

**E-GOVERNMENT: AN EXPLORATORY STUDY OF
ON-LINE ELECTRONIC PROCUREMENT SYSTEMS [CASE STUDY]**

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ABSTRACT

All around the world, governments are eagerly looking toward a digital future, but their view is obstructed by the challenges they face in the modernizing such vast enterprises. This study concentrates on a Government-to-Business (G2B) relationship in which the development and implementation processes of a government-based e-procurement system are explored. This study does not represent the overall picture of building an e-government, but it helps to bring out a number of issues which are currently challenging many e-government projects and can have further implications for other projects around the world. Finally, based on the findings, we learned that implementing e-procurement system within the context of e-government is rather complex and different from a normal B2B relationship. Specifically, three issues were identified from this study: continuous technical challenge, user preferences and institutional arrangements.

1. INTRODUCTION

In the electronic commerce (e-commerce) era, citizens and business owners having had increasing exposure to the offerings of the Internet and other digital tools such as wireless telephony now expect the same immediacy from one of their most important and often challenging relationships with their government. Now the opportunity exists to achieve significant and powerful breakthroughs that focus on benefits to the

customers of government services and programmes. Governments at national and local levels are racing to respond to citizens and business owners by adopting a whole range of e-commerce strategies. From Internet, web-based portals to digital kiosks in public buildings, governments at all levels are attempting to provide real time interactive lines of communication. Just as e-commerce diverged into the Business-to-Consumer (B2C) and Business-to-Business (B2B) sectors, e-government is also giving rise to two distinctive categories – Government-to-Citizens (G2C) and Government-to-Business (G2B). From a government's point of view, G2B application works with product and service providers in making a solid economic impact while greatly improving the convenience to citizens and operational efficiency of government agencies (e.g., an e-procurement system which permits vendors to submit tenders and participate in bidding for contracts on-line). G2C application, on the other hand, concerns more about providing one-stop services to its citizens (e.g., through e-government portals, citizens could access information and apply for government services). In a nutshell, e-government projects represent "using e-commerce technologies to streamline the delivery of their services to public, serving the citizens through diverse channels" (Papazafriropoulou and Pouloudi, 2000). While most governments are eagerly looking toward a digital future, their view is obstructed by the challenges they face in the modernising such vast enterprises. Thus, in developing an understanding of this complex task, this study concentrates on a G2B relationship in which the development and implementation processes of a government-based e-procurement system are explored. This particular G2B e-procurement system does not represent the overall picture of building an e-government, but it helps to bring out a number of complex issues which are currently challenging many e-government projects. Specifically, a case study of an e-procurement system developed and implemented by Singapore government is presented.

2. LITERATURE REVIEW: THE USE OF IT ON GOVERNMENT ACTIVITIES

Despite the increasing efforts of adopting web technology in recent years, most e-government efforts have concentrated on putting up a web page (Seavey, 1996). However, this organisation-focus has gradually changed to become a customer-focus serving citizens and trading partners directly by providing services, information and transactions directly. This has been termed as "electronic government," or "electronic commerce" within the context of government services (Stratford and Straford, 2000). A number of other definitions for e-government have been offered in the existing literature. For instance, e-government is considered as a guiding vision towards modern administration and democracy (Wimmer and Traunmuller, 2000). According to them, e-government as the guiding vision for the public sector is concerned with the transformation that government and public administration have to undergo in the next decades. Lawson (1998) suggested that e-government is one in which the public service operates in a "one-stop, non-stop" way, does "more for less," and "power is transferred to people." While Tapscott (1996) defined e-government as an "internetworked government," Nadler and Tushman (1997), on the other hand, emphasised that technology is only "one of the structural materials". Taking a more comprehensive view, Aichholzer and Schmutzer (2000:379) sees "e-government covering changes of governance in a twofold manner: (1) transformation of the business of governance, i.e. improving service quality delivery, reducing costs and renewing administrative processes; (2) transformation of governance itself, i.e. re-examining the functioning of democratic practices and processes. Lenk and Traunmuller (2000) claimed e-government as a powerful guiding vision for the transformation which government and public administration have to undergo in the next decades. They further suggested that e-government can be seen from four perspectives: the addressee's (citizen) perspective, the process (reorganization) perspective, the (tele) cooperation perspective, and knowledge perspective. In particular, they pointed out that e-government relies on a fundamental redesign of the interaction between public administration and citizens (including commerce firms) which is coupled with a reorganization of the business processes within public administration. According to Wimmer and Traunmuller (2000), the challenge of e-government is to find a successful way of re-engineering and distributing the administration's knowledge. In particular, Aicholzer and Schmutzer (2000) discusses 3 major organizational challenges faced by initiatives to implement e-government: (1) guiding principles and problems of restructuring administrative functions and process; (2) requirements of and barriers to coordination and cooperation within public administration; (3) the need to organize monitoring of performance in terms of e-government. More specifically, e-government initiative has been understood as

