Adoption and Use of E-Government Services: A Case Study on E-Procurement in Malaysia.

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Abstract - The edge of the Information Age, where information has become the cutting edge of global competition, has thrust the Information and Communication Technology (ICT) into the fore front of the national socio-economic development. ICT has been recognized as a strategic enabling tool to support the growth of the economy as well as enhance the quality of life of the population. The public sector in Malaysia is going through period of rapid change. The government's leading role in spearheading the surge forward into the information age has compelled the public sector to lead the way. The Government launched the Electronic Government (e-Government) initiative to reinvent itself to lead the country into the Information Age. Implementation of Electronic Procurement (e-Procurement or locally known as e-Perolehan) is regarded as one of the major milestones in government's effort to reduce corruption thus enhancing accountability and transparency of government procurement. There are six procurement modules being implemented since 1999. The aim of the government is to make all the suppliers and federal government agencies become electronic procurement enabled users by the year 2010. This paper looks at some of empirical findings from the survey conducted regarding the government suppliers readiness in adopting and using the e-Procurement system. The general findings show that the suppliers have positive perception about information technology and the use of Internet to do their business transactions; hence they are ready to use the e-Procurement system. Even though there are some positive development of e-Procurement in terms of the acceptance and usage, there are also many problems and challenges faced by both the buyer community i.e. government, and seller community i.e. suppliers. The paper provides some recommendations to improve the current practice to encourage more suppliers to grab the opportunity and benefit fully from the e-Procurement initiative in Malaysia.

Keywords: Information and Communication Technology, e-Government, e-Procurement, Adoption.

1   Introduction

Most of the advanced countries including United Kingdom (UK), Australia, Canada, New Zealand, and United States of America (USA) have adopted series of measures under a new model based on market principles [1]. This new model has several names such as: 'managerialism', 'new public management'; 'market based public administration'; 'the post bureaucratic paradigm'; or 'entrepreneurial government' [6]. Though these appear to be different terms yet they convey the same message i.e. replace the traditional bureaucratic model with a new model. Have faith in market principles: cut costs; reduce budgets; improve public managements, simplify rules and procedures; check corruption; inject transparency; and strengthen market forces by minimizing the role of the state. To make the new system more effective and ensure efficacy, the use of information technology in the governance process is emphasized. The initialization of e-Government presents a way for governments across the world to provide citizens, businesses and other governments with convenient access to government services and opportunities of collaboration as well as political participation via internet and wireless communication technology [5][12][13][14]. The government's focus on the electronic delivery of public services comes at a time when consumers of commercial services are now familiar and comfortable with the widespread benefits of information revolution [2]. Expectations are high and citizens now expect their public services to be equally accessible and convenient.

In the experiences of nations mentioned above including Malaysia, one thing distinctly emerged of late, that is deployment of information and communications technology as one key strategy and its brewing potential in addressing the quality, productivity, efficiency and effectiveness of civil service [8][9][15]. Historically, computers were deployed in offices to improve work efficiencies especially those involved routine operational tasks. However, the focused was incrementally shifted towards providing information, not only within office environment but also to wider public at large, who experience rising level of comfort and familiarity with the technologies in many contexts [3]. Today, Internet mediated computer systems, as reckoned revolutionizes the way individuals work, learn and play and civil service and its employees are not exception to these impacts.

This paper presents an exploratory study about the ICT and e-Government initiatives in Malaysia. The paper reports facts about such initiatives in Malaysia. Our objectives are essentially to: (i) provide a snapshot of the various ICT and e-Government initiatives in Malaysia (ii) present an empirical survey results on suppliers adoption and use of e-Perolehan and (iii) present a short critique of what the government agencies should do to ensure further growth and deployment of e-Government and e-Perolehan initiatives in Malaysia.

2 Essence of e-Government Strategy: Vision, Objectives and Benefits

First and foremost, it must be duly reckoned and applaud the Government of Malaysia for its focus and clarity in defining and articulating vision, model framework, objectives and benefits. The dual objectives of e-Government are to reinvent the government in terms of service delivery through the use of IT and to catalyze the successful development of the Multimedia Super Corridor (MSC) with IT as one of the leading sectors of the economy [10]. The vision of e-Government, in its essence entails people in government, business and citizenry working together for the benefit of Malaysia and all of its citizens; reinventing government using multimedia and IT to improve quality and productivity; perform government services electronically via Internet in an effective and efficient manner at all levels of three-tiered administrative systems and fosters the ongoing development of Malaysia's multimedia industry. The core elements needed to achieve the electronic government vision are standards, security and legislation [10][16][17].

