

Toward Full Public E-Service Environment in Developing Countries

H. S. Hassan, E. Shehab, and J. Peppard

Abstract—Changing technology and increased constituent demand for government services derive the need for governmental responsiveness. The government organisations in the developing countries will be under increased pressure to change their bureaucratic systems to be able to respond rapidly to changing and increasing requirements and rapid technology advancements. This paper aims to present a conceptual framework for explaining the main barriers and drivers of public e-service development. Therefore, the framework provides a basic context within which the process and practice of E-Service can be implemented successfully in the public sector organisations. The framework is flexible enough to be adopted by governments at different levels; national or local by developing countries around the world.

Keywords—Developing countries, E-service, Government services, Public administration.

I. INTRODUCTION

GOVERNMENTS today are fighting a strong battle to provide efficient and cost-effective services and solutions to their respective constituents. Some improvements in governments' processes can be made simply by swapping out old technology for the newer web-based versions. But, to do so without critically reviewing and challenging current processes would not lead to full potential. The current electronic government initiatives in some developing countries are still in its infancy with projects suffering a number of failures [1]. In some cases, there is the total failure of an initiative never implemented, or in which a new system is implemented but immediately abandoned. Alternatively, there is the partial failure of an initiative in which major goals are unattained, or in which there are significant undesirable outcomes [2].

Layne and Lee [3] have divided the stages of e-government in terms of their degree of technological and organizational sophistication into four stages, namely: cataloguing, transaction, vertical integration and horizontal integration.

According to this division, Ronaghan [4] claims that the

result of classifying the 191 UN member states has revealed that 97 have reached stage cataloguing, 55 have reached transaction stage and only 17 have arrived at vertical integration stage while none have reached horizontal integration stage.

II. REVIEW OF RELEVANT EFFORTS

Under the name of Public electronic service, a series of efforts are grouped, which tend to introduce the Internet and computer networks into public administration actions. Many of these efforts have conceptualised the challenges and the success factors associated to the e-service development in its different phases. This section will briefly discuss these previous efforts. Such review helped in the development of the proposed framework.

In response to the question, why do most e-government-for-development projects fail, Heeks [5] proposed "ITPOSMO model". Heeks points out that there are high rates of failure of e-government projects in developing countries. Consequently, he addresses the idea of design-reality gap, or rather the gap that exists in an organisation between the conceptions and public sector realities that determine success or failure in the information age reform. He notes that the larger this design-reality gap, the greater the risk of e-government failure; the smaller the gap, the greater the chance of success. His analysis of e-government projects indicates the seven dimensions – summarised by the ITPOSMO acronym – are necessary and sufficient to provide an understanding of design-reality gaps: Information, Technology, Processes, Objectives and values, Staffing and skills, Management systems and structures, Other resources: time and money.

Another effort is also related to the "Factor Model" proposed by Heeks [6] to judge e-government success and failure. This model summarises the reasons behind success and failure of e-government projects. The Factor Model identifies a set of ten key factors: external pressure, internal political desire, overall vision and strategy, project management, change management, politics/self-interest, design, competencies, technological infrastructure, and other. Presence or absence of these factors will determine success or failure.

In another attempt, Basu [7] examines the legal and infrastructure issues related to e-governance from the perspective of developing countries. In particular, he examines how far the developing countries have been successful in providing a legal framework. As regards to the objective of e-government, a distinction is made between the

H. S. Hassan is a PhD student in Decision Engineering Centre, School of Applied Sciences, Cranfield University, Cranfield, Bedford, MK43 0AL, UK (corresponding author to provide phone: +44 1234750111; extension: 5578; e-mail: h.s.h.hassan@cranfield.ac.uk

E. Shehab, Senior Lecturer and Course Director in Decision Engineering Centre, School of Applied Sciences, Cranfield University, Cranfield, Bedford, MK43 0AL, UK; e-mail: e.shehab@cranfield.ac.uk

J. Peppard, Professor of Information Systems and Director of the IT Leadership Program, School of Management, Cranfield University, Cranfield, Bedford, MK43 0AL, UK; e-mail: j.peppard@cranfield.ac.uk

objectives for internally focused processes (operations) and objectives for externally focused services. He identifies some legal issues such as privacy, public access to information, authenticity, and politics acceptance. He also spots guidelines for a proper and ideal legal framework for e-government operations in the developing countries.

