E-Commerce in Singapore

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1. Introduction

In the fast moving world of e-commerce, businesses are rushing to gain a share of this rapidly evolving market. Forrester Research predicts worldwide e-commerce will reach US$6.8 trillion from $657.0 billion in 2004. North America will continue to be the global e-commerce leaders, contributing US$3.5 trillion in online business but the region’s dominance will be eclipsed as some Asia Pacific and Western European countries hit hypergrowth over the next two years.

Despite the 1997/98 financial crisis that swept through the Asia Pacific, Internet and E-Commerce growth rates are among the highest in the world. According to IDC research, the number of Internet users in the region is projected to grow from around 15 million in 1998 to almost 100 million by 2003. The United State’s current dominance of the Internet, estimated to be 42 percent of global users, is expected to drop to 36.9 percent by 2005. Western Europe with 30 percent and the Asia Pacific with 27 percent are expected to grab a large proportion of Internet expansion.

Not surprisingly, Malaysia’s number one IT growth area is the Internet. China’s estimated number of Internet users has nearly doubled to 17 million in the first half of this year. Seventy-five percent of Singapore’s businesses have at least one computer and 81 percent of these businesses are linked to the Internet. Related data show
Singapore’s household computer penetration is around 59 per cent and Internet access is at 42 percent. These figures put the Lion City ahead of the United States, Australia and Japan.

2. Race to wire

Governments in the region are talking about re-inventing their economies. New ways are seriously being explored to leverage the use of technology to fast track, if not leapfrog to the next stage of development – advanced industrialisation status. The vision: position the country as a major knowledge based, high value added economy. The strategy: transform the economy through "technopreneurship" and e-business by taking advantage of the Internet. The scheme: create local Silicon Valleys that will drive towards a vision of a high tech future. Three countries have chosen to implement grandiose schemes: Malaysia’s with its 700 sq. km multimedia utopia, the Multimedia Super Corridor; Hong Kong’s $1.7 billion Cyberport to Singapore’s "wired island" girded with high-speed networks.

Four significant factors are playing a crucial role in Asia’s information and communication technology explosion: the region’s economic resurgence, renewed foreign and domestic investments; telecommunication industry liberalisation; and increase in Internet usage.

However, one factor may pose a challenge to ‘real’ development of e-commerce in the region: the capacity of government to respond quickly enough to create a condition that encourages its growth in an ever changing and dynamic environment. Unlike the United States, the governments in the region, historically and culturally, applies a centralised approach to economic development.

Examining Singapore’s high tech vision, what strategies has the city-state adopted in taking advantage of the growth potential of e-commerce? How are its strategies progressing?

3. The wired state

For a small city-state with a population close to 4 million, Singapore takes its information and communication technology (ICT) vision very seriously. Its strategy to transform its economy into a net-economy is comprehensive - invest in large-scale information infrastructures; remove barriers to private sector participation; nurture a skilled workforce; and create a fertile policy environment. Indeed the thinking is that this critical mass of simultaneous investment and policy initiatives will set in motion a self-perpetuating growth process for e-commerce.

The recent World Competitiveness Yearbook 2000 ranked Singapore as the top in Asia and fourth in the world, for e-commerce infrastructure. The Economist Intelligence Unit 2000 also ranked the republic as No. 1 in Asia and eighth internationally, for e-business readiness.
Since 1994 the online population of Singapore has grown from zero to 700,000 and is expected to grow to 1.5m by 2003. E-commerce in Singapore is expected to increase to $US 1 billion (A$1.6 billion) by 2001. IDC projects e-commerce revenues to grow from less than US$100m (A$168 m) in 1998 to nearly US$1.5 billion (A$2.5 billion) in 2003. It is also estimated that total e-commerce revenues will be evenly split between B2B and B2C and supply chain segments.

How does Singapore plan to develop a knowledge-based, high value-added net economy?