Successfully realizing the vision for e-Government means fundamentally changing how government operates and implies a new set of responsibilities for public servants, businesses and citizens. The new services, information and channel for government to interact with the different constituencies will require all parties to become familiar with new technologies and develop new skills. In other words at the implementation level the re-inventing government or civil service initiative need to address the following areas:

- Improving connectivity between all parties that deals with government be it public, inter-government agencies, private companies, and foreign country interrelationship. This gives better access to government.
- High quality services are expected to be assured.
- Better processes or systems are also crucial in terms of improving the government services.
- Create greater transparency and governance.
- Empowering government officers in the administration as well as the implementation level.

Through these implementations the benefits of e-Government can be realized. The benefits can be divided into three categories. Firstly, the focus will be on the benefits from government to citizens or businesses, entailing easy access between the government, citizens and private companies; availability of government information, services and products electronically; avoiding delays in acquiring any services; accessing the websites of related services or products; creating multi-channel service delivery, for example choosing between online or physical channel et cetera. Consequently, a new class of quality services will materialize, as the government system will be less complicated and therefore, better quality services are assured. Secondly, the benefits created in terms of intra agency, meaning communication between government departments or agencies. Business processes will be improved as the electronic government contributes to the sustainable implementation in handling the vast number of agencies that are part of the government engine. Indeed, this effort will also contribute to

the human resource development. The business process improvements will help to equip government staff with skills for information age. Thirdly, we will see the benefit for inter agency. There will be smooth information flow between agencies, best practice database and enhanced capability for information analysis through the use of ICT and multimedia tools.

2.1 Alignment with Malaysian Public Sector ICT Strategic Plan

It is also of paramount important that the formulation and implementation of e-government program is well aligned to national ICT policies, strategies and programmes. It is acknowledged, the e-government initiative is an integral component of the Public Sector ICT Strategic Plan that Government of Malaysia launched in 2003. The "big picture" plan basically envisions towards realizing a quality public service delivery through use of ICT and Multimedia and thus aimed at achieving efficient and effective online service, streamlining internal process and change work habits and connecting agency through secured communication network. Indeed, these objectives are in line with the objectives of e-government mentioned above. Therefore, it is imperative for the entire public sector to play a pivotal role in realizing the aspirations of e-government by enabling conducive environment; effective back-office processes; seamless front-end integration; facilitating growth and competitiveness of the industry and the private sector; supporting the country's manpower needs; and enhancing the quality of life of Malaysian citizens. With such alignment, the public sector master plan including e-government

strategy is ambitiously hopeful of providing efficient, effective and quality service to its customers through migrating from traditional mode of delivering services into a faster and smarter mode i.e. providing services online on the basis of 24 hours/7 days a week /365 days a year.

Towards this realization, the pushing factors include political will especially visionary leadership and administrative commitments for streamlining all internal processes and change work habit's or culture among the civil servants, who in tandem require mindset change; provision of affordable and equitable infrastructure; adequate supply of quality human capital especially knowledge workers; indigenous content development compatible to local culture, tradition and value system; creating environment of trust and confidence; successful MSC roll-out and undertaking commercially viable research and development activities.

2.2 e-Government Flagship Application

Within the e-Government Flagship application, a number of projects have been identified towards re-inventing the government or improving the quality of civil service, as shown in Table 1 below. Among the projects lined up, the Electronic Procurement is of much interest to the private sector. The introduction and adoption of ICT in the private sector businesses such as e-Commerce and e-Banking and the diffusion of the Internet among the general population have resulted in a rising level of comfort and familiarity with the technologies in many contexts [3]. As a result, many governments have invested huge amount of money in

developing IT infrastructure and deploying the use of IT ICT to serve their stakeholders in an efficient and effective way. The initialization of e-government presents a way for governments across the world to provide citizens, businesses and other governments with convenient access to government services and opportunities of collaboration as well as political participation via internet and wireless communication technology [12]. The government's focus on the electronic delivery of public services comes at a time when consumers of commercial services are now familiar and comfortable with the widespread benefits of information revolution [2]. Expectations are high and citizens now expect their public services to be equally accessible and convenient. Main projects implemented under the e-Government flagships are Generic Office Environment (GOE), Electronic Procurement (EP), Project Monitoring System (PMS), Human Resource Management Information System (HRMIS), Electronic Services (e-Services), Electronic Labour Exchange (ELX), E-Syariah and E-Land.

