked among the top five positions in the world in terms of e-Governnance (Lee 2002). However, the growth of e-Government in Singapore has faced challenges and threats due to the rapid development of technology, as well as the vulnerability of the global environment. As a result, Singapore fell from 7th place in 2004 to 11th place in 2005 in terms of e-readiness (Economist Intelligence Unit 2002: 4). Hence, there is an apparent need to examine factors affecting the development of e-Government in Singapore.

This paper aims to review the vision, the objectives and the strategic framework of e-Government in Singapore and investigate

1. The current state of e-Government in Singapore and
2. The preparedness of e-Government in Singapore for future development.

Although there are many works on e-Government in Singapore (e.g. Jenkins 2001, Mahizhnan and Andiappan 2002, Smith 2004, Ke and Kwok 2004, Fung 2004, and Lim 2006), there is a lack of research based on its practical dimension. This paper therefore looks at e-Government from a practical standpoint.

The authors use secondary data from literature and government materials to describe the context in which the study was conducted. SWOT and PEST analyses are employed to answer the questions posited in the investigation.

E-Government in Singapore

The Vision of E-Government

E-Government is defined as

> the use of information technology, in particular the Internet, to deliver public services in a much more convenient, customer-oriented, cost-effective, and altogether different and better way. [Holmes, 2001 cited in Hughes (2003: 182)]

The concept of e-Government is enhanced by the vision of the Singaporean government, which is to become a world leader in e-Government and to better serve the community and the nation (IDA 2004). The Singaporean government has engaged e-Government to

> re-examine(s) the organising principles of bureaucracy and governance, re-define(s) the objectives and deliverables of government and re-deploy(s) the resources available. (Mahizhnan and Andiappan 2002: 250)

It is not only the addition of an "e" to the word "government" (Khaw 2002: 3) that has caused e-Government to flourish. The government has had to challenge itself and to change the ways it thinks and operates in order to continually develop, sustain and improve the operational processes of the public services (IDA 2000).

The Objectives of e-Government

Due to advanced technology and the high level of investment in Research & Development (R&D) since the 1980s, Singapore has gained a reputation as a regional technology-hub and has nurtured an ambition to become the world leader in e-Government. Singapore has re-structured the operation of public services so that they can be delivered more effectively, efficiently, conveniently and rapidly.

The objectives e-Government in Singapore are integrated in the acronym C.A.R.E., which according to the Infocomm Development Authority of Singapore (IDA) website stands for the following:

1. C stands for *Courtesy*. The Singaporean government provides public services with a client-centric approach that pleases customers (Tran 2003). Traditionally, the public felt indebted to civil servants whenever

they were in need of services. Now, e-Users are treated as valuable customers who "buy" services from the government. Government agencies have transformed themselves into service providers who have to attract customers with better quality services and cheaper prices. Red-tape and bureaucracy have been minimized in order to change the mindset of the public when it needs interacts with government officials.

3. A stands for *Accessibility*. e-Users can be connected to any government website at any time, any place, and for any purpose. e-Government should be a public good, with the qualities of non-exclusion and non-rivalry. No one is excluded from the services rendered and every user enjoys the same level of satisfaction when "consuming" these services, no matter who they are, when they use them or where they are located. However, accessibility depends on the availability of human and physical resources. Therefore, the government has to make special efforts to bring e-Services to all stakeholders, rather than wait for the public to approach government agencies to avail of them.

4. R stands for *Responsiveness*. Government must be willing to listen to e-Users, be transparent and be accountable in terms of policy making, implementing, monitoring and modifying. It needs to meet the new demands of e-Users by providing new and better online services.

5. E refers to *Effectiveness*. e-Services must be reliable, secure, free from problems, and able to save resources. Different government bodies can share the same resources, and e-Users can use the same password (SingPass)[2] to communicate with all government agencies (IDA 2003).

Apart from the above objectives, the e-Government Action Plan, Stage 2 (2003 – 2006) has introduced three new expected outcomes, which are (i) "delighted customers, (ii) connected citizens, and (iii) networked government" (Tran 2003, p. 24).

Strategic Framework

The Singaporean government has developed a strategic framework with five main thrusts and six programs. The sum of S$1.5 billion has been generously invested in these "infocomm initiatives" projects between 2002 to 2005 in order to achieve these objectives (IDA 2000).

Five thrusts

The five thrusts of e-Government in Singapore are "(i) "reinventing government, (ii) delivering integrated electronic services, (iii) being proactive and responsive, (iv) using IT and Telecommunications to build new capabilities and

capacities, and (v) innovating with IT and Telecommunications" (Fung 2004, p. 3). These five thrusts in the strategic framework have served to: a) develop an internationally linked e-Commerce infrastructure ; b) jump-start Singapore as an e-Commerce hub ; c) encourage businesses to use e-Commerce strategically ; d) promote usage of e-Commerce by the public and businesses ; and e) harmonise cross-border e-Commerce laws and policies (IDA 1998). These have helped the involved parties to focus resources and efforts on accomplishing their responsibilities.

In adherence to the five thrusts, Singapore has first of all increased the number of e-Services it provides. Any public services that can be delivered online must be digitised. This task requires a strong infrastructure and co-operation among various government agencies. As important stakeholders, the public must also actively participate in policy making and implementation processes. Online services should be better and more effective than services delivered by traditional channels in terms of costs and timing.

Second, Singapore has mobilised available human and capital resources to "build new capability and new capacity" in order to sustain the operation of e-Government (IDA 2000). Capability and capacity refer to the ability to receive, filter, digest and manage information technology and knowledge, as well as to monitor and modify the electronic delivery of public services. The IT strength of Singapore must be maintained and nurtured to continuously improve the living standards of Singaporeans, and to help Singapore meet international standards in public administration.

Third, the adoption of current IT applications may be insufficient to develop a world class e-Government. The public sector must be innovative and creative in order to refrain from deploying outdated technology. e-Services need to be practical and pragmatic (IDA 2000). Singapore cannot afford to be a dumping ground of obsolete technology from developed countries. Obsolete technology will create more problems for e-Users, damage the environment and cause negative externalities. A satisfactory level of investment in R&D would help Singapore develop new IT applications for the benefit of humankind.

Fourth, a sensitive and responsive approach has been implemented to improve the delivery and quality of services, and to simplify the current regulatory framework (IDA 2000). Service quality is not only reflected through timing, accuracy and convenience, but also depends on how the government deals with crises or sensitive issues such as SARS (Severe Acute Respiratory Symptoms)

outbreaks, or combating cyber-crime. Adhering to this thrust will help to achieve the "E" and "R" objectives (Effectiveness and Responsiveness).