one of the following: (1) computerisation of government activities (Ahmad and Zink, 1998), (2) part of the document management issues of allowing access to government information (Christian, 1999), (3) recognition of the adoption factors of technology or Internet (Ahmad and Zink, 1998; Newell et al., 2000). Earlier studies on the computerisation of government activities suggest that significant changes have been introduced and have had fundamental influence on how government agencies conduct business (Caudle, 1990). As reviewed by Ahmad and Zink (1998), previous studies on the computerisation of government activities have been attributed to having increased efficiency and effectiveness, enhanced employee and manager satisfaction; faster and more accurate job performance; astute decision-making; improved control and supervisory functions; higher quality and reliability of information; and improved customer service satisfaction (Babcock et al., 1995; Chen and Klay, 1994; Esser, 1996; McDonough and Buckholtz, 1992). Also, the advent of computer technology in the role of e-government had a wide impact on the field of public librarianships (Aldrich, 1996; Laskowski, 2000). Some of the questions asked by the government document management researchers include: Would government documents librarians be able to ensure free and open access to government information in the new electronic environment? How would Federal Depository Libraries continue to provide their traditional “safety net” for public access to the democratic process? In other words, the focus is on the capability (ease and effectiveness) to provide connectivity and access (Ford, 1997; Turock and Henderson, 1996) from the user and document specialist point of view (Laskowski, 2000). The many issues related to government information in electronic format have been identified in a variety of studies and opinion articles that relate both positive and negative aspects of e-government. The list of issues includes “capability issues” of government libraries in providing electronic access (Ford, 1997); “ramifications” of government information in e-government (McConnell, 1996); the “elimination” of print-based information by on-line information (Aldrich, 1996). Finally, studies about U.S. local government have found that although many factors were important in the adoption of technology (Ahmad and Zink, 1998), one finding, in particular, has to do with the size of the population and its use of computers from a local government’s perspective. According to Norris (1984), the smaller the population of a local government, the lower per capita use of computing. Moreover, the form of local government also influences the adoption of computer technology (Agnew et al., 1978). Norris’ (1984) study of computer utilisation by 90 cities and 75 counties in the United States, found that characteristics like population, metropolitan status, city government type were associated positively with computer adoption. Later, in 1986, Lee reported that microcomputer adoption by government is driven by reasons such as quick implementation, cost effectiveness, software availability, privacy, and as replacements for ‘dumb’ terminals connected to main frames. Despite the continuous effort in understanding some of the implications derived from the ‘possible benefits’ of computerisation or digitalisation of government activities, there is no effort in understanding the dynamics of e-government implementation. Specifically, there are almost no studies that conceptualise the development and implementation of e-government systems. Thus, focusing on these processes becomes the main research objective of this paper. This study aims to explore the actual process of digitalizing government activities, especially on the procurement aspect.

3. ANALYZING E-GOVERNMENT INITIATIVE FROM A KNOWLEDGE-FOCUSED PERSPECTIVE

While most of the previous studies have focused on the government policy, the potential benefits and functional capabilities of e-government, the use of information technology and web-based technology (e.g. Internet) to digitalize government activities from a knowledge-focused perspective has not really been discussed earlier. What has been studied widely, however, are some of the individual factors influencing Internet use from a public policy perspective such as government policy (Faltch, 1998; Lan and Falcone, 1997), technical characteristics (Lan and Cayer, 1994), user preferences (Shangraw, 1986), psychological factors (Kawasaki, 1994), and institutional arrangements (Fletcher et al., 1992; Smith, 1999). Taking a similar view as Holsapple and Singh (2000), the study accepts the proposition that electronic commerce occurs within and among knowledge-based organisations in the knowledge-driven economy. We contend that it might be useful for our understanding of e-government initiatives to explicitly recognise the importance of knowledge and technology in managing it. In taking a knowledge-focused perspective, this