3   Research Methodology and Findings

A total of 3,000 questionnaires were sent by mail to randomly selected suppliers. There were 502 completed questionnaires received and the findings reported here are based on the analysis of this data. As shown in Table 1, most of the firms are small (90 percent) and fall within the Small Medium Industries (SMI) definitions. In terms of number of employees, most of the firms employed less than 20 workers (75 percent). About 50 percent of the firms have registered

for be e-Perolehan enable after the year 2004 compared to about 40 percent of them registered before 2004. About 73 percent of the firms' annual sales using e-Perolehan system is within RM 1 million per year, however, only about 25 percent have recorded annual sales in the range of RM 1 million to RM 5 million per year. Eighty nine percent of the respondents doing business with both the government and also the private sector, only about 11 percent of them solely depend on government business.

Reliability analysis was conducted on the items of the survey instrument. Reliability is an assessment of the degree of consistency between measurements of variable [11]. Cronbach alpha is used for this purpose and the accepted lower limit for Cronbach alpha value is 0.70 although it may decrease to 0.60 in exploratory research [4]. An examination of the Cronbach alpha for the three main constructs was conducted; organizational perspective, technological perspective and environmental perspective. The results are shown in Table 1 and all the items are consistent and therefore used for the purpose of data analysis.

Table 1: results for reliability tests

No	Items	Number of items	Cronbach Alpha
	ORGANIZATIONAL PERSPECTIVE		
1	Organizational Leadership	5	0.9091
2	Organization Perceived Usefulness	12	0.9561
3	Organization Perceived Ease of Used	4	0.9231
4	Organization Facilitators	8	0.8894
	TOTAL	**29**	**0.9617**
	TECHNOLOGICAL PERSPECTIVE		
5	IT Infrastructure	4	0.8254
6	IT Skills	4	0.8267
7	E-Perolehan Capability	4	0.7636
	TOTAL	**12**	**0.8445**
	ENVIRONMENTAL PERSPECTIVE		
8	Government Policy & Regulations	3	0.7892
9	Government Advocacy	8	0.9202
10	Industry Acceptance	12	0.9519
	TOTAL	**23**	**0.9606**

3.1 e-Perolehan Adoption and Usage Factors

There are three main variables employed in this study as the determinants of e-Perolehan adoption intention and usage level, that is, organizational perspective, technology perspective and environmental perspective. Using correlation analysis, the three variables are found to be significantly correlated with one another. The findings suggest that with the support and lead role by the senior management, the organization will adopt and eventually use the e-Perolehan system. Furthermore, the information technology factors play an important role in ensuring that the organization will adopt e-Perolehan and finally the relevant and good government policies are important in building the thrust and confidence among the suppliers to use the e-Perolehan system. In addition, the general acceptance of e-Perolehan in the industry will boost the confidence and motivation among the non e-Perolehan users to quickly adopt the system so that they can maintain their competitive advantage in the industry.

Table 2: correlation analysis between e-Perolehan usage factors

Items	Organizational Perspective	Technology Perspective	Environmental Perspective
Organizational Perspective	1.000		
Technology Perspective	0.698**	1.000	
Environmental Perspective	0.753**	0.583**	1.000

**Correlation is significant at the 0.01 level (2-tailed)

3.2 e-Perolehan Determinants

The main objective of this study is to identify and examine the determinant factors that lead to the adoption intention and usage of e-Perolehan system among the suppliers in Malaysia. Generally, ten factors have been identified and grouped based on literature and with the help of factor analysis. The factors concerned are; (i) Organizational Perspective –

organizational leadership, perceived usefulness, perceived ease of use and organization facilitators; (ii) Technology Perspective – IT infrastructure, IT skills and e-Perolehan capability ; (iii) Environmental Perspective – government advocacy, government policy and industry acceptance. A summated scale of e-Perolehan adoption intention and current usage was calculated by averaging the mean of the three e-Perolehan determinants dimensions of the study. The result of the correlation analysis is summarized in Table 3 below.

Table 3: Correlation Analysis between Organizational, Technology and Environmental Variables and e-Perolehan Adoption / Usage

Items	Organizational Perspective	Technology Perspective	Environmental Perspective	e-Perolehan Usage
Organizational Leadership	0.752**	0.564**	0.497**	0.691**
Perceived Usefulness	0.916**	0.561**	0.721**	0.866**
Perceived Ease of Use	0.781**	0.604**	0.589**	0.751**
Organization Facilitators	0.806**	0.638**	0.595**	0.773**
IT Infrastructure	0.403**	0.754**	0.211**	0.432**
IT Skills	0.548**	0.827**	0.424**	0.608**
e-Perolehan Capability	0.652**	0.692**	0.670**	0.738**
Government Advocacy	0.571**	0.505**	0.733**	0.689**
Government Policy	0.628**	0.472**	0.898**	0.781**
Industry Acceptance	0.743**	0.537**	0.951**	0.873**

**Correlation is significant at the 0.01 level (2-tailed)

The result shows that all the e-Perolehan determinants are significantly correlated with e-Perolehan adoption intention and current usage level. The result of the correlation analysis therefore, supported the entire proposition developed in this study (Table 4).

