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Roles for Government and The Private Sector: Electronic Commerce in Singapore

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Abstract

Electronic commerce will be built on existing technology infrastructure of computers, communication networks, and communication software to form the information superhighway. The building of this information superhighway however, cannot be done by the government alone. While the use of the Internet for commerce has been coincidental, it must now be further developed based on a strong partnership involving the government, the industry, and the users. Both the government and the private sector play a vital role in supporting the pillars of the electronic commerce framework. An understanding of the roles of government as facilitator and that of the private sector as business strategists for electronic commerce to flourish and mature will enable us to further refine future strategic models of electronic commerce framework.

Introduction: The Changing Business Environment

The traditional business environment is changing rapidly as customers and businesses seek the flexibility to change trading partners, platforms, carriers, and networks at will. Many companies are looking outside their organization as well as within when shaping their business strategies. These activities include establishing private electronic connections to customers, suppliers, distributors, industry groups, and even competitors, to increase the efficiency of business communications, to help expand market share, and to maintain long-term viability in today's business environment. The information superhighway will expand this trend to another level all together. It will allow businesses to exchange information among constantly changing sets of customers, suppliers, and research collaborators in government and academia on a global basis. It will become a powerful business tool that no organization can do without [4].

Competitive strategies based on flexible manufacturing, rapid response, expanding variety, and increasing innovation are time-based. Inter-networking, whether internally or externally with customers and business partners, can be a useful tool to facilitate time-based competitive strategies [10]. Inter-networking via a public network infrastructure provides a firm with the pathways to conduct electronic commerce between trading partners, support collaboration with partners who can supply needed capabilities, and stay close to the customer [5].

This paper will address the infrastructure requirements for electronic commerce on the Internet, and examine the roles that government (using Singapore as an example) and the private sector play to create the business-to-business setting as well as the consumer-marketplace environment.

Electronic Commerce Industry Framework

Electronic commerce applications will most likely be built on existing technology infrastructure of computers, communication networks, and communication software to form the information superhighway. A variety of possible electronic commerce applications, including both inter-organizational and consumer-

oriented examples are depicted as an electronic commerce industry framework [4] in Table 1. None of these uses would be possible without each of the building blocks in the infrastructure.

The common business services infrastructure is needed to facilitate the buying and selling process while the messaging and information distribution infrastructure serves as a means of sending and retrieving information. The multimedia content and network publishing infrastructure provides the medium for creating a product and a means to communicate about it while the information superhighway infrastructure is the foundation for providing the highway system along which all electronic commerce must travel.

Kalakota [4] suggests that to support these infrastructures and application services, public policy to govern such issues as universal access, privacy, and information pricing and technical standards to dictate the nature of information publishing, user interfaces, and transport in the interest of compatibility across the entire network must be established. The government, the private sector, and the academia are involved throughout the layers of the framework.

The Government's Role as Facilitator

Over the past decade, Singapore has deliberately prepared herself to meet the new challenges of the information age. Through the development of a substantial national information technology (IT) capability, a positive environment exists for the private and public sectors to collaborate in exploiting IT for national competitive advantage.

The National Computer Board (NCB) of Singapore is the government agency tasked with the responsibility of transforming Singapore into an Intelligent Island by the year 2000. The Singapore Government is committed to working with the private sector to connect every classroom, library, hospital, and government agencies in Singapore to the national information infrastructure by the year 2000. Public institutions will be equipped to serve as access sites for households that are not hooked up to the information superhighway. People will be able to handle transactions with government agencies or private businesses electronically.

The building of the information superhighway cannot be done by the government alone. It has to be built on a strong partnership involving the government, the industry, and the users. The Singapore Government nevertheless, plays a major role in the information infrastructure development in order to ensure that leveraged developmental resources are available.

Singapore ONE

Singapore ONE, initiated in 1996 is a national high-capacity network platform that will deliver a potentially unlimited range of multimedia services to the workplace, the home, and the school. It comprises two distinct but interrelated levels (1) an infrastructure level of networks and switches, and (2) a level of applications and multimedia services.

The introduction of broadband capability into the residential setting will benefit consumer-oriented electronic product sales as well as afford workers and entrepreneurs the opportunity to conduct business in multiple settings [7].

Creation of this infrastructure will enable any government agency to securely interface and accomplish transactions with outside businesses and the general public through the use of secured World Wide Web servers, browsers, and client encryption tokens. An open platform will be created to ensure ubiquity for all agencies, as well as outside users.

Electronic Commerce Hotbed Program

In August 1996, the NCB initiated an Electronic Commerce Hotbed (ECH) program to speed up the realization of electronic commerce in Singapore. The program will: (1) bring together, coordinate and match-make various parties to jump start electronic commerce in Singapore, (2) provide support services to enable electronic commerce to happen, (3) demonstrate both technical and business feasibility of electronic commerce with real life applications, (4) provide a common platform to address technical and policy issues, (5) manage and ensure the smooth running of electronic commerce trials and applications, and (6) help create a critical mass of users and services [8].

Important issues that must be looked into include copyright/intellectual property, financial crime, tax, electronic banking/currency, content, international, universal service, labor, consumer protection, cryptography, and legal regulatory authority [9].

