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# E-Government: An Exploratory Study of Online Government Procurement

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*ABSTRACT*

*The quest to improve the government service delivery is becoming an important agenda for most governments. The introduction of ICT in the public sector especially E-Government initiatives opens up a new chapter in the government administration throughout the world. Governments have deployed ICT to serve their citizens in an efficient and effective manner. This paper presents an empirical investigation of Malaysian government's e-Procurement initiative (locally known as e-Perolehan). The aim of the paper is to examine factors that influence the current and future use of the system within the supplier community. These factors are grouped in three perspectives, (i) organizational perspective; (ii) technological perspective; and (iii) environmental perspective. 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. However, before this occurs, the findings suggest that several issues must be addressed by the relevant authorities in light of the three perspectives as mentioned above, to improve the procurement process at the federal government level.*

**Keywords**: *e-Procurement, Technology Adoption, Information and Communications Technology (ICT)*

## Introduction

All around the world, the quest to improve government service delivery is becoming an important agenda for most governments. Information and

Communications Technology (ICT) and the Internet in particular have opened new possibilities for the government and the governed. Successful delivery of online services has rapidly become an important measure of effective public sector management and this has made many governments to deploy Electronic Government (E-Government) as a tool to achieve this vision.

E-Government is defined as the use of technology, particularly the Internet, as a means to deliver services to citizens, businesses and other entities (Hart and Teeter, 2001; Howard, 2001; West, 2004). The common focus is on the application of ICT to improve the internal management of the government, to offer more flexible and convenient services to the public and to a limited extent, to enhance public participation and democracy (West, 2004; Seifert & Relyea, 2004; Ancarani, 2005; Maniam et al. 2006; Maniam 2008). Implementation of E-Government bring forth many advantages such as the reduction in paperwork, the provision of continuous service availability to customers, a reduction in response time and a reduction in error rate.

The paper proceeds as follows. Section two presents the background of E-Government and e-Perolehan implementation in Malaysia. Section three provides snapshot of the methodology used including the research design and data collection methods. This is followed by the analysis and research findings. The paper ends with a short discussion and recommendation to the key stakeholders with the intention of ensuring the project achieves its intended objectives.

## E-Government & E-Perolehan Initiatives in Malaysia

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 rich digital age has compelled the public sector to lead the way. In the last several years, the public sector has become a major investor and user of information technology. The government of Malaysia launched E-Government as one of the Multimedia Super Corridor (MSC) Flagship Applications with the aspiration to employ multimedia technologies to re-invent the way the government operates. E-Government will improve both how the government operates internally as well as how it delivers services to the people of Malaysia. The E-Government implementation seeks to improve the convenience, accessibility and quality of interactions with citizens and businesses; simultaneously it will improve information flows and processes within government to improve the speed and quality of policy development, coordination and enforcement. There are eight projects launched to date under the E-Government Flagship since it was started in 1997. All these projects will use ICT and multimedia technologies to transform the way the government operates, coordination and enforcement. Table 1 summarizes the projects and their characteristics. E-Perolehan is the new procurement system that allows

the Government ministries to electronically select items to be procured from the desktop, initiate an electronic approval process and also create, submit and receive purchase orders, delivery orders and other related documents electronically. The vision of e-Perolehan is to ensure an effective and efficient electronic procurement management system while its mission is to make e-Perolehan as a main procurement mechanism to be used by the government agencies and suppliers. E-Perolehan objectives are (Ratha, 2007; Zaharah, 2007):

- To ensure best value for money for Government procurement.
- To ensure suppliers receive faster and more accurate payment.
- To ensure accountability and transparency in all Government procurement.
- To increase collaboration between the business sector and the Government.

