Association for Information Systems
AIS Electronic Library (AISeL)

PACIS 2013 Proceedings

Pacific Asia Conference on Information Systems (PACIS)

6-18-2013

Public E-Service Sustainability Failure Factors: An Exploratory Study

Haslinda Sutan Ahmad Nawi
Universiti Selangor, haslindasan@unisel.edu.my

Othman Ibrahim
Universiti Teknologi Malaysia, othmanibrahim@utm.my

Azizah Abdul Rahman
Universiti Teknologi Malaysia, azizahar@utm.my

PUBLIC E-SERVICE SUSTAINABILITY FAILURE FACTORS: AN EXPLORATORY STUDY

Haslinda Sutan Ahmad Nawi, Faculty of Computer Science and Information Technology, Universiti Selangor, Selangor, Malaysia, haslindasan@unisel.edu.my

Othman Ibrahim, Faculty of Computing, Universiti Teknologi Malaysia, Johor, Malaysia, othmanibrahim@utm.my

Azizah Abdul Rahman, Faculty of Computing, Universiti Teknologi Malaysia, Johor, Malaysia, azizahar@utm.my

Abstract

Based on some identified problems and challenges to the current ICT sustainability, this paper explores the failure factors of e-service sustainability in Malaysian public sector. Currently, the government agencies are transforming their operations and services through the use of ICT in line with the Malaysian Public Sector ICT Strategic Plan (2011-2015) that was launched on 7th July 2011. Their target is towards zero face-to-face service delivery with 90% of all government services available online by 2015 and 90% of total transactions for online services made available by 2015. However, most of the government services have difficulties in sustaining their e-services after their successful implementation. This preliminary study identifies fourteen failure factors towards public e-service sustainability gathered from interview with 8 respondents based on their experience in e-service implementation and operation.

Keywords: public e-service, sustainability failure factors, e-service sustainability

1 INTRODUCTION

Information and communication technology (ICT) plays an important role for government agencies to further increase their service efficiency. The implementation of e-services through e-government initiatives has a large potential in developing and delivering better services for citizens and the potential to transform government structures and processes (Allen, Juillet, Paquet, & Roy, 2001; Irani, Love, & Montazemi, 2007). However, it has been reported that several e-government initiatives face a number of challenges in terms of complexity and risk, and are not easy to manage (Gil-Garcia & Pardo, 2005; Irani, et al., 2007; Rosacker & Olson, 2008).

In Malaysia, the public sector remains the key for the global competitiveness of the national economy. The speed and cost-effectiveness of private sector operations depend on the speed and efficiency of the public sector. Consequently, there are many transformation strategies including e-service projects introduced by the Malaysian Government to increase their efficiency. One of the targets is towards zero face-to-face service delivery with 90% of all government services available online by 2015 and 90% of total transactions for online services made available by 2015 (PPTD & INTAN, 2011). For that reason, it is crucial to ensure that the e-service projects are successfully implemented and sustained.

This paper is an initial study on the failure factors in sustaining the public e-services in Malaysian public sector after their successful implementation. The study considers views from project stakeholders who have experience in implementing, managing, and monitoring e-service initiatives in government agencies.

1.1 Public E-Service

Electronic services or e-services are a means to organise and manage the administrative processes of government electronic services especially the interactive transaction between the Government and the public. Government services, which are designed to provide real-time services that can be accessed from anywhere with 24/7 accessibility at individual, organisational, and societal levels, are made available by ICT. (Lenk & Traunmuller, 2002) define e-service as "simple transactions between identifiable customers (citizens, enterprises) on one side, and a multitude of government organisations in charge of registering objects, issuing passports, collecting taxes or paying benefits on the other". According to (Goldkuhl & Persson, 2006), e-services allow an external user (a citizen) to interact with the Government services through a user interface of a public IT system based on web technology. Although e-services are used in many different settings and there is no commonly agreed definition (Rowley, 2006), there are some general characteristics applicable for most e-services. Firstly, e-services are based on electronic interactions between a service provider and a service consumer (Javalgi, Martin, & Todd, 2004; Rowley, 2006). Secondly, e-services are intangible, inseparable, and heterogeneous (Jarvinen & Lehtinen, 2004).