Finally, leadership and political willingness play an important role in the development and sustainability of e-Government, as leaders make "meaningful decisions in all aspects of governance" (IDA 2000). No vision or objectives can be fulfilled without good leadership. The impact of e-Government can reach beyond national borders; thus the co-ordination and collaboration between and among different levels of government to address e-Government problems is highly desirable. A strong commitment and political willingness to deliver and develop e-Government will certainly contribute to the achievement of expected outcomes.

Six programs

e-Government is a long-term process that requires a strong commitment from the government to demonstrate a high level of obligation in terms of resources, policies, strategies, approaches and implementation. Therefore, the five e-Government thrusts are supported by the following six programs: (i) Knowledge-based Workplace; (ii) Infocomm Education; (iii) Electronic Services Delivery; (iv) Technology Experimentation; (v) Adaptive and Robust Infocomm Infrastructure; and, (vi) Operational Efficiency Improvement.

The first program, "Knowledge-based Workplace" (KBW), helps to produce an ICT literate workforce, especially public servants, in order to improve work processes and teamwork (Mahizhnan and Andiappan 2002). e-Government can only flourish if civil servants are empowered with IT knowledge, and an understanding of the government mechanism, as well as of the operational procedure of e-Services. Civil servants, who are well equipped with IT knowledge and skills will be more confident and professional in providing services to customers.

e-Government can be seen as a new form of market with a supply side (government) and a demand side (users). The KBW program improves the efficiency of the supply side. At the same time, the "Infocomm Education" program enables users to go online for public services (IDA 2000). Without proper training, e-Users will be frightened and discouraged by the complexity of processes, procedures and guidelines from government websites. While knowledge of IT is not enough to create magical changes in the public sector, it must be used to improve current processes and develop new technological applications and capacity, as well as for accessing e-Services.

The "Electronic Services Delivery" (ESD) program provides public services via the Internet (Mahizhnan and Andiappan 2002). This has helped to re-engineer the public service mechanism. This program is in line with the first thrust to increase the number of e-Services that can save costs and time for both government and users. It also facilitates the growth of e-Government and enables the public sector to achieve the four levels of e-Government, that is to "publish, interact, transact and integrate" (IDA 2003, p. 4).

The "Technology Experimentation" (TE) program assists Singapore in implementing the second and the third thrusts to enhance its capability and capacity to adapt to rapid changes in ICT trends. e-Government in Singapore has experienced the last stage of the "three stages in the development" of ICT (Hughes 2003: 186). The first stage is "automation," where machines are used to reduce the paper work and the operation costs. The second stage is "informatization," where data from different sources is integrated for convenient use. The final stage refers to the "transformation" of services into business that can improve the market efficiency of public services and delivery services beyond national borders (Hughes 2003: 186-187). Frequent and continuous updates with advanced technology help stakeholders to minimize the probability of making wrong decisions.

This TE program is fostered by the "Adaptive and Robust Infocomm Infrastructure" program (Tran 2003, p. 23). Singapore must utilize the rapid improvement of IT to achieve economies of scale in the provision of public services with lower costs and higher productivity. Public services must also be delivered in an integrated manner that can improve the efficiency of organizational operation. For example, e-Users can use the SingPass (which, as mentioned earlier, is a pin number given to each person who registers online) to check their CPF accounts[3] or to access other government websites.

However, knowledge and experimentation in technology alone are not enough to enable Singapore to successfully deploy e-Services. It must implement the "Operational Efficiency Improvement" program in order to employ relevant and advanced technology as well as new management approaches that will produce "an efficient and effective public sector" (Mahizhnan and Andiappan 2002, p. 252). The process can only be improved when all the components are well designed and well operated. This calls for strong co-operation within and between government agencies, and between providers (government) and receivers (citizens). Otherwise, resources and efforts will be wasted.

Three Target Groups

The strategic framework of e-Government focuses on three main target groups: Government to Citizen (G2C), Government to Business (G2B) and Government to Employees (G2E).

Government to Citizen (G2C)

Government to Citizen (G2C) refers to public services provided by the government to its citizens via electronic means. This strategy aims to enhance the service quality and deepen "participatory democracy online" (Clift 2004, p. 3).

The three most important e-portals in Singapore are eCitizen (www.eCitizen.gov.sg), e-Celebrations (www.ecelebrations.gov.sg) and www.gov.sg where e-Users can find all necessary information. However, the main portal is eCitizen. This portal was launched in 1999 and aimed to deliver public services in a better manner to benefit all Singaporean residents (Government of Singapore 2005). By 2004, 1,600 services were available on this website (Faculty of Business and Economics - Research Committee 2004). The services on the eCitizen portal include e-Information, e-Filing, e-Registration, e-Payments and e-Democracy.

Under the e-Information service, citizens can access information from the eCitizen website home page, where 16 towns—such as Business, Defence, Election, Education, Employment, Family, and Housing—appear, with 48 main e-Services (Tran 2003; IDA 2003). To make the home page more attractive to e-Users, popular e-Services such as "Pay Fines, Fees, Taxes and Licenses, Check CPF Account, Enquiry Road Tax Payable" are listed (Government of Singapore 2005). The community portals were designed to cater to the needs of teenagers, working adults, senior citizens, foreigners and overseas Singaporeans. Thus, no e-Users feel excluded from accessing information online. e-Users can search for any kind of information, from books to news, from how to book a tour to how to find a job, or what the latest share prices are. As a result, this portal has received a significant increase of hits per month, from 240,000 in October 2001 to 14.4 million in June 2003 (Faculty of Business and Economics - Research Committee 2004: 2).

e-Filing and e-Registration have been implemented widely by the Inland Revenue Authority of Singapore (IRAS). In 2000, 30% of the tax payers submitted their tax statement on-line, which saved "S$2.7 in transaction costs per filing" (Trish 2001). The transaction cost is split between the government and users. The government only pays for online related costs less manpower costs, and users pay

only the cost of accessing the Internet. To encourage tax-payers to use e-Filing, the IRAS conducts a lucky draw with many attractive prizes annually (Tran 2003). It often extends the deadline for e-Submission of tax assessments.

The legal industry implements e-Litigation to reduce the complexity of registration and court attendance. Users can access the Electronic Filing System (EFS) at many locations via wireless LAN in Singapore. By 2002, 315 law firms had utilized this EFS and "more than 82% of court documents and 780,000 documents" were e-Filed (IDA 2002: 7). This system can significantly reduce administration costs. In addition, lawyers can appear virtually in courts through the Internet Protocol VideoPhones (IDA 2002). Lower costs lead to lower prices, thus lessening the financial burden of participants.