study recognises that an e-government (e.g. e-procurement) project takes more than computerising government activities. It incorporates a number of actors enacting the 'process innovation', rather than considered solely as an 'Information Communication and Technology (ICT)-based innovation' (Davenport, 1997; Ang et al, 1997; Roberts and Fوسفeld, 1981). Instead, we adopt a knowledge-focused perspective. Such a knowledge-based argument is similar to studies by Markus and Keil (1994) and Davenport (1992), which explore the importance of business process re-engineering as a means of implementing new technology. In this case, some of the actors involve include personnel of various government departments, agencies, IT engineers, vendors and many other participants in the supply chain. Such a complex and dynamic relationship, which can be found during the development and implementation processes of an e-procurement project, requires a multi-faceted perspective capable of analysing the dynamics in depth. In other words, an e-government project can be considered as an integrated effort of bringing knowledge-related activities together (Holsapple and Joshi, 1997). Specifically, the rationale behind adopting a knowledge focus in understanding the dynamics of e-government implementation is threefold. Firstly, both e-government projects and the knowledge-focused perspective are similar, in that they are multi-disciplinary and multi-faceted in nature. They both are concerned with how organisational efficiency can be enhanced through effective information and knowledge sharing across divisions and functions (Newell et al., 2000). Secondly, the need for process innovation to enable e-government implementation and improved knowledge sharing and integration is evident. Finally, the effectiveness of an e-government project and knowledge management for organisational competitiveness lies in their scope. Both approaches are typically designed and implemented on an organisation-wide basis, rather than a divisional or departmental basis. This study aims to help conceptualise the development and implementation of an e-procurement from a knowledge-focused viewpoint. This brings out the multi-faceted and multi-disciplinary nature of the processes as they unfold over time.

4. METHODOLOGY

Tempered by a significant lack of theoretical and empirical research, the issue of e-government development and implementation remains as an under-studied area of research. Consequently, the main objective of this research is to develop a richer understanding of this emerging topic. The research approach is exploratory based on an in-depth case study research design. Case study methods are most useful for gaining detailed knowledge about phenomena for which theoretical propositions are unavailable (Eisenhardt, 1989). Such an approach is also useful in contextual or descriptive research in which basic questions are related to "what's going on here?" (Weingand, 1993).

4.1 Data Collection

The data was collected in the summer of 2000 through 15 semi-structured interviews with open-ended questions focused on when, what, how and why certain problems had taken place in the development and implementation processes. The main fieldwork was conducted on-site at GeBIZ (Government Electronic Business) Centre, with semi-structured interviews carried out with knowledgeable managers (Huber and Power, 1985) and system developers. Informants were encouraged to express in their own terminology and experiences. In particular, we interviewed four managers - GeBIZ programme manager, GeBIZ Service Centre manager, GeBIZ Enterprise project manager, and network support project manager. The range of interviewees covered different management levels involved in the development and implementation of GeBIZ. The interviews lasted from one to 2 hours and were tape-recorded. Interviews were based on five main issues: 1) gathering information on the background of the organisation and how it got started in developing GeBIZ; 2) exploiting benefits of GeBIZ; 3) anticipating business, technical, security and administrative issues pertaining to GeBIZ; 4) articulating GeBIZ development and implementation strategy, experiences and problems encountered; 5) identifying and exploring the dynamic interactions between the trading partners and GeBIZ users. From these interviews, more than 250 pages of transcription were generated. Also, interviews were further supplemented by direct observations and written documents such as annual reports, secondary data, business newspapers, and other trade magazines.