The term "public e-services" or simply "e-services" is used to describe a phenomenon where services are made available via an information system by the public agencies for public access. The e-services allow citizens to engage in transactions with government and utilities payments such as telephone and electricity bill, police summons, and road and transport department services. These e-services are accessed via multichannel service delivery such as the Internet and kiosk machines.

1.2 Sustainability

In general terms, sustainability can be defined as preserving something that has been available for over a period of time without having any external support to continue its operations (Reynolds & Stinson, 1993). (Misund & Hoiberg, 2003) define sustainable ICT as "technology that is capable of being maintained over a long span of time independent of shifts in both hardware and software".

Sustainability becomes a critical issue in the perspective of ICT projects or initiatives as there is an increased rate of failure among these projects (Abdelsalam, ElKadi, & Gamal, 2010). Some analysts have noted that e-services through e-government projects often fail, either totally or partially, to achieve their objectives despite initial success (Heeks, 2003) due to long-term sustainability problems (Aichholzer, 2004). (Heeks, 2002) categorises different levels of project failure as follows: (1) Total Failure, in which an ICT project ends up not being implemented at all, or a new project that has been implemented but eventually abandoned; and (2) Partial Failure, in which major goals of the ICT project have not been attained or significant undesirable outcomes are experienced. A clear form of partial failure is sustainability failure where a project or initiative succeeds initially but then fails after a year or so. A successful ICT project is when the project attains its major goals and does not experience significant undesirable outcomes.

(Pade, Mallison, & Sewry, 2009) group success or failure factors according to five sustainability dimensions:

- Institutional dimension: Institutional sustainability is achieved when prevailing structures and processes have the capacity to perform their functions over long term (Batchelor & Norrish, 2003). Aspects of institutional sustainability that need to be put in place include well-defined ICT laws, participatory policy-making processes, and effective public and private sector organisations that develop a framework in which the livelihoods of the community can be continuously improved.
- Technological dimension: It considers the ability to choose technology in an ICT project that can serve for an extended period of time (Cisler, 2002).
- Social and cultural dimension: This dimension considers the social and cultural contexts in which a project operates, and the response of the ICT project to these contexts. As the ICT project takes the social and cultural aspects of the community into account, people in the community feel empowered by the project and hence become active in seeking ways to keep the project running as it is in their own vital self-interest (Stoll, 2003).
- Economical/financial dimension: This is associated with the level of expenditure that can be sustained in long term (Batchelor & Norrish, 2003). E-service initiatives in the government agency are initially funded by development organisations; however, these initiatives have to be expanded and sustained in long term.
- Political dimension: An ICT project is often confronted with political challenges that hinder the progress or sustainability. Political sustainability is important for a project to be accepted by the main governing bodies of a community or country. A politically sustainable project therefore means that local and national politics, policies, and individuals can influence a project in a positive way (Cisler, 2002).

2 METHODOLOGY

The study reported in this paper is the first stage of our e-service sustainability research. The four stages of this study are as depicted in Figure 1.

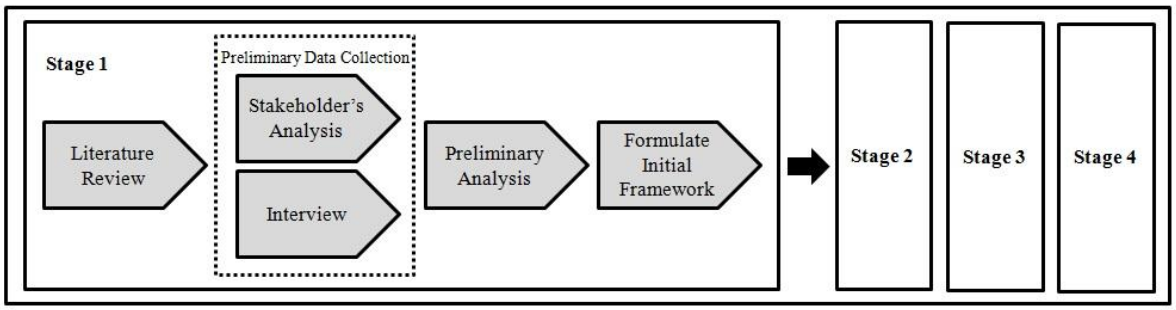

Figure 1. Stages in the study

In the study, stakeholder's analysis was done and four groups of stakeholders of e-service initiatives were identified as follows:

- User: Citizen i.e., primary users of the e-service application system.
- Regulator: Policy and process owner who determines institutional administrative policy and procedures.
- Service provider: Organisation that supplies, installs, and maintains the e-service product and its documentation as soon as the contract is signed.
- Implementer: Agency that owns and operates the e-service application system.

Using purposive sampling, eight respondents were interviewed. Five respondents who were regulators of e-service initiatives were interviewed; three of them were the senior officers of from public sector who managed and monitored ICT projects including e-services projects for the past seven years and another two respondents were officers from public sector who had had more than ten years experience in monitoring e-government projects. Another two respondents were under the category of service provider or from the vendor side; they had more than ten years experience in managing public e-service projects. The last respondent was the implementer of an e-service application. He was the Deputy Head of ICT Department and had five years experience in managing and maintaining an e-service application. Data was interpreted based on the respondents' experience and examples given during the interview sessions. To ensure consistency, the study adopted the failure definition used by (Heeks, 2002) .

From the interview, the data of the e-service issues and problems of e-service projects and initiatives was mapped using rich picture. The sustainability failure factors were then analysed and classified according to sustainability dimensions by (Pade, et al., 2009) as introduced in previous section.

3 RESULT AND DISCUSSION

Figure 2 shows the rich picture from the interview session with eight respondents. The figure highlights the failure factors related to e-service sustainability.