Table 1: Main Projects under the E-Government Flagship

| Projects | Characteristics |
|---|---|
| Generic Office Environment (GOE) | Provides a new paradigm of working in a collaborative environment where government agencies communicate, interact and share information. |
| Electronic Procurement (EP) | Links the government and suppliers through online environment. Government agencies as buyers procure goods/ services by browsing catalogues advertised by suppliers. Aimed at best value for money, timely and accurate payment. |
| Project Monitoring System (PMS) | Provides a new mechanism for monitoring implementation of development projects, incorporating operational and managerial functions, and knowledge repository. |
| Human Resource Management Information System (HRMIS) | Provides a single interface for government employees to perform HRD functions effectively and efficiently in an integrated environment. |
| Electronic Services (e-Services) | Enables direct, online transactions between the public, the government and large service provider via electronic means |
| Electronic (ELX) | Labour Exchange A one-stop-centre for labor market information, accessible to government agencies, the business sector and the citizens. |
| E-Syariah | Introduces administrative reforms that upgrade the quality of services in Syariah courts. To enhance the Islamic Affairs Department's effectiveness- better monitoring and coordination of its agencies and 102 Syariah courts. |
| E-Land | To achieve an updated, effective, efficient and accurate National Land Administration System via utilization of Information Communication and Technology (ICT), the e-Tanah project of Ministry of Natural Resources and Environment encompasses 24 main areas in land administration. |

*Source*: MDeC (www.mdc.com.my)

## Methodology

The population studied was the registered suppliers with the Ministry of Finance (MOF) and who is e-Perolehan enabled. The total sample selected for this study is 3000 respondents, where 1,500 questionnaires were sent to transacting e-Perolehan enabled suppliers and another 1,500 questionnaires were sent to non-transacting e-Perolehan enabled suppliers. The reason for doing this is to capture perception regarding technology acceptance for e-Perolehan both from the current users and non-users (potential users).

The main constructs of interest to this study are demographic factors which include firm scope and firm size; organizational factors which include organization leadership, organization perceived usefulness, organization perceived ease of use and organization facilitators; technological factors entail IT infrastructure, IT skills and e-Perolehan capability; and environmental factors which entail government rules and regulations, government advocacy and industry acceptance of e-Perolehan system. All constructs are measured using multiple-item perceptual scales, using pre-validated instruments from prior research wherever possible, and were reword, where necessary, to relate specifically to the context of e-Perolehan adoption and usage. The aim is to analyze the level of adoption and usage of e-Perolehan system among the government suppliers in Malaysia.

## Results

Table 2 depicts the characteristics of sample surveyed in this study. Most of the firms are Private Limited (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). A total of 266 suppliers (53 percent) out of 502 firms have used at least one of the e-Perolehan modules. The modules are central contract, direct purchase, tender and quotation, whereas 236 suppliers have not used the e-Perolehan system. However, about 91 percent of the latter has indicated that they will adopt e-Perolehan in the near future.

Factor analysis was carried out for the purpose of questionnaire content validity and reliability. The primary purpose of factor analysis is to analyze the interrelationships among large number of variables that are highly interrelated (Hair, et al., 2006). A total number of sixty six items or questions were used for the purpose of constructing factor analysis and out this, two items were deleted and hence sixty four items which has loading factor more than five percent was included. Also, the items were categorized into ten constructs as shown in the following tables. The observed higher levels of correlation among measurements for the same than different constructs suggested that the instrument exhibited adequate convergent and discriminant validity. The criteria used for this study

Table 2: Demographic Profile

| Type of Organization | Frequency | Percent |
|---|---|---|
| Sendirian Berhad / Private Limited | 452 | 90 |
| Berhad / Limited | 9 | 1.8 |
| Sole Proprietor | 41 | 8.2 |
| Total | 502 | 100 |

| No. of Employees | Frequency | Percent |
|---|---|---|
| Less than 10 workers | 259 | 51.6 |
| 11-20 workers | 118 | 23.5 |
| 21 – 30 workers | 40 | 8.0 |
| 31-40 workers | 10 | 2.0 |
| 41-50 workers | 23 | 4.6 |
| more than 50 workers | 52 | 10.4 |
| Total | 502 | 100 |

| Number of users / non-users | Frequency | Percent |
|---|---|---|
| Yes | 266 | 53.0 |
| No | 236 | 47.0 |
| Total | 502 | 100 |

is to adopt a cut-off loading point for factors with eigenvalues greater than 1.0. In interpreting factors to determine which factor loadings are worth considering, this study adopts loadings 0.50 as significant. The independent variables are organized into three sub-groups. The first sub-group describes the organizational perspective as influencing factors towards the adoption and usage of e-Perolehan and it consists of four constructs. The second sub-group focuses on technological perspective with three constructs towards the adoption and usage of e-Perolehan. The third sub-group, that is, environmental perspective with three constructs explains its influence towards the e-Perolehan adoption and usage.