4.2 Data Analysis

In the case of our study, the data collected through interviews, on-site observation and documentation were analysed systematically based on concepts of open coding, axial coding and selective coding (Strauss and Corbin, 1990). The iteration between data and concepts helped the researchers not only to generate categories and sub-categories, but also to identify potential links between categories. Drawing on the analytical technique proposed by Miles and Huberman (1994), patterns that were unique to the case study were identified through matrix displays. Such pattern-matching processes enabled the researchers to enhance the internal validity of the research findings (Yin 1989). One process that was interwoven with data analysis and interpretation was literature comparison. The purpose of drawing intensively on the current literature was not only to compare the emergent theory with similar theories, but also to contrast it with conflicting literature in order to ensure internal validity (Eisenhardt, 1989). To achieve high-quality data analysis, the following steps were taken. First, a revelation process, applied in the present research, presents answers to the questions of “how” and “why” e-procurement initiatives took place. “How” suggests a revelation of the historical pattern of the procurement practice, while “why” means the facilitators and inhibitors of the process. The revelation stage, in the data analysis process, began after an organisational chronology was prepared. The primary purpose of the initial analysis of archival, observational and interview data was to create an organisational chronology. In particular, the significance of organisational events, personalities and key changes was emphasised. A detailed chronology of the e-procurement initiative was drawn up to guide thinking and subsequent analysis. With the key stages of the e-procurement system development identified, further data were collected, reduced, displayed and verified in an ongoing iterative process before conclusions were drawn. Data reduction involved simplifying, abstracting, codifying and transforming data that appeared in field notes and interviews. The qualitative approach facilitated an analysis of different informants’ interpretations of organisational practices and their activities around it. In particular, the data were first separated into groups depending on whether they reflected statements or the actions of management, users and system developers. Then, for each of these groups, interview transcripts and field notes were examined to identify statements or actions that reflected assumptions, knowledge of the system and its implications for work and the organisation’s operations as a whole.

5. THE DEVELOPMENT AND IMPLEMENTATION OF AN E-PROCUREMENT SYSTEM: A CASE STUDY

While most governments have been criticised for lacking in adopting e-commerce practices, there are a few exceptions. In particular, Denmark, the Netherlands and Singapore have been highlighted as pioneers in this area (Faltch, 1998; Tan, 1998; Trauth et al., 1998). In order to explore issues pertaining to e-government, this study has selected the development and implementation processes of an e-procurement system developed by Systems and Computer Organisation (SCO), member of Defence Administration Group, Ministry of Defence (MINDEF) of Singapore as the focus of this case study. SCO was established in September 1979 as an IT arm of MINDEF, provides expertise and advice on management science (e.g. optimisation and simulation) and technology systems (e.g. computers and telecommunications) to MINDEF. The overall mission of SCO is to enhance the efficiency, productivity and effectiveness of MINDEF in key areas of electronic commerce, logistic, finance, training, planning, etc. Specifically, its responsibilities include: building and maintaining in-house systems, managing computer centres as well as MINDEF’s Internet and e-mail networks, and engaging in business process re-engineering. With the support of 500 staff members, SCO has established a track record of leveraging IT in areas such as manpower, logistics, finance, training and procurement. In 1998, based on a very successful track record of implementing IT-based systems and solutions to Singapore government, SCO launched an e-procurement system called MINDEF Internet Procurement Systems (MIPS). Using MIPS (www.mips.mindef.gov.sg), as pointed out by an informant, “MINDEF conducts business electronically with its suppliers in a more transparent trading environment and widens its reach to the global supplier community”. In a way, with MIPS, MINDEF could post its requirements and tenders on the system for suppliers to submit quotations. Tender results are then posted on the system for faster and better dissemination of the results. In 1999, according to an informant, there were about 140 trading partners

registered with MIPS. They are mainly suppliers for recurring components such as aircraft spare parts (Pang, 2000). In mid 1998 the Ministry of Finance (MOF) in collaboration with Infocom Development Authority (IDA) decided to introduce a one-stop public procurement centre (OPPC) within the civil service. Initially MOF searched the market for a software package that could meet the procurement needs of civil service, but soon realised that no such software package was available capable of meeting the procurement requirement. Finally they decided to invite SCO to demonstrate its two procurement systems: MIPS and Procurement Information Management System (PRIMS-II). As one GeBIZ programme manager recalled,

“We were invited to demonstrate PRIMS-II and MIPS to MOF in 1998. After that some follow up was done. They found that together with PRIMS-II and MIPS they can actually fulfil the 80% of civil service requirements. From there they decided to move on conceptualising things for one-stop public procurement standard (OPPC). The system was subsequently renamed to GeBIZ in early 1998.

After observing the characteristics of MIPS and PRIMS-II. MOF found that by adopting the concept of these two systems, it is possible to introduce a one-stop public procurement centre called GeBIZ which allows public service officers from different government institutions to conduct procurement and revenue tender activities quickly and efficiently.