The Singapore Immigration & Checkpoints Authority (ICA) offers "Application for Passport on-Line Electronic System" to Singapore citizens who can "apply, pay and submit their passport application" any time and from anywhere (IDA 2002: 8). This one-stop online transaction reduces processing time and operational costs. To encourage citizens to use this service, a rebate of $10 is given to users (IDA 2002). However, with the increase in online identity fraud and identity theft, the authority may be forced to re-assess its current system of security—West comments that "unless ordinary citizens feel safe and secure in their online information and service activities, e-government is not going to grow very rapidly" (2006: 5).

The Ministry of Manpower has introduced iJOBS, where job seekers can search, browse and apply for jobs on-line (IDA 2002). The Singapore Sports Council has also joined the trend by introducing iBook, an online service from which the public can make enquiries about and booking for sport facilities (IDA 2002; Singapore Sports Council 2005). In addition, National Service personnel can apply for exit permits[4] instantly with the Ministry of Defence, the Singapore Civil Defence Force, or the Singapore Police Force through the Defence and Security link on the eCitizen website (www.eCitizen.gov.sg).

e-Payment has been implemented by different government agencies. Users can pay income tax, property tax, TV licence fees or fines online through eNETS (Network for Electronic Transfers (S) Pte Ltd 2005).

e-Government is a service that enables e-Democracy, of which e-Voting is a good example. The website of the Elections Department Singapore provides voters with necessary information such as "Elections in Singapore, Useful

Information for Voters, Overseas Voting, Registers of Electors, Registry of Political Donations" (Elections Department Singapore 2005).

If the "People Power 2" movement was successful in the Philippines because of the use of SMS to "coordinate demonstrations that eventually led to the ousting" of the ex-president (International Telecommunication Union (ITU) 2005), e-Democracy in Singapore demonstrates another dimension of democracy. Parliamentary notices and alerts are new features of e-Democracy, through which everyone can receive news from the government. Recently, the Singaporean government introduced online feedback—everyone can voice their views at www.feedback.gov.sg. Users can enjoy the freedom of giving feedback via the Internet without fear of being traced. This homepage shows many channels, namely e-Consultation Paper, e-Poll, Discussion Forum, Policy Digest, Cut Red Tape, Feedback Groups and others (Feedback Unit 2004). A progressive aspect is the display of the replies to public feedback.

From a guided and consultative democracy, Singapore has moved to a new type of democracy with open discussion forums. These forums offer privilege to their members, who are allowed to participate in "the dialogue sessions, tea sessions and the Annual Conference for Feedback Groups" (Feedback Unit 2004). Previously, only a small elite group was involved in such activities.

The vision of e-Government has opened a new page in the history of democracy in Singapore. Feedback portal has strengthened the relationship between the government and the public. This joint force will help Singapore overcome difficulties through better interaction among and between all stakeholders. The public can comment on consultation papers or can discuss current issues (IDA 2003). On the other hand, government bodies can consider public opinion when making policies.

Government to Business (G2B)

The second target group of e-Government is Government to Business (G2B), defined as the interaction between Government and Business via the Internet (Tang 1991). Similar to the services for G2C, these interactions include e-Information, e-Filing and e-Registration, e-Payment and e-Procurement.

On 13 January 2004, 217 services were introduced on the website http://www.bizfile.gov.sg (Singapore Accounting and Corporate Regulatory Authority 2004). This portal provides users with all necessary information about setting up a business or looking for business opportunities with government agencies.

To encourage the adoption of e-Filing and e-Registration, the government introduced its "One-Stop Business Registrations and Licenses Application" service in July 2001 (Mahizhnan and Andiappan 2002: 256). At http://www.business.gov.sg/ companies can apply for, update, renew or terminate a licence. They can find business opportunities and government incentives or collect business statistics on this site (Government of Singapore 2005). Businesses can also "apply, update, renew or terminate licences from the "Online Business Licensing Service (OBLS)" established in 2004 which aims to provide one-stop services to businesses in order to reduce time and other costs associated with waiting and moving from one counter to another (Lim 2006: 3).

For companies wanting to do business online with the government, GeBIZ (Government Electronic Business) at http://www.gebiz.gov.sg/ is a well-known source. This is a business center at which trading partners can conduct business transactions with the Singaporean government via online "Invitation-To-Quotes and Request-For-Quotations" (GeBIZ 2005). This service is totally free for business partners, although users need a password to log in.

To minimize the processing time and to simplify the application process for business licenses, the One-Stop Public Entertainment Licensing Centre was launched in July 2001 on the "eCitizen Portal's Business Town" (PS21 Office 2002). The processing time was reduced "from 6 to 8 weeks to about 2 weeks," which meant opportunity costs also decreased proportionately (PS21 Office 2002).

A "customer relationship management" concept is also applied in e-Government (Tan 2002; Leo 2002) through the introduction of new modes of payment. e-Payment makes it convenient for trading partners because they can pay by flexi-pay method or by credit card, but only MasterCard or Visa are accepted (GeBIZ 2005). Another feature of G2B is the payment for patents online through http://www.epatents.gov.sg/IUAM/RegPAForm.asp. Many e-Payment modes are offered by government agencies—for example Net-payment and the latest mode of "multi-bank Internet Direct Debit" (Tan 2002). In the future, an integrated single mode of payment will certainly benefit users.

Finally, e-Procurement refers to online buying by government agencies. Currently, e-Users can find business opportunities from different government bodies on the GeBIZ portal. These institutes expand the range of procurement functions available by posting information about internal and external procurement. GeBIZ has strived hard to put "in place an integrated end-to-end solution for procurement and revenue tender processes, to facilitate electronic procurement and revenue tender activities easily and effectively" (PS21 Office 2001).

The convenience of buying online is reflected through the automated ordering process, the instant confirmation of orders and the online delivery of services. e-Procurement is recommended due to its user-friendly interface. Madam Cheng, Corporate Support Officer at Nanyang Polytechnic, who orders stationery via the GeBIZ system, agrees that "the system is easy to use" (PS21 Office 2001). Moreover, customers feel secure with the system and do not worry about whether the products can reach them on time since "the system updates the purchase order status once a new one is posted into the Supplier's inbox" (PS21 Office 2001). This suggests that GeBIZ has been successful in the market. As a result, by January 2001, there were 2,463 users and 131 GPEs registered on the GeBIZ system, and users made a total of 494 purchase orders valued at $6,375,006 (PS21 Office 2001). In 2006, 12,500 users access the GeBIZ portal everyday (Lee 2006).

Government to Employees (G2E)

Government to Employees (G2E) is defined as the interaction between government and its public servants. The main aims of G2E are to "facilitate the management of the civil service" and to improve communication among governmental employees in order to make "e-career applications and processing system paperless in E-office" (Tang 1991: 7).