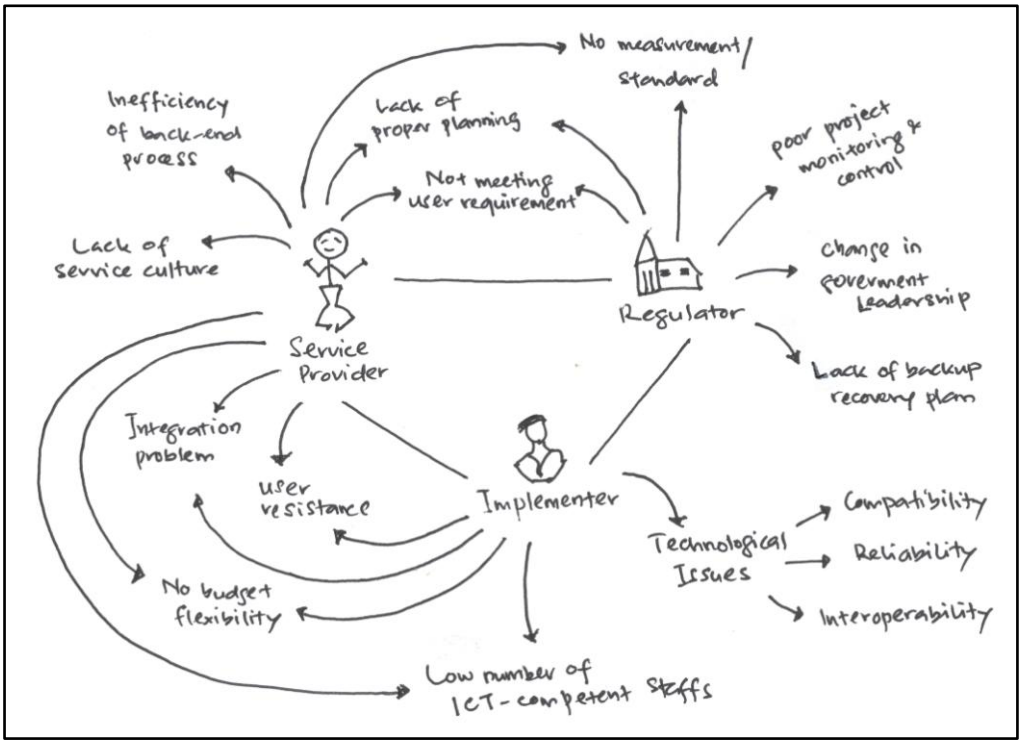

Figure 2. E-service issues and problems

3.1 Institutional Dimension

- Lack of proper plan on e-service initiatives
  Before the project work begins, the project champion must make sure that the work is properly understood and agreed by the project sponsor and key stakeholders. Inappropriate definition and planning done ahead of time lead to the project team to start off the project with inadequate resources and time. Later, the project that could be successful and sustained is viewed as a failure because it overshoots the budgets and deadlines, and does not meet the expectations of the project sponsor and key stakeholders. During the interview, the respondents mentioned about *no upfront planning to prevent future problems*, *upfront planning is not prepared* and *different viewpoints on the basic terms of the project*.
- Lack of project monitoring and control
  Poor e-service project monitoring and control are another factor mentioned by the respondents. The monitoring process should start from the strategic planning stage of an e-service implementation until the operational stages. The process should provide understanding into the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan. Among the comments from the respondents are *not easy to monitor every agency progress* and *don't know what's going on*.
- Not meeting user requirement
  The issues of not meeting the user requirement are common issues arising in most ICT projects. They are caused by ineffective communication among the vendor and user during requirement gathering. As a consequence, the developer needs to redo the requirement gathering. Among the issues mentioned by the respondents are *UAT not signed* and *the verification process is not complete.*
- No measurement and standard
  Issues raised by the respondent related to measurement and standard were *didn't measure their service delivery, didn't have the standard*, and *failed to do impact study*. To ensure the benefits of e-service delivery are delivered to the citizens, the e-service application requires doing more than just implementing a successful project. It also entails establishing key performance measures, setting baselines and targets for those measures, and tracking performance after implementation. This is one of the ways to maximise the benefits of e-service and to prolong its sustainability.
- Integration issues
  Respondents raised integration issues as among the failure factors by mentioning *new e-service does not fit with the current systems*, and *many service units need to work with other units.* Difficulties in integrating the new e-service application with the current systems will lead to the failure to sustain the initiative. Integration issues from this study's perspective refer to the merging or combining two or more system components or configurations into a higher level system element, and ensuring that the logical and physical interfaces are satisfied and the integrated system satisfies its intended purpose. Other than that, the roles and responsibility, and the process must be clearly defined. It means that there must be a standard to the measurement of the service delivery, or else it will lead to the failure to sustain the service.
- Low number of ICT-competent staffs
  A poor computer related staff skills among government employees will lead to the failure of e-service sustainability. Linked to this is the lack of skills and training required to effectively maintain and monitor the e-service system. One of the issues mentioned by the respondents is *personnel responsible and accountable did not possess appropriate ICT background.*
- Inefficiency of back end process
  Inefficiency of back end processes is another issue highlighted by the respondents in the interview session. The public sector must change and reengineer its processes to adapt to the new technology and culture of an e-service system, or else the issue of inefficiency back end process would contribute to the failure to sustain the e-service system. Related comments discussed by the respondents are *e-service must have a starting point and end point* and *clear back-end process*.

- Lack of backup recovery plan
  Comments *proper backup plan* and *recovery plan* are categorised into lack of backup recovery plan. A plan should be clear and specific about the organisation's recovery sequence and priorities in the event of various kinds of disasters. In the interview, the respondents agreed that a solid backup recovery plan would ensure the continuity of the e-service.

3.2 Technological Dimension

- Reliability and compatibility
  Respondents raised issues on *not reliable and not compatible with technology after several years implemented* i.e., technological issues where the developers failed to align the system design and technology used with the current technology. There were cases where the developer did not consider existing hardware capacity at which the program could actually run. It resulted into inappropriate systems with old design and obsolete technology, which eventually led to the systems not being reliable and compatible with latest technology. Other than that, *low quality of the end product* was also mentioned during the interview. This issue relates to the technological factors and the fact that the personnel responsible and accountable did not possess appropriate ICT background.
- Interoperability
  In the interview, the respondents commented on the issues of *interoperability* and *not fit to existing system.* The e-service system must be able to work together with other systems that are already in operation. It is important for e-service sustainability because interoperability reduces operational cost and complexity, and ensures the investments made worth the results.