Figure 1. GeBIZ (Source: GeBIZ service centre)

In order to speed up the development process, MOF decided to assign GeBIZ enterprise and GeBIZ partner development responsibility to SCO, while the other component of GeBIZ, GeBIZ Professional was assigned to an IT consulting firm.

After a few months of development, GeBIZ was launched in June 2000. GeBIZ (www.GeBIZ.gov.sg) is one of Singapore's e-government initiatives. The GeBIZ application comprises three components, namely GeBIZ Enterprise, GeBIZ Partner and GeBIZ Professional. Also, table 1 shows their roles and functions. As a G2B portal, it is an integrated one-stop centre for all ministries, statutory boards and government bodies that will allow trading partners, prospective revenue tender bidders and government procurement officers to interact

with the government for procurement and revenue tender activities. GeBIZ, with the support of the Ministry of Finance, aims to allow public service officers to easily conduct procurement and revenue tender activities. It is also one of the largest government’s Internet-based e-commerce initiatives (Pang, 2000).

Component	Roles	Functions
GeBIZ ENTERPRISE	It caters mainly to the Public Service Officer’s needs, which are characteristically non-complex. These non-complex buys could include purchasing from the Period Contracts.	Catalogue Buy; self-service Buy; Assisted Buy; Quotation/Tender Publication; Catalogue Management; Revenue Tender; Reports
GeBIZ PARTNER	This component is implemented as an Internet website and serves as the ‘shopfront’ for GeBIZ. All business opportunities and revenue tenders from the entire government, results of quotation and tender bids, and functions to facilitate trading with the government, are available in this application.	Supplier Registration, ITQ/ITT Activities; Invoice Submission; Payment Status Checks; Updating of Supplier Catalogue/Profile; Revenue Tender Activities
GeBIZ PROFESSIONAL	GeBIZ Professional contains a rich set of functionalities required for carrying out complex purchase and support procurement as a centralised function in an organisation.	ITT/ITQ; Contracting; Post Contract Management

Table 1. Summary of GeBIZ components and its functions

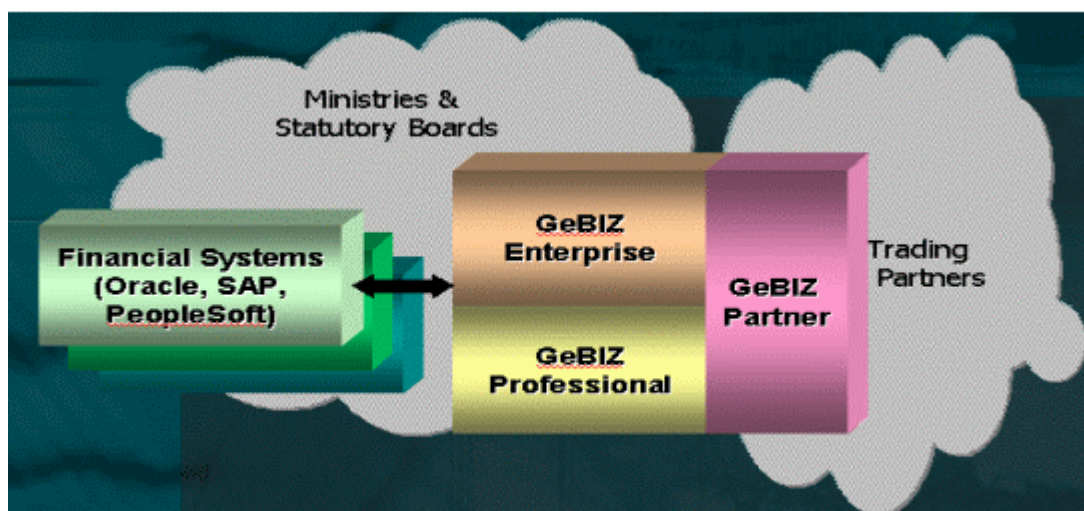


Figure 2. Components of GeBIZ application (Source: GeBIZ service centre)

Based on the successful launch of phase I, the training of users and suppliers was conducted by GeBIZ service centre in order to make them capable of using GeBIZ efficiently. GeBIZ service centre adopted two methods to train users and suppliers. One of them was to allowing them to practice with GeBIZ prototype (offline GeBIZ system). Other one was to allow them to practice with a dummy GeBIZ web site. According to the manger of GeBIZ service centre,