At the moment, every ministry has its own website, which links to the www.gov.sg website. The workflow in the public sector can be coordinated vertically and horizontally thanks to these government portals. The integrated one-stop service among ministries has materialized through the use of one SingPass to access all government agencies' websites.

In terms of e-learning and knowledge management, Singapore concentrates on two main issues: IT education, knowledge provision and management. Public servants are empowered with IT skills to "enrich their careers and to keep them relevant in the e-economy" (Mahizhnan and Andiappan 2002: 256). The Infocomm Education program provides public servants with the necessary skills to increase their productivity and effectiveness. Such IT skills are very important for employees, not only for working in the public sector but also for increasing their market value if they decide to seek employment in the private sector.

Apart from IT skills, civil servants must also possess sufficient skills and knowledge to deal with emergency cases. They have to be equipped with knowledge and skills and learn how to manage such knowledge. Together with the "Knowledge Management Experimental Programme," the "Knowledge-based

Workplace Programme" and the "Knowledge Management Interest Group" also "flatten the learning curve through effective sharing of best practices and experiences" (Mahizhnan and Andiappan 2002: 256).

Due to the cross-border nature of e-transactions and the rapid development of globalisation, e-Government should also be developed at the international level. This should be demonstrated by coordination, cooperation, commitment and assistance within and between regions. This can be seen as Government to Government (G2G). Nevertheless, this paper only focuses on Government to Employees (G2E) because e-Government is the centre of the PS21[5] in Singapore.

SWOT and PEST Analysis

In this section, not only the SWOT but also the PEST (Law 2006) factors are examined to assess the current and prospective states of e-Government in Singapore by using a practical approach.

SWOT analysis is employed in this article to discuss strengths (S), weaknesses (W), opportunities (O) and threats (T) of e-Government in Singapore. Each of the four components of SWOT analysis is further examined according to PEST factors, referring to political (P), economic (E), social (S) and technological (T) determinants.

Strengths

The strengths of Singapore to develop and maintain e-Government lie with the public policy. This is an important *political determinant* in the PEST model. Singapore has enjoyed political stability since independence in 1965 and the People's Action Party (PAP) has been in government throughout that period. Due to the one-party government system, there has been little or no disruption of policy implementation, which has enhanced the effectiveness of the delivery mechanism of public services. This stability has created well-organized institutions that help all stakeholders to adopt e-Services. These bodies have also built up a strong legal foundation with regulations and guidelines to protect copyright and intellectual rights that create a secure online environment for users. Thus, the Singaporean government can strengthen its relationship with the public. This has been necessary for overcoming barriers in the process of building, maintaining and developing the nation.

In addition, well-defined schemes such as the light-touch or consensus approach in governing e-Commerce encourage the public and the private sectors to actively participate in e-Government (Lee 2005). The Class Licence Scheme encourages e-Businesses to classify themselves into different schemes to make it

easier for users to know about them and for authorities to monitor them. This requires a high level of self-regulation and self-discipline. Nonetheless, some businesses may take advantage of legal loopholes to offer online products with undesirable content. Ideally, market demand and intensive competition will force businesses to be more trustworthy in order to attract new customers and retain existing customers but this cannot be guaranteed.

The government has encouraged both the public and private sectors to contribute to the growth of e-Government by introducing eCitizen Helper 3P Partnership (People – Private – Public) (Government of Singapore 2005). This joint program provides the public with the means to adopt e-Services. This strategy reflects the capacity of Singapore in human capital development and capacity building. The government knows how to motivate and mobilize all stakeholders to participate in e-Services.

Regarding *economics*, Singapore has implemented radical economic policies to assist SMEs to "tap the schemes and benefits that await them by adopting e-commerce initiatives" (Ravindran 2003). The Singapore Quality Class helps to identify businesses that have the potential to expand internationally. The government then provides incentives to these enterprises to encourage and assist them to reach overseas markets. However, political stability and appropriate policies are not enough to create an awareness of e-Government. It needs sufficient funds to finance and enhance the system. The government has allocated $1.5 billion to push for e-Services (Tee 2000).

In 2005, the Singaporean government introduced a master plan to tackle security issues. S$38m (£12.3 million) will be invested in this plan to ensure a secure online environment (Yu 2005). A strong financial foundation helps to improve both physical and social infrastructure for the development of e-Government. Physical infrastructure refers to the resources needed for the development of e-portals and the operations of government agencies. Social infrastructure refers to the resources needed for training an Internet-proficient workforce. IT knowledge and skills will empower e-Users to overcome online obstacles.

Not only accounting cost but also economic cost has been considered when measuring the cost and benefit of e-Government. Economic cost refers to the opportunity cost of time, effort and convenience. Time saving, convenience and actual monetary savings are the main drives to pull e-Users to e-Services. Thus, incentives such as a lucky draw, free gifts, vouchers, etc. are given to e-Users. As mentioned above, the IRAS has encouraged tax-payers to submit tax

declarations electronically, and has extended the deadline for those who are willing to declare their incomes electronically. People who apply for their passports online can pay a lower fee.

The low cost of Internet subscription ($5 per month charged by Pacific Internet) and low cost of local phone calls (S0.1 per block of 30 seconds by SingTel Company) also lessens the burden for e-Users. Therefore, more people can afford to be connected to the Internet.

The *social strengths* of Singapore have been demonstrated by an educational system that produces a well-educated workforce to attract foreign direct investment (FDI). Not only developing its own pool of local talents, Singapore also recruits foreign talents to work in both the public and private sectors. Most FDI in Singapore was from Multi-national Corporations (MNCs) and foreign Small and Medium Enterprises (SMEs), which are familiar with the operations of e-Government. Ultimately, these corporations will engage in e-Services to cut costs and to improve their operations. They need employees with IT proficiency and the ability to learn fast.

A tech-savvy population and a well-educated IT labour force can participate in e-Government projects and can use these services effectively. The Singaporean government has introduced the National IT Literacy Program equipping "workers, homemakers and senior citizens" with basic computer and Internet skills (Tran 2003; Hu 2002). The e-Ambassador program has engaged celebrities to attract participants (Tran 2003). Non-IT trained civil servants can attend training sessions offered by the Civil College or the Infocomm Development Authority of Singapore to acquire the necessary IT knowledge and skills to improve their performance.

Nobody is excluded from this e-Project. The PC Re-use Scheme, initiated by the National Trade Union Cooperation, has provided affordable computers (either to sell or rent) to nearly 2,000 needy families in Singapore (Raoul 2001). "A network of Internet-enabled terminals at civic locations" has also been set up so that the public can easily and conveniently search the Internet (Hu 2002).