Under the ECH program, individual projects will be established to develop specific electronic commerce-enabled applications and to trial new and evolving technologies. A Technical Committee, chaired by the NCB, will oversee the management and progress of projects under the program. The Monetary Authority of Singapore (MAS), being the agency responsible for the financial sector in Singapore, will chair the Policy Committee of the ECH. The committee will involve participation from other government agencies and will be assisted by the legal and business academia from the National University of Singapore and the Nanyang Technological University. The National IT Committee, as patron of the ECH, will oversee and drive the overall direction of the development of electronic commerce in Singapore.

Several electronic applications have been initiated through the Electronic Commerce Hotbed Program, such as: shopping malls, banking and finance, fashion boutiques, arts and entertainment, sports and outdoors, travel and leisure, computer and software, food and beverages, etc. The program is rapidly gaining momentum and now has 70 participants. The program now also has five fully electronic commerce enabled sites, including a shopping site, where electronic shoppers can pay for their purchases via credit card [6].

The ECH brings many benefits to the key stakeholders in the emerging electronic commerce industry. Application providers will benefit from a common and accessible pool of infrastructure and support systems that will enable them to build electronic commerce applications quickly. Common issues can be addressed under the program, allowing developers to concentrate on adding value to their products. Technology providers and infrastructure service providers will have a consolidated channel for marketing their solutions. The ECH can also be used to trial and pilot electronic commerce technologies and to demonstrate products. Regulatory bodies will have a convenient mechanism to ensure that proper standards and controls can be implemented across applications. The ECH will enable this by providing a common platform for policy research into the legal, social and economic impact of electronic commerce [8].

Currently, efforts are being made to introduce more payment systems into the program. The Secure Electronic Transactions (SET) trial, utilizing Visa and Mastercard's SET payment protocol, will begin in April 1997. New plans for the ECH program include the announcement of an ECH technology roadmap and framework in the near future to keep partners abreast of issues such as how all the security frameworks will work together, and when they will be rolled out. The NCB also plans to hold electronic commerce workshops and training sessions, to let companies know the benefits of electronic commerce [6].

The Private Sectors' Role as Business Strategists

Electronic commerce is the cutting edge of business today. Broad goals of business-to-business electronic commerce are reduced costs, lower product cycle times, faster customer response, and improved service quality.

Early research by Cronin [1] on business use of the Internet postulated that integrating Internet applications into every stage of business processes would yield the most significant benefits for companies. The subsequent experience of a variety of businesses using the global network confirms that the Internet provides multiple avenues for improving corporate performance in key areas, such as information

management, communications, research and development, marketing, and customer relations. Nevertheless, the difference between a corporate presence on the World Wide Web and an integrated strategy for doing business on the Internet needs to be well understood. Cronin presented a model that will focus specifically on developing Web applications in the context of an overall Internet business strategy.

Strategic business applications of the World Wide Web match the intrinsic capabilities of the Internet with the specific goals and opportunities most relevant to a particular enterprise. No matter what the company size, planning for a Web site should encompass internal assessment of organizational as well as evaluation of pivotal product and market growth opportunities. A parallel external assessment should analyze the Internet connectivity and unmet needs of existing and targeted customers, track the activities of networked competitors and partners, and determine the mix of products, services, and networked information that will make the greatest impact on targeted audiences. Table 2 outlines the components of this dual assessment process [2].

The internal and external analysis of needs, competitors, and opportunities provides the foundation for an integrated, value-added approach to the Web. While such analysis is likely to identify multiple openings for advantage, it is not necessary to pursue every possible application simultaneously. Companies may identify a particular cluster of capabilities as being of primary importance for their initial network implementation and plan to phase in other functions. Many businesses open a Web server with a limited set of options and a prominent "under construction" notice. Over the long run, the expansion of Internet applications, especially in response to customer feedback, will add to the competitive value of the Web and keep the organization ahead of competition [2].

Conclusion

The Internet is a fairly new medium to conduct business in. Information services prevail on the Internet today. In the near future, the Internet will overtake mail order and phone orders, but for this to happen, many components will have to be improved to minimize risks to both the buyer and seller. Several methods are used today to protect the privacy of users and merchants.

The biggest morale boost to Internet-based commerce came in 1995 when Visa and Mastercard announced they would agree to a single mechanism to enable secure transactions over the Internet [3].

The issue of cash transactions will open the doors wide to business on the Internet. Although it is not here yet, a lot of players are working to make Internet-based commerce a reality. Much hope is riding with CommerceNet, a consortium of technology-oriented companies that has the charter of enabling business-to-business transactions on the Internet [3].

Competitive advantage on the Web starts with a company undertaking strategic planning to match the capabilities of the Internet with the central challenges of building and growing a business. These include identifying breakthrough business opportunities, assessing the competition, attracting and retaining customers, and adding value through integrated information management. This process is clearly different from the most simplistic of approaches to business on the Internet, which consists of opening up a Web site, adding some pre-published content, and waiting to see what happens. Strategic Web practices are individual to the organization and reflect the inter-connections of product, partnerships, customers, and competitive analysis.

Organizations that incorporate the core Internet capabilities into their plans for the Web will be in a much better position to realize a long-term return on their Internet investment in terms of international competitive value.

The government plays a very important role too in setting the infrastructure requirements for electronic commerce. The Singapore Government, for example, has spearheaded this effort to stimulate and promulgate the growth of electronic commerce.

Electronic commerce creates a whole new environment that needs close cooperation and coordination between the government and the private sector. There is definitely a role for both the government and the private sector in helping to nurture and flourish this new and exciting business environment of electronic commerce.

References & Tables available upon request.