Table 3 depicts that there are four constructs under the organizational perspective that is, organizational leadership with five items, organization perceived usefulness with twelve items, organization perceived ease of use with 6 items and organization facilitators with six items. All together there are twenty nine items measured and grouped for measuring organizational perspective. None of the items from the original questionnaire were deleted for this section.

In the case of technology perspective, three constructs was created that is, IT infrastructure with 4 item, IT skills with 4 items and e-Perolehan capability with 4 items (Table 4). One of the questions from this section was deleted based

Table 3: Results of Factor Analysis – Organizational Perspective

| Variable | | Items | Factor Loading |
|---|---|---|---|
| Organizational Leadership | 1. | Management support | 0.82 |
| | 2. | Lead role by management | 0.84 |
| | 3. | Invested time, effort & money | 0.72 |
| | 4. | Proactive about e-Perolehan | 0.75 |
| | 5. | Stresses on importance of e-Perolehan | 0.71 |
| Organization Perceived Usefulness | 1. | e-P is useful | 0.66 |
| | 2. | e-P supports selling requirements | 0.74 |
| | 3. | e-P improves selling efficiency | 0.81 |
| | 4. | e-P simplifies selling process | 0.81 |
| | 5. | e-P reduces financial costs | 0.78 |
| | 6. | e-p increases administrative savings | 0.80 |
| | 7. | e-P increases overall job performance | 0.80 |
| | 8. | e-P increases overall job productivity | 0.84 |
| | 9. | e-P is effective than manual system | 0.71 |
| | 10. | e-P improves information management | 0.77 |
| | 11. | e-P is fast | 0.54 |
| | 12. | e-P improves inventory management | 0.67 |
| Organization Perceived Ease of Use | 1. | e-P is easy to use | 0.73 |
| | 2. | e-P is flexible to interact with | 0.71 |
| | 3. | e-P is easy to learn | 0.83 |
| | 4. | e-P is user friendly | 0.77 |
| | 5. | e-P can be easily understood | 0.84 |
| | 6. | e-P skills can be acquired easily | 0.74 |
| Organization Facilitators | 1. | Sufficient training for IT is provided | 0.65 |
| | 2. | Sufficient training for e-P is provided | 0.77 |
| | 3. | Sufficient technical support is available | 0.77 |
| | 4. | Management encourages use of e-P | 0.57 |
| | 5. | Management provides information on e-P | 0.70 |
| | 6. | Management rewards staff to use e-P | 0.69 |

on the factor analysis result which gave factor loading of less than 4 percent. Therefore, a total of 12 items was selected.

Table 5 indicates that for environmental perspective, there are three constructs that is, government policy and regulations with three items, government advocacy with eight items and industry acceptance with twelve items. One of the items from the original questionnaire was deleted based on less than 5 percent factor loading in factor analysis. Therefore, a total of twenty three items was selected.

Therefore, based on the factor analysis results, these are the factors that influence the adoption and use of e-Perolehan among the suppliers in Malaysia.

Table 4: Results of Factor Analysis – Technology Perspective

| Variable | Items | Factor Loading |
|---|---|---|
| IT Infrastructure | 1. Has access to telecommunication services | 0.72 |
| | 2. Enough computers to all the staff | 0.83 |
| | 3. Staff can access to Internet services | 0.84 |
| | 4. Internet access is fast | 0.73 |
| IT skills | 1. Enough IT qualified staff | 0.66 |
| | 2. IT support for e-P is readily available | 0.70 |
| | 3. IT helpdesk readily available | 0.84 |
| | 4. Staff are well trained to use e-P system | 0.77 |
| E-Perolehan Capability | 1. Less uncertainty about e-P | 0.51 |
| | 2. e-P system can handle multi-task | 0.82 |
| | 3. Supplier-government interaction enhanced | 0.80 |
| | 4. e-P system is secure | 0.79 |