4. The masterplan

At the opening of CommunicAsia99, the region’s largest IT and communication trade show, Yeo Cheow Tong, Minister for Communications and Information Technology announced the plan to "dot-com the 3Ps" – the people, private and public sector. This is laid out broadly in the government’s 10 year master plan, the Information and Communication Technology 21 (ICT21). ICT21 is also intended to build on the achievements of IT2000 and Singapore ONE. IT2000, a plan initiated in 1992, was aimed at transforming the nation into an intelligent island by rolling out broadband networks to link homes, schools and workplace. Singapore ONE is the government’s high speed, high capacity platform to deliver rich and interactive content and services including news-on-demand, entertainment, distance learning, online shopping, electronic commerce services, government services as well as fast Internet.

Four crucial strategies are being implemented to develop Singapore’s e-commerce environment: internationally competitive telecommunication industry; infrastructure services; human resource development; and creating a conducive policy environment.

5. The new telecommunications regime

On 1 April 2000 Singapore opened wide its telecommunication sector to local and foreign competition. The plan initially set for 1 April 2002 was brought forward by two years. The liberalisation of the industry makes Singapore one of the last major Asian economies to end its fixed-line and international-call monopoly. Previously, the only competition in telecom was in the paging and cellular phone area.

Under the liberalisation drive, more than 130 telecom licenses were issued. Already the change to Singapore’s telecommunication industry is starting to have an impact. It was reported that as a result of the changes, S$3 billion (A$2.9 billion) in investment was generated. In the first two months following liberalisation, IDD rates fell by up to 59 percent or an average of 20 percent across the board. Mobile phone costs have also been falling fast. Analysts expect by the end of this year, phone costs could be as much as 80 percent cheaper than then were a few months ago.

Another significant impact of Singapore’s liberalisation drive is the awarding of new facilities and service-based licenses to local and foreign firms. Local company such as Pacific Internet Ltd., one of now six major Internet Services Providers (ISP) was
awarded a license to roll out voice and data services. This move enables Pacific Internet to offer a full suite of services and e-business support, which were previously restricted under the old telecom regime.

Along with the liberalisation drive, a new initiative is currently in development. The government is writing a new telecom industry code that is aimed particularly at promoting competition, accessibility, market conduct and self-regulation. The final version of the code is planned for release in mid-September 2000.

6. E-Commerce infrastructure services

Singapore’s infrastructure that supports e-commerce is quite comprehensive and continues to evolve rapidly.

5.1 Network services

Network services that link online businesses have been expanded with the liberalisation of ISPs and introduction of Singapore ONE’s broadband network access providers.

In September 1999, in an unexpected move, the Telecommunication Authority of Singapore (TAS) completely liberalised its Internet market. Limits on foreign ownership, previously restricted to 49 percent for ISP and Internet exchange service providers (IXSP), were lifted. The number of ISPs have increased from three in 1999 – SingNet (owned by SingTel, the country’s former monopoly telecom carrier); StarHub and Pacific Internet - to six. The new players include Data One – a joint venture between Keppel T&T media company Singapore Press Holding Ltd. – Cable & Wireless Asia; and MCI WorldCom’s Uunet.

This may be compared to Malaysia with a population of 23.5 million, with only four ISPs. In Australia with a smaller population of 18 million, there are approximately 900 ISPs.

An integral part of the government’s network service initiative is the delivery of high speed Singapore ONE broadband network access (BNA). Currently two companies have been given licences to operate as BNA providers – SingTel’s Magix and Singapore Cable Vision’s Cable Modem Service. The BNA has enabled core technologies such as ADSL (Asymmetrical Digital Subscriber Line) to provide broadband services to homes, schools and offices. ADSL technology connects two ADSL modems - one on each side of the telephone line - to allow the transmission of large amounts of information, via a broadband network. It allows transmission of voice concurrently while the modem is accessing data. Subscribers can be watching and surfing online while making and receiving phone calls.

5.2 Directory services
Another aspect of e-commerce infrastructure services is the function of directory services. Directory services allow customers to search for specific information on goods and services using various search criteria and search engines. To provide directory services the government has encouraged Internet search engines such as Yahoo and Excite to establish sites in Singapore. There are a number of sites that have been established to provide niche directory services. One example is Sintel Yellow Pages which provides contact information of people and organisations in the Singapore. Other examples of directory services are the National Contact Information Service; Singapore Shopping Village; Business Information locator, SingaporeConnect; and CalendarONE.