Table 4: Summary of the Correlation Analysis

Variables	OL	PU	PEOU	OF	ITI	ITS	ePC	GP	GA	IA
OL	1									
PU	.600**	1								
PEOU	.437**	.593**	1							
OF	.593**	.591**	.605**	1						
ITI	.398**	.285**	.372**	.366**	1					
ITS	.482**	.412**	.427**	.580**		1				
ePC	.397**	.596**	.589**	.520**	.220**	.393**	1			
GP	.443**	.484**	.486**	.488**	.276**	.380**	.486**	1		
GA	.428**	.599**	.453**	.529**	.156**	.391**	.547**	.666**	1	
IA	.469**	.725**	.595**	.559**	.196**	.382**	.672**	.599**	.732**	1

** Correlation is significant at the 0.01 level (2-tailed)
Note: OL= organizational leadership, PU= perceived usefulness, PEOU= perceived ease of use, OF= organization facilitators, ITI= IT infrastructure, ITS= IT skills, ePC= e-Perolehan capability, GP= government policy & regulations, GA= government advocacy, IA = industry acceptance

5   Issues and Challenges

Overall the implementation of e-Perolehan system in Malaysia is progressing well with a positive mindset among the suppliers. However, there are some key issues and challenges inherent within Malaysia's e-Perolehan initiative that prevents the government and the service provider from maximizing the value potential of the system:

Issues & Challenges from Government
- Application hiccups – some of the applications are not well understood and therefore not fully utilized yet.
- Limited commitment and ownership to support and push e-Perolehan implementation at ministries/agencies.
- Ministry's local area network (LAN) and firewall posed additional unexpected dependencies to the rollout team.
- Ministry/agency IT dept was not involved directly from the beginning of the implementation.
- Successful interfacing to e-SPKB for budget check is reliant on external factors- EG*net, availability of IB gateway and LFEP servers, etc.
- Intermittent EG*net connectivity issues.

Issues & Challenges from Supplier
- Suppliers are adopting a 'wait-and-see' attitude on e-Perolehan enablement- most of them do not want to register themselves to be e-Perolehan enable suppliers due to the cost factor and would like to do business using the manual procurement system as long as possible.
- Low IT literacy amongst the suppliers- most of them is transacting using either direct purchase or central contract modules and they are not highly educated and IT savvy.
- Perceived high cost of enablement (pc, smart card, smart card reader, digital certificate) – on average s supplier need to pay about RM 1500 (USD 300) to be e-Perolehan enable.
- Suppliers contact information not up to date- the data base with Ministry of Finance is not up to date thus creates a lot of confusions in determining the current of the suppliers.
- Ignorance over the importance of electronic catalogue- most of them still prefer to use the manual printed catalogue rather the online version.
- Lack of confidence over information's security and confidentiality- lack of trust and confidence among the suppliers especially in providing credit card numbers and password to access to the e-Perolehan system.

In order to overcome the above mentioned issues and challenges, some of the strategies to increase government procurement using e-Perolehan platform includes:
- Change management programme – awareness (road shows, talk, seminars and promotion), TV & radio interviews (TV as, exhibition, bulletin and newspaper articles) and training (through INTAN and ministries' programme to suppliers by CDCSB).
- Enforcement – treasury instructions/circulars and e-Perolehan task force.
- Monitoring- auditing, benefit capture study, reporting mechanism,

ministries' e-Perolehan implementation committee.

- Support service- help desk, e-Perolehan centers and ministries' e-Perolehan coordinator.
- Continuous infrastructure & application enhancement- system application, technology improvement, infrastructure and system integration.
- SMART target procurement- smart goals (specific, measurable, achievable, realistic and time bound), enablement for responsibility centers and suppliers, increasing targets for e-Perolehan transactions (RM 5 bil for 2008, RM 8 bil for 2009 and RM 10 bil for 2010).

5   Conclusion

The success of e-Perolehan rely both on government agencies and suppliers commitment in using e-Perolehan, application system that is user friendly, stable network connectivity and smooth integration with other entities. On balance, the general consensus amongst both the buyer and seller communities is that e-procurement will become an important management tool to enhance the performance of supply chain especially in the public sector. In this regard, we expect that between the next three to five years, more suppliers will grab the opportunity and benefit fully from the e-Perolehan initiative in Malaysia.

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