Technologically, Singapore has a high-tech based economy. Well-prepared infrastructure and the latest technology contribute to the rapid development and deployment of e-Services. Government agencies can share resources and services such as "payment, authentication and data exchange" that are "built-once, reuse-always" by employing available IT applications (Faculty of Business and Economics - Research Committee 2004: 2). As mentioned previously, security issues are also received much attention from the government.

Last but not least, innovation cannot be omitted in a knowledge-based economy with a web-based government. It is argued that "a spirit of innovation" is the key to the success of countries as well as to organizations (PS21 Office 2001). Technology, IT, ICT or other inventions become out-of-date quickly. Thus, continual innovation and creativity for better products and processes helps organizations and countries tackle the problems of obsolete technology. Lambe comments that "Singapore's innovation credentials are quite sound" (2002: 3). For example, Raybould (undated) considers PS21 a product of innovation of Singapore. Another example is the eCitizen Portal which helped Singapore win the Stockholm Challenge award in 2002 for excellence in using ICT to benefit the community (Stockholm Challenge 2006).

Weaknesses

Singapore still faces some *political* weaknesses. Traditionally, the public believe that the Singaporean Government always wants to introduce new methods and new approaches to earn more from the public. This belief may cause people to hesitate in trying e-Services. Other weaknesses are the public feelings of insecurity and concern about making mistakes and being fined. These issues discourage people from tapping into e-Services.

In terms of the *economy*, the SARS outbreak attracted much attention from the government in 2003, while combating terrorism threats has recently become the main concern. Thus, e-Government may become second on the agenda. Therefore, the resources for e-Government may be reduced in order to direct funds to prevent SARS or to fight terrorists. The SARS[6] outbreak in 2002 - 2003 also left a great impact on the economy (Asia-Pacific Economic Cooperation 2003) as did the war in Iraq in 2002 (Kyodo News International Inc 2002). Many people lost their jobs[7] and might not be able to apply for a credit card to pay for on-line purchases[8]. This may emerge as one of hindrances.

Socially, a large portion of blue-collar workers and the older generation are still computer illiterate. Others may find it difficult to follow instructions on the Internet or may be discouraged by computer-related problems. So, although the government tries to ensure "access for all" (Hu 2002), some people may not have the chance to access information on-line. They may have to go to e-stations to browse the Internet which can be an inconvenience if people want to access the Internet at night or if they have to wait for sometime to use a computer.

Technologically, less IT-savvy people and the older generation are afraid of computer related problems. Some government websites are not friendly-users.

Thus, these websites attract few people. Time is another issue. Internet users may have to spend a lot of time on the Internet when there is heavy traffic on the Internet highway or the Internet connection is very slow. It may even take hours to download a webpage with graphics and voices.

Opportunities

In spite of the abovementioned shortcomings, there are many opportunities for e-Government to grow in Singapore. The *political willingness* of leaders in ASEAN countries to build and link countries in the region through a cyber highway creates an opportunity for governments in the region to show their commitment to e-Government. With the support from different governments, resources (human capital, physical capital, etc.) may be pooled to develop strategies for planning, implementation, monitoring and the modification of G2G within and between countries.

Concerning *economics*, people with IT proficiency have better opportunities for employment since computer literacy is a requirement for most industries in Singapore. Thus, people are motivated to learn computer skills. Time constraints are another motive to urge the public to adopt e-Services. Most people who use e-Services can save time and effort when shopping for public services online. The recent Free Trade Agreements signed between Singapore and the USA and between Singapore and Australia are predicted to create more opportunities for domestic suppliers to reach overseas markets. At the moment, business competition between competitors is becoming more intensive. Information and timing are important factors in bringing about success in doing business. It is the Internet that can help businesses to narrow the gaps between ordering, delivering and monitoring the flow of information.

Socially, if the SARS outbreak and terrorist threats hinder economic growth, they may arouse the re-development of dot.com companies, as customers may prefer to shop online in order to avoid crowds. Thus, e-Users could eventually turn to e-Services to get information faster and to purchase public services.

Finally, the introduction of Broadband enables e-Customers to connect to the Internet faster. The development of new *technology* applications presents opportunities for better, cheaper and more efficient e-services.

Threats

Currently, cyber-terrorism emerges as a threat to e-Government. For example, "terrorists' technological capabilities have greatly advanced" and terrorists

will use the web to "strike critical infrastructure like water systems or power plants" (Ho 2003). Singapore has not been spared from such threats. These issues are crucial to Singapore due to its small size and lack of natural resources. In addition, censorship, as the main approach in regulating the Internet, also complicates the investigation of cyber-terrorism (Ho 2003). It requires a lot of time, manpower and technology to trace such cyber offences.

Politically, opposition organisations may take advantage of the Internet to spread propaganda on their ideologies and to create social disorder. However, this may not be a big issue in Singapore due to the tight control of the government and the weak activities of opposition parties.

Security breaches are another problem for e-Government (Thompson 2002). The loopholes in the legal system and advanced technology make it easy for hackers to penetrate government websites and steal confidential information. This will create insecurity among e-Users who then may not be so willing to go online. For example, they may be unsure if their particulars are protected or if they will be more vulnerable to junk emails.

Internet and computer related crimes, such as hacking, scam, spam, phishing or identity fraud and theft, will hinder the development of e-Government. Since the most popular mode of online payment is by credit card, security becomes a major problem. If problems relating to security and privacy are not properly addressed, e-Users could hesitate to give credit card details and thus may not want to use e-Services.

Where issues of copyright and intellectual property are not fully and properly addressed, businesses may hesitate to communicate and disseminate information online.

Further, an *economic* threat exists if increases in the oil price flow through to higher charges for broadband subscriptions which financially burden e-Users. However, the relatively low charges for broadband suggest that that is unlikely.

Social threats include the rapid development of telecommunication such as mobile and SMS technology. The lower cost of hand-phones (the Singaporean term for cell phones) provides an incentive for people to switch from the Internet to SMS. For example, National Service personnel can apply to the Singapore Immigration & Checkpoints Authority for exit permits to go overseas by SMS and television news headlines can be received via hand-phones. Information about current affairs and carrying out some other activities is faster through hand-phones rather than by using e-Services.

Finally, the dependence of people on *technology* may produce the adverse ffect of "people serving technology, instead of technology serving people" (Mahizhnan and Andiappan 2002, p. 259). For example, if e-users are not well equipped with IT skills and knowledge, it can take them hours to retrieve corrupted documents. An electronic crisis may disrupt activities and the whole country could be paralyzed without any Internet connection. Computer viruses, worms and computer bugs discourage e-Providers from storing data and information online. Network problems are also a major barrier. Users may feel helpless when they have to deal with technological problems. Furthermore, a proportion of Singaporeans may not have equal opportunity to access the Internet (Mahizhnan and Andiappan 2002) even though the government has tried to reach as many users as they can by providing access points at libraries and community centres.