3.3 Social and Cultural Dimension

- User resistance
  User resistance in terms of the vendor not getting user involvement especially during the user acceptance test has been highlighted by previous researcher. User resistance is a factor that prevents full integration of ICT in the e-service implementation and operation. This factor can be seen in terms of unwillingness among staffs to change their routine practices, and in terms of institutions finding it difficult to reorganise the ways they work although the reorganisation could facilitate innovative practices involving ICT. Among issues categorised under user resistance mentioned by the respondents are *do not know how to use the computer*, *not confident and feel that the computerised systems cannot help them to do their work efficiently*, and *feel that they have lost their authority*.
- Lack of service culture
  In the interview, the respondents mentioned about *lack of service culture*, *low service mentality*, and *to them the service is not important*. One respondent confirmed that there were cases where the agencies that implemented e-services did not have a clear policy and procedure on service in their organisation. The organisation did not have a clear definition of organisation service, standard of roles and responsibilities, and an appropriate measurement of performance related to e-services.

3.4 Economical/Financial Dimension

- No budget flexibility
  This situation is often caused by the project champion committing to allocated budgets that are too low, caused by lack of upfront planning. Due to this insufficient fund, the team needs to do budget re-allocation. However, there is no budget flexibility in government. It is full of bureaucracy especially when it comes to decision making in funds allocation and approvals. Among the comments related to this category are *insufficient fund*, *bureaucracy*, and *no flexibility.*

3.5 Political Dimension

- Changes in government leadership
  Issues related to changes in government leadership as raised by the respondents were *there are changes in government leadership* and *there is a possibility where a minister could change the ministry policy*. These factors are among the issue raised in sustaining the e-service project. If there is change in government leadership, there are always changes in direction and aspiration in the newly formed leadership. The changes thus cause changes in the policy and procedures, and the work process in the agencies implementing the e-service project. For example is when a new minister changes the ministry policy, thus impacts the implementation of the current e-service projects. This consequently needs the projects to be redone.

The results from this initial study contributes to the identification of 14 sustainability failure factors that have influenced the public e-services projects, as shown in Table 1. These factors are further categorised under the five sustainability dimensions.

No.	Sustainability Failure Factors	Frequency Mentioned in the Interview (%)	Sustainability Dimensions				
			Institutional	Techno-logical	Social & Cultural	Economical / Financial	Political
1.	Lack of proper plan on e-service initiatives	14	√				
2.	Lack of project monitoring and control	11	√				
3.	Not meeting user requirement	11	√				
4.	User resistance	8			√		
5.	Changes in government leadership	8					√
6.	No budget flexibility	8				√	
7.	No measurement/ standard	8	√				
8.	Integration issues	8	√				
9.	Low number of ICT-competent staffs	6	√				
10.	Inefficiency of back end process	6	√				
11.	Lack of service culture	3			√		

12.	Lack of backup recovery plan	3	√				
13.	Compatibility and reliability	3		√			
14.	Interoperability	3		√			

Table 1. Sustainability Failure Factors

4 CONCLUSION

It is important to analyse and understand the different factors behind the failure of sustainability in e-service initiatives. Hence, their sustainability becomes a critical issue due to the increased rate of failure in sustaining these initiatives. This paper discusses the view and experience from e-service stakeholders. 14 sustainability failure factors have been identified. It has to be noted that most of the respondents in this study were from regulator and service provider groups. In general, the findings clearly indicate that the top three sustainability failure factors of such initiatives are from the institutional dimension.

This finding helps the researcher to understand the scenario of public e-services sustainability in the context of the Malaysian Government. We believe that these sustainability failure factors and dimensions could be related to our next investigation on sustainable e-services, and could help us in formulating our initial research framework.