5.3 Security services

Security services, providing secure identification and secure communication over the Internet are another crucial feature of an e-commerce environment. IDA’s infrastructure for Electronic Identification (IEI) initiative provides secure communication and secure identification using digital certificates and digital signatures. The first digital certification authority for IEI Netrust Pte Ltd. enables parties to verify the identity of individuals and organisations over an electronic network.

5.4 Payment services

Another important element of e-commerce is secure payment services. A number of mechanisms available in Singapore includes:

- NETS Financial Electronic Data Interchange (FEDI), which is similar to inter-bank GIRO for sending payment and collection instructions electronically;
- NETS Network CashCard (C-ONE), which enables consumers to make low-value electronic purchases on the Internet with a stored value smart card;
- Secure Electronic Transaction (SET) which is a protocol developed by Visa and MasterCard to support secure credit card payments; and
- Commerce Toolkit, which is an alternative to SET that allows transmission of credit card instructions between online merchants and banks.

7. Skilled Workers

Access to skilled workers is a major issue for Singapore. A recent study commissioned by Infocomm Development Authority of Singapore (IDA), a body established by the government to drive the republic’s information and communication technology (ICT) development, reported that at the end of 1999, ICT skilled workers was estimated to be 92,800. The demand for skilled workers is projected to grow 10% - 12% per year for the next two years. This implies that the total number of ITC in Singapore will reach 114,000 by the year 2001. It is projected that Singapore will need about 250,000 ICT workers to achieve its masterplan by 2010.
To meet the growing demand, a new three-point initiative was recently launched to address the skill shortage. Strategy one: nurture IT skilled workers through collaboration with industry and higher education institutions to train students and those already in the workforce. Strategy two: develop a coordinated effort by government agencies to attract and retain skilled foreign talents. Strategy three: work closely with industry to establish and build Singapore into an e-learning hub.

To deal with the current IT shortage the government has opted to recruit foreign IT skilled workers. Singapore in the past few years has made considerable efforts to attract software engineers from India. The offer of permanent residency and citizenship and reducing bureaucratic red tape has given Singapore the edge over countries such as Malaysia in attracting Indian software engineers.

Initiatives to deal with ICT literacy – government has increased the skills development levy paid by employers to fund approved training courses for lower-paid workers. – training in skills related to IT.

8. Policy Environment

In the pursuit to establish Singapore as a "trusted global e-commerce hub", the government is developing guidelines and frameworks to make Singapore a more conducive environment for e-commerce. The new environment includes technical standards, a legal and regulatory framework, and various incentive schemes.

One significant development is the attempt to distinguish content or application providers from those who merely host content on behalf of others. The aim is to exempt the content ‘hosts’ liability for the content belonging to their customers. This falls in line with the government vision to encourage data ‘hubbing’ centres to be based in Singapore.

The government is also reviewing a range of legislation relating to online conduct, in particular the Electronic Transactions Act and Regulations and E-Commerce Code for Protection and Personal Information. Both Act will be reviewed to incorporate latest global legal developments. The Electronic Transaction Act established uniformed rules, regulations and standards regarding authentication and integrity of electronic records and electronic commerce.

Singapore has also established a set of open, industry-led, technical standards in the areas of network protocols, security, e-mail and directories, electronic commerce, and information sources and exchange.

9. High tech springboard

For a population of about 4 million, at first glance the country does not look compelling and attractive against the backdrop of Asia’s macro Internet and e-commerce expansion. But its speed and commitment to create a conducive investment and policy environment does position the city-state, as suggested in a
recent Goldman Sachs Investment Research, to provide a good test-bed and springboard to the Asian region. Singapore’s large manufacturing base and its location in a pre-dominantly commodity and manufacturing based region does offer foreign technology transfer opportunities particularly for B2B supply chain software and systems.

Even in the republic’s high tech vision and drive presents tremendous opportunities exist for foreign firms and universities to participate in the country’s ICT development. Recently, the government announced a new initiative of $1.5 billion to transform into an e-government, where business, community and bureaucracy can communicate and interact virtually. There will be a need for technology transfer and diffusion for ‘hard’ (eg. network, security, payment services) and ‘soft’ (education and training) information infrastructure

10. Conclusion

Singapore is positioning itself effectively to transform the island state into a knowledge economy. Its national ICT and e-commerce development plans present a dynamic model for other countries in the region to consider.