The SWOT and PEST analysis is summarized in the Table 1.

Overall, e-Government in Singapore has been rapidly developed and public services have been more effectively and efficiently delivered to the public via online channels. Apart from five thrusts and six programs, Singapore has prepared to embark on another program called iGov2010 which aims to increase the "reach and richness of e-services" and encourage more public e-engagement (Lim 2006: 3). Consequently, Singapore is considered one of the leaders in e-Government in the region (Research Institute of E-government (Waseda University) 2005; West 2006). Some other Asian Pacific countries or regions also contribute to the development of the e-Realm. For example, Taiwan is a pioneer in "electronic voting" (Trish 2001). Hong Kong is the top country in Asia in terms of e-Readiness in 2005 (Economist Intelligence Unit 2002). China has also joined the "e-race" in 2005, while New Zealand is well known for its e-Procurement since 2004 (Trish 2001). Also, Western Australia, with its Government Electronic Market (GEM), "processed about 500,000 transactions" in September 2000 (Trish 2001).

Overall, e-Government has been well developed in Singapore. Yet, the future state of e-Government in Singapore depends on a favourable political, economic and technological environment at regional and international scales.

Table 1: Summary of SWOT and PEST analysis of e-government in Singapore

SWOT/ PEST	Strength (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
Political aspect (P)	▪ Public policy (e.g. Class Licence Scheme) ▪ Cooperation between the public and private sectors	▪ Conservation in trying e-Services	▪ Political willingness	▪ Cyber terrorism and cyber crimes ▪ Security breach and copyright issue
Economic aspect (E)	▪ Economic policies (e.g. Singapore Quality Class) ▪ Funds for e-services to improve social and physical infrastructure ▪ Low cost of Internet subscription	▪ SARS outbreak and terrorism receive more attention ▪ Unemployment	▪ IT-proficient people can have better opportunity for employment	▪ Higher cost of living and higher broadband subscription due to higher oil price
Social aspect (S)	▪ Educational system (e.g. national IT Literacy program) ▪ Recruitment of foreign talents ▪ Tech-savvy population (e.g. e-Ambassadors, PC Re-use scheme)	▪ Workers and older generation are computer illiterate	▪ SARS outbreak was one of the factors encourage more online shopping, including e-Services	▪ The rapid development of mobile and SMS technology
Technological aspect (T)	▪ High-tech based economy ▪ Innovation	▪ Some government websites are unfriendly-user ▪ Over-capacity of the Internet highway due to heavy traffic	▪ Broadband facilitates faster connection.	▪ Dependency on IT, i.e. small technical problems will disrupt the entire networks

Conclusion

e-Government in Singapore has been well developed with five thrusts and six programs. The five thrusts are (i) providing more e-Services, (ii) building new capability and new capacity to sustain the operation of e-Government, (iii) being innovative and creative to prevent deploying outdated technology, (iv) being sensitive and responsive to customers, and (v) demonstrating leadership and political willingness. The six programs are (i) Knowledge-based Workplace, (ii) "Infocomm Education", (iii) "Electronic Services Delivery", (iv) "Technology Experimentation", (v) "Adaptive and Robust Infocomm Infrastructure", and (vi) Operational Efficiency Improvement" programs. E-Government in Singapore aims to deliver services to three main groups: (i) citizen (G2C), (ii) business (G2B) and (iii) employees (G2E).

Many strengths and opportunities fuel the development of e-Government in Singapore such as sound economic policies, political willingness, robust educational system to generate tech-savvy future employees and low cost of phone calls. However, Singapore also faces new threats and challenges such as the significant increase in the number cyber crimes, security and privacy concern.

In general, Singapore has successfully developed a strong foundation for e-Government. Singapore has invested adequate resources and demonstrated commitment to improve the provision of public services online. Sound policies, clear objectives and strategic planning are factors contributing to e-Government success. Singapore has also prepared to deal with future threats.

Further research can focus on how Singapore develops Government-to-Government (G2C) to foster ties among nations in the region.

Notes

[1] Mahizhnan and Andiappan (2002) argue that e-Government must be customer-centric, and civil servants must not become "civil masters" who "place their own administrative convenience above citizens' needs" (p. 252). To balance this relationship, citizens must be treated as customers and must have the right to opt for online or offline services. Marche and McNiven (2003) also comment that e-Services must be delivered in a way that will ensure that customers are retained.

[2] 'SingPass' is short for Singapore Personal Access, which is used as a password to access government e-Services. Only Singaporean citizens, permanent residents and valid Employment & Dependant Pass/S-Pass holders or eligible valid Work Permit holders can secure SingPass. For further information, see Singapore Government 2006.

[3] CPF stands for Central Provident Fund Board, which is a statutory agency, helping Singaporeans to save for their retirement. Information about the CPF Board can be accessed at www.cpf.gov.sg.

[4] All NSmen (National Service men) who want to stay overseas for more than six months need to apply for an Exit Permit (EP). They can apply for an electronic EP via the Internet at www.ns.sg (Ministry of Defence (Singapore) 2004). [5] PS21 stands for "Public Service for the 21st Century" which aims to attain a higher quality of public service in order to be more responsible and responsive to the needs of the public and to create a conducive environment for continuous changes and improvement for greater efficiency and effectiveness (PS21 Office 2005).

[6] SARS stands for Severe acute respiratory syndrome

[7] The annual average unemployment rate in 2003 was the highest at 4% since 1993, followed by 3.6% in 2002 and, 3.4% in 2004 and 3.1% in 2005 (Ministry of Manpower (Singapore) 2006).

[8] One of conditions to apply for a credit card in many banks in Singapore is to have a minimum income of S$30,000. More information can be accessed at author date www.dbs.com

References

Asia-Pacific Economic Cooperation. 2006. *Economic impact of SARS on the APEC region (submitted by Economic Committee)*. Asia-Pacific Economic Cooperation 2003 [cited 13 Sep 2006]. Available from http://www.apec.org/apec/documents_reports/senior_officials_meetings/2003.html.

Clift, Steven L. 2004. e-Government and democracy. Representation and citizen engagement in the information age. *Publicus.Net*:41.

Economist Intelligence Unit. 2002. Corporate governance - The new strategic imperative. *The Economist*.

Elections Department Singapore. 2005. *Sitemap*. Government of Singapore, 15 Sep 2005 [cited 30 Sep 2005]. Available from *http://www.elections.gov.sg/sitemap.htm*.