References

Abdelsalam, H. M. E., ElKadi, H. A., & Gamal, S. (2010). *Setback and Remedy of Local e-Government Projects: A Case Study from Egypt.* Paper presented at the International Conferences on Theory and Practice of Electronic Governance, Beijing, China.

Aichholzer, G. (2004). Scenarios of e-government in 2010 and implications for strategy design. *Electronic Journal of e-Government, 2*(1), 1-10.

Allen, B. A., Juillet, L., Paquet, G., & Roy, J. (2001). E-governance & government on-line in Canada: partnerships, people & prospects. *Government Information Quarterly, 18*(2), 93-104.

Batchelor, S., & Norrish, P. (2003). Sustainable Information Communication Technologies (ICT). Retrieved from http://www.sustainableicts.org/Sustainable.htm

Cisler, S. (2002). Schools Online Planning for Sustainability: How to keep your ICT project running. Retrieved from http://www2.ctcnet.org/ctc/Cisler/sustain.doc

Gil-Garcia, J. R., & Pardo, T. A. (2005). E-Government Success Factors: Mapping Practical Tools to Theoretical Foundations. *Government Information Quarterly, 22*(2), 187-216.

Goldkuhl, G., & Persson, A. (2006). From e-ladder to e-diamond - Re-conceptualising Models for Public E-services. *European Conference on Information Systems*. Retrieved from http://aisel.aisnet.org/ecis2006/139

Heeks, R. (2002). Failure, Success and Improvisation of Information Systems Projects in Developing Countries. Retrieved from http://www.sed.manchester.ac.uk/idpm/publications/wp/di/di_wp11.pdf.

Heeks, R. (2003). *Most e-Government –for Development Projects Fail: How can Risks be Reduced?* Paper presented at the iGovernment Working Paper Series.

Irani, Z., Love, P. E. D., & Montazemi, A. (2007). E-government: past, present and future. *European Journal of Information Systems, 16*(2), 103-105.

Jarvinen, R., & Lehtinen, U. (2004). *Services, e-Services and e-Service Innovations — Combination of Theoretical and Practical Knowledge*. Paper presented at the Frontiers of e-Business Research.

Javalgi, R. G., Martin, C. L., & Todd, P. R. (2004). The Export of e-services in the age of technology transformation: challenges and implications for international service providers. *Journal of Services Marketing, 18*(7), 560-573.

Lenk, K., & Traunmuller, R. (2002). Preface to the focus theme on e-government. *Electronic Markets, 12*, 145-147.

Misund, G., & Hoiberg, J. (2003). Sustainable information technology for global sustainability.Digital Earth. *Information Resources for Global Sustainability Symposium*. Retrieved from http://www.ia.hiof.no/~gunnarmi/omd/dig_earth_03/

Pade, C., Mallison, B., & Sewry, D. (2009). 'An Exploration of the Critical Success Factors for the Sustainability of Rural ICT Projects - The Dwesa Case Study' in C.Barry, et al. (eds). *Information Systems Development: Challenges in Practice, Theory, and Education, 1, Springer*.

PPTD & INTAN. (2011). Inputs for Persidangan Perkhidmatan Awam Keenam Belas (PPA 2011). Retrieved from http://www.mampu.gov.my/c/document_library/get_file?uuid=72ea6a15-3f2a-4df0-9ef0-fc5f52ca47ae&groupId=10136

Reynolds, J., & Stinson, W. (1993). *Sustainability analysis*. Paper presented at the Primary Healthcare Management Advancement Programme.

Rosacker, K. M., & Olson, D. L. (2008). Public sector information system critical success factors. *Transforming Government: People, Process and Policy, 2*(1), 60-70.

Rowley, J. (2006). An Analysis of the E-Service Literature: Towards a Research Agenda. *Journal of Internet Research, 16*(3), 339-359.

Stoll, K. (2003). Telecentres Sustainability: What Does it Mean? Retrieved from http://topics.developmentgateway.org/ict/sdm/previewDocument.do~activeDocumentId==442773