“We adopt a prototype approach. We also provide the facility of a dummy web site in order to allow suppliers and users to browse GeBIZ web site and give feedback to us”

Furthermore, the GeBIZ team undertook certain measures in order to evaluate the performance of GeBIZ web site and to improve server response time. To achieve these tasks different tools were employed. One of them is Web train enterprise edition that tracks the number of hits to the server; number of accessed pages and most busy hours etc. Another tool called ROBOT is used to record and replay user actions. At the same time load tester tool is used to test the system load measuring server response time and how many users can connect concurrently. Currently maximum 250 users can connect concurrently to the application server.

Finally, it is also estimated that by the end of year 2000, Phase II (ver.1.3) will be launched with additional features. That will allow suppliers to: view ITT/ITQs (Invitations To Tenders/Quotations) and enable them to respond electronically; send invoices to buyers and receive purchase orders electronically arising as the result of their offer in the ITQ bid. In the case of buyers phase II will enable them to: buy from period contracts; raise ITQ; recommend awards based on offers; view offers electronically; evaluate and recommend awards; cut P.O (purchase Order) and despatch to suppliers.

6. RESEARCH FINDINGS

From the case study, we learned that implementing an e-procurement system within the context of e-government is rather complex and different from a normal B2B relationship in which it needs to possess the ability to integrate with different systems across various government agencies as well as trading partners providing products and services. Specifically, as public and private institutions determine what their participation will be in e-government initiatives, three issues were identified in this study: continuous technical challenge, user preferences and institutional arrangements.

6.1 Continuous Technical Challenge

Based on our initial analysis on GeBIZ, we discovered that there are continuous technical challenges faced by the development team as well as users at large. Specifically, there are still integration and connectivity issues to be resolved. As suggested by some of the informants, during the implementation phase, GeBIZ users and trading partners faced connectivity and access problems due to several reasons: IP blockage, proxy settings and compatibility problems. According to an informant,

“The phase-I was very difficult because everything was new to us. Specifically, there were issues related to users connectivity. Besides that, in network set-up we also faced a lot of problems. For instance, initially, SAN switches used to go down and were very unstable.”

Furthermore, we have also found that the integration of financial systems with GeBIZ is another critical issue that needs attention. Presently, due to unavailability of the interfaces between GeBIZ and other financial systems in various departments and agencies, trading partners' payments are being delayed as staff at various government agencies have to perform extra task of entering data to two different systems. In other words, payment is still done in the traditional manner and making GeBIZ one-step away from a fully automated system. As explained by the GeBIZ programme manager,

“Currently, for GeBIZ, the biggest limitation is that there is no interface to financial system such as NFS and FRIMS to integrate with. The problem here is if an officer goes to GeBIZ to create a purchasing order (PO), he has to first go to the financial system and key in the PO and have the funds committed. Only when the funds are committed, he can then go back to GeBIZ to issue P.O. This is obviously repetitive work”

This problem is perhaps due to the high cost of migrating or integrating existing government financial systems to GeBIZ. Such reluctance is also in line with what was suggested by Baron et al., (2000) that most organisations have a significant investment in their existing (legacy) systems. Any attempt in abandoning such systems is often simply not economically feasible until they have hit the replacement point in their life cycle. At the time of data collection, we realised that in trying to overcome some of the interface problems, GeBIZ team had begun to experiment by integrating various financial systems with GeBIZ e-procurement

system by using three ERP software systems: People Soft, SAP and ORACLE and they (the engineers) seem quite confident about resolving interface problems before the launch of phase II.

In addition to the technical problems related to integration and connectivity, additional attention must also be given to improving the ease or comfort in use. We discovered that there were still some vendors and government officers using telephone and fax as the main telecommunications technology. This observation implies that perhaps they were discouraged from using it because of technical difficulties and other non-technical factors. While rectifying some of the technical problems is crucial in the overall success of e-government initiative implementation, further efforts in understanding the resistance or impediments from a non-technical perspective should also be pursued (Lan and Falcone, 1997).