Faculty of Business and Economics - Research Committee. 2004. 2004 Review of research units and centres.

Feedback Unit. 2005. *Feedback channels*. MCYS 2004 [cited 16 Sep 2005]. Available from *http://app.feedback.gov.sg/asp/index.asp*.

Fung, Meil Lin. 2006. *Looking for true e-Government? Singapore gets it right*. CRMGuru.com 2004 [cited 13 Sep 2006]. Available from *http://www.crmguru.com/articles/2004/Looking_for_True_E-Government_Singapore_Gets_It_Right/n*.

GeBIZ. 2005. *Glossary*. GeBIZ 2005 [cited 16 Sep 2005]. Available from *http://www.gebiz.gov.sg/partner_faq_gs_reg_tp.html*.

_____. 2005. *Overview for payment for user accounts*. GeBIZ 2005 [cited 30 Sep 2005]. Available from *http://www.gebiz.gov.sg/bill_index.html*.

Government of Singapore. 2005. *eCitizen - About us*. Government of Singapore, 29 April 2005 [cited 5 September 2005]. Available from *http://www.ecitizen.gov.sg/about_us.html*.

_____. 2005. *eCitizen Helper Service*. Government of Singapore, 31 Aug 2005 [cited 30 Sep 2005]. Available from *http://www.ecitizen.gov.sg/eCitHelp/Org.html*.

_____. 2005. *Government services - Do it online!* Government of Singapore, 27 Sep 2005 [cited 30 Sep 2005]. Available from *http:// www.ecitizen.gov.sg/.*

_____. 2005. *Services.* Government of Singapore, 2 June 2005 [cited 30 Sep 2005]. Available from *http://www.business.gov.sg/service.htm.*

Ho, Ka Wei. 2003. Cyber-war on terror: The check's in the e-mail. *The Straits Times*, 10 May 2003.

Hu, Richard. 2002. Speech by Dr. Richard Hu. Paper read at The CPA Australia 7th Asian Regional Conference, 17 Aug 2001, at The Mandarin Hotel, Singapore.

Hughes, Vern. 2003. Power to the people: Bringing social policy into the new century. Paper read at 'Toward Public Value?: Management and Employment for Outcomes' Conference, 24 November 2003, at Monash University, Melbourne.

Infocomm Development Authority of Singapore (IDA). 2006. *Singapore launches electronic commerce masterplan.* Infocomm Development Authority of Singapore (IDA) 1998 [cited 13 Sep 2006]. Available from *http:// www.ida.gov.sg/idaweb/media/infopage.jsp? infopagecategory= ncbarchivemediareleases.mr:media&versionid=5&infopageid=I1008.*

_____. 2005. *Fact sheet on Singapore's e-Government action plan.* The Infocomm Development Authority of Singapore (IDA) 2000 [cited 5 September 2005]. Available from *http://www.ida.gov.sg/idaweb/media/ infopage.jsp?infopagecategory=factsheet:aboutida&versionid= 5&infopageid=I853.*

_____. 2005. *Overview: e-Government Action Plan II (2003 - 2006).* IDA Singapore, 22 July 2004 [cited 5 September 2005]. Available from *http://www.egov.gov.sg/PlansandStrategies/e-GovernmentPlans/ eGovernmentActionPlanII/index.htm.*

_____. 2005. *Singapore gears up to be leading e-Government to better serve the nation in the new digital economy.* The Infocomm Development Authority of Singapore (IDA), 6 June 2000 [cited 5 Sept 2005]. Available from *http://www.ida.gov.sg/idaweb/marketing/ infopage.jsp?infopagecategory=egovernment.mr:media&versionid= 3&infopageid=I369.*

_____. 2003. A common password for all. *eGovernment Newsletter* 8 (Aug 2003):2.

_____. 2003. Advancing E-services in Singapore. Lessons from Singapore Organisations. *eGovernment Newsletter* 7, Jan 2003.

_____. 2003. Share your opinions, they count! *eGovernment Newsletter* 8 (Aug 2003):4.

_____. 2003. *The Singapore eGovernment Action Plan*. The Infocomm Development Authority of Singapore (IDA) 2000 [cited 5 April 2003]. Available from *http://www.ida.gov.sg/Website/IDAContent.nsf/ vSubCat/Government+ComputerisationThe+Singapore+e-Government+Action+Plan?OpenDocument*.

_____. 2002. Applying for passport? *eGovernment Newsletter* Aug. 2002 (Issue 6):8.

_____. 2002. Litigation with an E-dge. *eGovernment Newsletter* Aug 2002 (Issue 6):7.

_____. 2002. Mobility on the job. *eGovernment Newsletter* Aug 2002 (Issue 6):5.

International Telecommunication Union (ITU). 2005. *Democracy and SMS*. International Telecommunication Union (ITU), 22 August 2005 [cited 5 September 2005]. Available from *http://www.itu.int/osg/spu/wsis-themes/ict_stories/Themes/e-Democracy.html*.

Khaw, Boon Wan. 2002. Welcome address by the Government of Singapore. Paper read at ICA 36th Conference in Singapore, 22 - 24 October 2002, at Singapore.

Kyodo News International Inc. 2006. *Port strike, Iraq War may force Singapore to cut GDP forecast*. Kyodo News International, Inc 2002 [cited 13 Sep 2006]. Available from *http://findarticles.com/p/articles/ mi_m0WDP/is_2002_Oct_14/ai_94330237*.

Lambe, Patrick. 2006. *Singapore's innovation journey*. Straits Knowledge 2002 [cited 13 Sep 2006]. Available from *http://www.greenchameleon.com/ thoughtpieces/innojour.pdf#search=%22innovation%20 in%20Singapore%22*.

Law, Jennifer. 2006. Managing change and innovation in public service organisations. *Public Administration* 83 (3):p. 794.

Lee, Ching Wern. 2006. *SMEs Discover new business opportunities*. Defense Science & Technology Agency (DSTA), 30 Aug 2006 [cited 13 Sep 2006]. Available from *http://www.dsta.gov.sg/Home/DisplayPage/ ContentPage12.asp?id=3016*.

Lee, John. 2003. *Canada leads world in e-Government but biggest challenges lay ahead - Technology in Government 2002* [cited 24 April 2003]. Available from www3.telus.net/johnlee/egovernemnt.html.

Lee, Terence Lee. 2005. Internet control and auto-regulation in Singapore. *2005 Surveillance & Society* Vol. 3 (Issue 1):75 - 95.

Leo, Kee Chye. 2002. Singapore government to offer more integrated e-Services. *Business Times*, 20 May 2002.