Table 5: Results of Factor Analysis – Environmental Perspective

| Variable | Items | Factor Loading |
|---|---|---|
| Government Policy and Regulations | 1. Vision & objectives for e-P is available | 0.75 |
| | 2. Clear operating guidelines is available | 0.64 |
| | 3. Specific agency is responsible for e-P | 0.73 |
| Government Advocacy | 1. Common approach across all agencies | 0.67 |
| | 2. Laws/legislation to support e-P | 0.71 |
| | 3. Specific legislation addressing e-P | 0.72 |
| | 4. e-P policy enhances suppliers confidence | 0.68 |
| | 5. Proactive effort to promote use of e-P | 0.76 |
| | 6. Educate suppliers on e-P benefits | 0.73 |
| | 7. Full responsibility in ensuring security | 0.71 |
| | 8. Incentives to e-P enabled suppliers | 0.68 |
| Industry Acceptance | 1. Suppliers used e-P have benefited greatly | 0.66 |
| | 2. Suppliers used e-P are perceived favorably | 0.65 |
| | 3. Relationships among suppliers improved | 0.66 |
| | 4. Supplier-government relationship improved | 0.75 |
| | 5. e-P promotes healthy competition | 0.69 |
| | 6. e-P is reliable | 0.65 |
| | 7. Transparency of transactions increased | 0.76 |
| | 8. Degree of accountability increased | 0.78 |
| | 9. Degree of transparency increased | 0.79 |
| | 10. e-P gives satisfaction to suppliers | 0.82 |
| | 11. e-P improves organizations image | 0.76 |
| | 12. Suppliers has confidence in e-P system | 0.75 |

The data collected was tested for reliability and the overall results gave alpha value more than 0.98 (Table 6). In general, there are nine factors found to be influencing the adoption and use of e-Perolehan system among the government registered suppliers.

Table 6: Results for Reliability Tests

| No | Item | Number of items | Cornbach Alpha |
|----|------|-----------------|----------------|
| 1 | Organizational Leadership | 5 | 0.953 |
| 2 | Organization Perceived Usefulness | 12 | 0.978 |
| 3 | Organization Perceived Ease of used | 4 | 0.902 |
| 4 | Organization Facilitators | 8 | 0.918 |
| 5 | IT Infrastructure | 6 | 0.429 |
| 6 | IT Skills | 4 | 0.939 |
| 7 | E-Perolehan Capability | 6 | 0.706 |
| 8 | Government Policy & Regulations | 11 | 0.935 |
| 9 | Industry Acceptance | 14 | 0.975 |
| | Total | 70 | 0.9815 |

## Issues & Challenges in the Implementation of E-perolehan

The finding shows that the suppliers who are using e-Perolehan have indicated a positive attitude towards the system. However, there are still large numbers of suppliers who have not registered for e-Perolehan and among those who have registered, have not used the e-Perolehan system. The following points highlight the key issues inherent within Malaysia's e-Perolehan initiative that prevents the government and the service provider from maximizing the value potential of the system:

- Application hiccups
- 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 department was not involved directly from the beginning of the implementation.
- Successful interfacing to eSPKB for budget check is reliant on external factors – EG*Net, availability of IB Gateway and LFEP servers, etc.
- Intermittent EG*Net connectivity issues.

- Suppliers are adopting a wait-and-see attitude on e-Perolehan enablement.
- Low IT literacy amongst suppliers.
- Perceived high cost of enablement (PC, Smartcard, Smartcard Reader, Digital Certificate etc.)
- Suppliers contact information not up to date.
- Ignorance over the importance of electronic catalogue.
- Lack if confidence over information's security and confidentiality.

One of the main challenges for an e-Perolehan project is the establishment of an appropriate and context tailored strategy. Every project or initiative needs to be rooted in a very careful, analytical and dynamic strategy. This seems to be a very difficult task, requiring a focus on many aspects and processes, a holistic vision, long-term focus and objectives. Many public institutions limit their activities to a simple transfer of their information and services online without taking into consideration the re-engineering process needed to grasp the full benefits. The government must have a clear strategy to overcome the barriers to change. Part of the strategy is to engage in a rigorous assessment of the current situation, the reality on the ground and the inventory of projects, articulate costs, impacts and benefits of programme as well as continuously monitor and evaluate the project upgrading. Learning from the private sector, e-Procurement must be customer-driven and service oriented. This means that a vision of e-Procurement implies providing greater access to information as well as better, more equal services and procedures for public and businesses.

## Conclusion

The success of E-Government initiative in general and e-Perolehan in specific depends not only on the government as policy maker and implementer but also requires commitment and cooperation from all participating agents such as responsibility centers, service provider and suppliers in adopting and using IT application systems in doing their business with the government agencies and departments.

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