6.2 User Preference

The second lesson we identified is that e-government activities should have a user focus serving the public rather than having an administration-focus emphasising the needs of government officials (Hwang, Choi and Myeong, 1999). One observation made during the data collection process was that there was some resistance to participating in e-procurement practices, as remarked by some informants. This could be due to the mismatch between what the system can offer and what users' preferences are. For example, from the standpoint of the suppliers, cost can be a major factor in determining the extent of using information technology to engage in e-practices (Lan and Cayer, 1994; Bolter, 1994). Although, at the moment, vendors or suppliers are not charged to participate in the e-procurement system, it is likely that a fee will have to be paid for using the G2B service in the near future. This might have implications for future participation of the trading partners.

In the 21st century, as e-government activities become vital to citizens' daily lives, the number of on-line interactions will increase. The opportunity exists in which citizens and businesses alike find a seamless relationship, a positive interaction, and a responsiveness-to-customer satisfaction mindset. We learned from this study that these factors are important to the trading partners when implementing e-procurement systems in the public sector. To encourage user participation, the system must be user-friendly (Lan and Cayer, 1994; Lan and Falcone, 1997) and possess the following characteristics: first, it must provide a one-stop service to government procurement and tender processes. It must have the ability to share information between services and departments, generate revenues, provides a managed service for other agencies. New users should also be educated in understanding e-government initiatives not only for conducting procurement procedures on-line; it is an organisational transformation on a scale that will fundamentally alter the way public services are delivered and managed. It should also possess power in creating a new mode of public service. In particular, a "no gap" relationship where all public organisations deliver modernised, integrated and seamless service for their trading partners and citizens is needed. The relationship is no longer just one-way; rather, it is about building a partnership between governments and their stakeholders.

6.3 Institutional Arrangements

We confirmed through our findings e-government is not merely about using technology or computerising government activities to enhance access to, and delivery of government services to benefit citizens, business partners and employees, as suggested by the current literature (see for example, Ang and Soh, 1995). We discovered that in establishing an e-procurement system for the government, some of the problems are not necessarily technical in nature, but organisational (Hwang, Choi and Myeong, 1999). As explained by an informant,

"For example, in the current practice, the required number of approval by officers is different from one ministry to another. This has implications for how an approval process is designed and managed within the system. In particular, traditional methods of approving procurement-based documents must be streamlined. More process innovation is needed so that all institutions could adopt one single approach for approving (procurement) documents in order to provide efficiency to the procurement process."

Even though most governments seem to have accepted the importance of Internet use in their daily activities, governments must understand that e-government goes further than that (automating some processes, especially in terms of information retrieval) and impacts on every aspect of their organisation, from workflows to technology to staffing. Therefore, in building a seamless on-line e-government, a common understanding and co-ordinating mechanism should be established. Particularly, it is to consider developing policies to address issues such as the privacy of users, free speech and censorship, ownership of on-line information leading to procurement transactions, copyright, intellectual property, information pricing, and many other issues (Rose, 1995).

7. CONCLUSIONS

The shift towards a global digital economy is driving dramatic change in government operations. It has become essential to find new and innovative ways of delivering government services electronically and to develop new vision to move swiftly, safely and successfully into the future and to execute the operational strategies. This study argues that the development and implementation of e-government initiatives is an intrinsically complex and dynamic transformation, which requires process innovation. Thus, the impact of such implementation has on the public institution is far greater than simply adopting a computer-based system or computerising government activities. Based on this realisation, this study recognises that there are still very few studies which have conceptualised e-government initiatives and activities from a multi-faceted and context-dependent perspective.

Providing empirical evidence derived from the analysis of the case, this study has outlined various challenges faced by the organisation during the implementation of an e-procurement project from a knowledge-focused perspective. Further research in the area may include the investigation of government-based e-procurement policies and systems implemented in variant national settings. For instance, we could move the focus of the research from national governments to international organisations. Finally, another issue is the question of whether the development and implementation of e-government initiatives should be outsourced (Gordon and Walsh, 1997). Since 1995, there has been a continuous global trend towards outsourcing public IT transactions (Batholomew, 1995; Caldwell, 1995; Myerson, 1996). Increasingly, governments are looking to the private sector to become involved in the business of managing and operating government IT. In other words, in addition to addressing issues similar to outsourcing in the private sector, governments must also consider the broader picture of what is best for the citizenry as a whole (Gordon and Walsh, 1997).

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