Lim, Roland. 2006. Connecting citizens and the government. *Business Times*, 5 June 2006.

Mahizhnan, Arun, and Narayanan Andiappan. 2005. *e-Government: The Singapore*. Tamil Internet 2002 [cited 5 September 2005]. Available from *http://www.infitt.org/ti2002/papers/60ARUN.PDF*.

Marche, Sunny, and James McNiven. 2003. e-Government and e-Governance: The future isn't what it used to be. *Canadian Journal of Administrative Science* 20 (1):pp. 74-86.

Ministry of Defence (Singapore). 2006. *Notification of overseas travel*. Ministry of Defence, Singapore 2004 [cited 13 Sep 2006]. Available from *http://www.mindef.gov.sg/nsmen/2_travel.asp*.

Ministry of Manpower (Singapore). 2006. *Unemployment.* Ministry of Manpower (Singapore) 2006 [cited 13 Sep 2006]. Available from *http://www.mom.gov.sg/Statistics/ManpowerResearchNStatistics/LabourMarketStatistics/Unemployment-print.htm*.

Network for Electronic Transfers (S) Pte Ltd. 2005. *eNETS lets you pay from your credit card*. Network for Electronic Transfers (S) Pte Ltd 2005 [cited 30 Sep 2005]. Available from *http://www.nets.com.sg/enets/pay_credit.html*.

PS21 Office. 2006. *Background: Public service for the 21st century.* PS21 Office, Prime Minister's Office 2005 [cited 13 Sep 2006]. Available from *http://app.ps21.gov.sg/newps21/default.asp?id=21*.

——————. 2005. *Highest national recognition for innovation in Singapore*. PS21 Office, Prime Minister's Office, Public Service Division, 6 June 2001 [cited 5 September 2005]. Available from *www.ps21*.

PS21 Office, Prime Minister's Office. 2002. More services with eCitizen Portal revamp. *Challenge* 8 (5):9.

Raoul, Le Blond. 2001. Nothing but Net, bring back the "green" screen. *ComputerWorld* Vol. 7 (Issue 18).

Ravindran, N. 2003. e-Commerce is bouncing back. *The Straits Times*, 19 April 2003.

Raybould, Denise. 2006. *Using knowledge to unlock innovation: The Innovation Roadmap.* BDO Kendalls undated [cited 13 Sep 2006]. Available from *http://www.actkm.org/userfiles/File/actkm2005conf/ P r e s e n t a t i o n s / R a y b o u l d % 2 0 - % 2 0 I n n o v a t i o n % 2 0 Roadmap.pdf#search=% 20innovation% 20in%20PS21%20in% 20Singapore%22.*

Research Institute of e-Government (Waseda University). 2006. *2006 Waseda University e-Government Ranking released.* Research Institute of E-government (Waseda University) 2005 [cited 13 Sep 2006]. Available from *http://www.obi.giti.waseda.ac.jp/e_gov/2nd_rankings_en.pdf.*

Singapore Accounting and Corporate Regulatory Authority. 2005. *ACRA BizFile list of services - Menu of BizFile services.* Singapore Accounting and Corporate Regulatory Authority 2004 [cited 16 Sep 2005]. Available from *http://www.acra.gov.sg/news/news14.html.*

Singapore Government. 2006. *Singapore Personal Access* [cited 18 Sep 2005]. Available from http://www.ecitizen.gov.sg/singpass/faq.htm

Singapore Sports Council. 2006. *Sports facilities.* Singapore Sports Council 2005 [cited 13 Sep 2006]. Available from *http://www.ssc.gov.sg/ SportsWeb/sw_cat_details.jsp?type=9&root=31&parent=112&cat =582.*

Stockholm Challenge. 2006. *The eCitizen Portal. Tagline : Government Services - A click away* Stockholm Challenge 2006 [cited 13 Sep 2006]. Available from *http://www.stockholmchallenge.se/projectdata. asp?id=5&projectid=4622.*

Tan, Helen. 2002. Better services for you. *The Straits Times*, 12 June 2002.

Tang, Fang Fang. 1991. Fuzzy preferences and social choice. In *91-01*: University of Birmingham.

Tee, Edmund. 2000. $1.5 Plan to put public services online. *The Straits Times Interactive*, 7 June 2000.

Thompson, Bill. 2002. The problem with e-Government. *BBC News*, 7 June 2002.

Thum, Choon Fang. 2001. Public service sector in Singapore: PS21. Singapore: Development Bank of Japan - Representative Office in Singapore.

Tran, Thanh Hai. 2003. *e-Government: Toward enhanced governance and best public services*. Singapore: Public Policy Program, National University of Singapore.

Trish, Saywell. 2005. *Electronic Bureaucracy*, 21 June 2001 [cited 5 September 2005]. Available from *http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan001663.pdf*.

West, Darrell M. 2006. *Global e-Government, 2006*. InsidePolitics.org 2006 [cited 13 Sep 2006]. Available from *http://www.insidepolitics.org/egovt06int.pdf*.

Yu, Eileen. 2005. Singapore unveils cybersecurity masterplan. *CNET Networks*, 23 Feb 2005.

Chicago. Ha, Huong. "A New SWOT Analysis of an E-Government System: Singapore Case." In Integrated Information and Computing Systems for Natural, Spatial, and Social Sciences. edited by Claus-Peter Rückemann, 74-95. Hershey, PA: IGI Global, 2013. http://doi:10.4018/978-1-4666-2190-9.ch004.
 This chapter aims to (i) discuss the current state of the e-Government system in Singapore, (ii) provide a SWOT (strengths, weaknesses, opportunities and threats) analysis of this e-Government system, and (iii) make policy recommendations on how to address challenges, facing e-Government in order to enhance public trust via the effective and efficient delivery of public services. This paper employs the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and PEST (Political, Economic, Social and Technological) determinants to evaluate the current state of e-Government in Singapore and its preparedness. In short, Singapore has successfully developed a strong foundation for e-Government. Many strengths and opportunities fuel the development of e-Government in Singapore such as sound economic policies, political willingness, robust educational system to generate tech-savvy future employees and low cost of phone calls. Singapore has continuously improved in ord SWOT and PEST analysis are two valuable tools that offer valuable insights into your company and its position in the world. These analyses are meant to provide you with an objective look and the information you need to make informed, mature decisions. After the PEST analysis is completed, it's time to conduct a SWOT analysis. This will help you understand your company in context of the outside world, including weaknesses that you may not have considered weaknesses before the PEST analysis. The same can be said of strengths: You may find that what you considered a strength in your own country before conducting a PEST analysis is actually a weakness in a different market. Ready to start your SWOT and PEST analysis? Open a template in Lucidchart.