One recent paper of Chen *et al.*, [8] identifies critical success factors of electronic government and proposes an implementation framework. It compares between developed and developing countries in terms of implementing electronic government. The comparison is based on four key factors are termed as National e-government Infrastructure (NeI) factors: Network Access, Network Learning, Network Economy, Network Policy; in addition to Culture Factors: National Culture, Organizational Culture, Social Norms (resistance to change); and Society Factors: History, Citizen, Governance, Organizational Structure, Politics and Information Availability. In addition, the authors present an extensive case study to illustrate how the proposed framework can be used to analyze electronic government strategies in a developed country (United States) and a developing country (China).

In order to identify organizational processes of resistance and support to e-government innovations, Ebbers and Van Dijk [9] proposed a multi-disciplinary and non-linear innovation model. The proposed model grasps the whole process of innovation of e-government services: Gestation, Perception of urgency, Plan, Top management involvement, Adaptation of the innovation, Adapting policy, Clarification, Deploying financial resources and Deploying information systems. Presence or absence of each phase represents indicators of support or resistance e-government innovations.

It is clear that all the above mentioned efforts and other efforts can be considered as useful guides to identify the major elements that affect the process of e-service development in the public sector. However, most, if not all electronic government frameworks and implementation strategies in literature is based on experiences of developed countries. Feeling the pressure and demand from citizens to provide electronic services online, many developing countries' governments have no choice but to follow electronic government development strategies proposed and carried out by developed countries [10]. Hence, the authors believe that there is a need to develop a conceptual framework which places emphasis on the e-service development process within the environment of developing countries' public sector which is at an early stage of its progress. Given the substantial differences in many key aspects of electronic government related technological and social conditions between developed and developing countries, electronic government development strategies and experiences from developed countries may not be directly applicable to developing countries.

III. METHODOLOGY

The framework proposed in this paper builds on prior literature in the area of e-service development in public

organisations. Also, the framework is adapted from the efforts being undertaken in developing countries, which are at a basic stage of their progress besides considering e-government lessons already learned in the developing countries world. The review of the previous studies that have conceptualised the e-service challenges in the public sector facilitated the development of the proposed framework. Frameworks are useful because they allow us to organize and integrate the various elements of a problem in a simple and consistent way, assuring the attainment of the pursued outcomes. In addition, they allow holding a common work discipline [11]. Based on a literature review, the paper summarises the factors that either facilitate or impede the E-service initiatives in the public sector; target what e- public service should be and determine what steps need to be taken to reach that designated target. It identifies key factors for successful e-public service and hence, proposes the conceptual framework.

IV. PROPOSED FRAMEWORK

Motivated by a desire to increase the chance of success of e-service projects in developing countries' governments, the authors develop a conceptual framework (shown in Fig. 1) for explaining the main barriers and drivers of public e-service development.

The framework considers the e-service development process as a transformation from the traditional rigid context; which is the current situation in many developing countries; to full public e-service environment (desired end state) emphasizing citizen-centric focus and digitalisation. While e-service transformation is on the move from the initial state to the desired state, a number of barriers hinder the e-service progress; while a number of driving factors enable or facilitate it.

The first part of the framework (the As- Is part) represents the traditional rigid structure of the government as described by Ho [12] as a hierarchical bureaucracy. This paradigm focuses on internal and managerial concerns and emphasizes division of administrative labour among persons and offices, specialisation, vertical hierarchy of control, standardisation, and routinization of the production process. However, it is criticized for its rigidity, inactivity of procedures, making decision-making slow or even impossible when facing some unusual case, and similarly delaying change, evolution and adaptation of old procedures to new circumstances. This type of government structure is also characterised by its proceduralism, inefficiency and overspecialization, making individual officials not aware of larger consequences of their actions.

Bureaucracy can lead to the treatment of individual human beings as impersonal objects and not allowing them to use common sense, as everything must be as is written by the law. As a result, the government is unable to serve human citizens who have preferences and feelings [12, 13, 14, and 15].

The designated target of the proposed framework is the full Information and Communication Technology (ICT) based

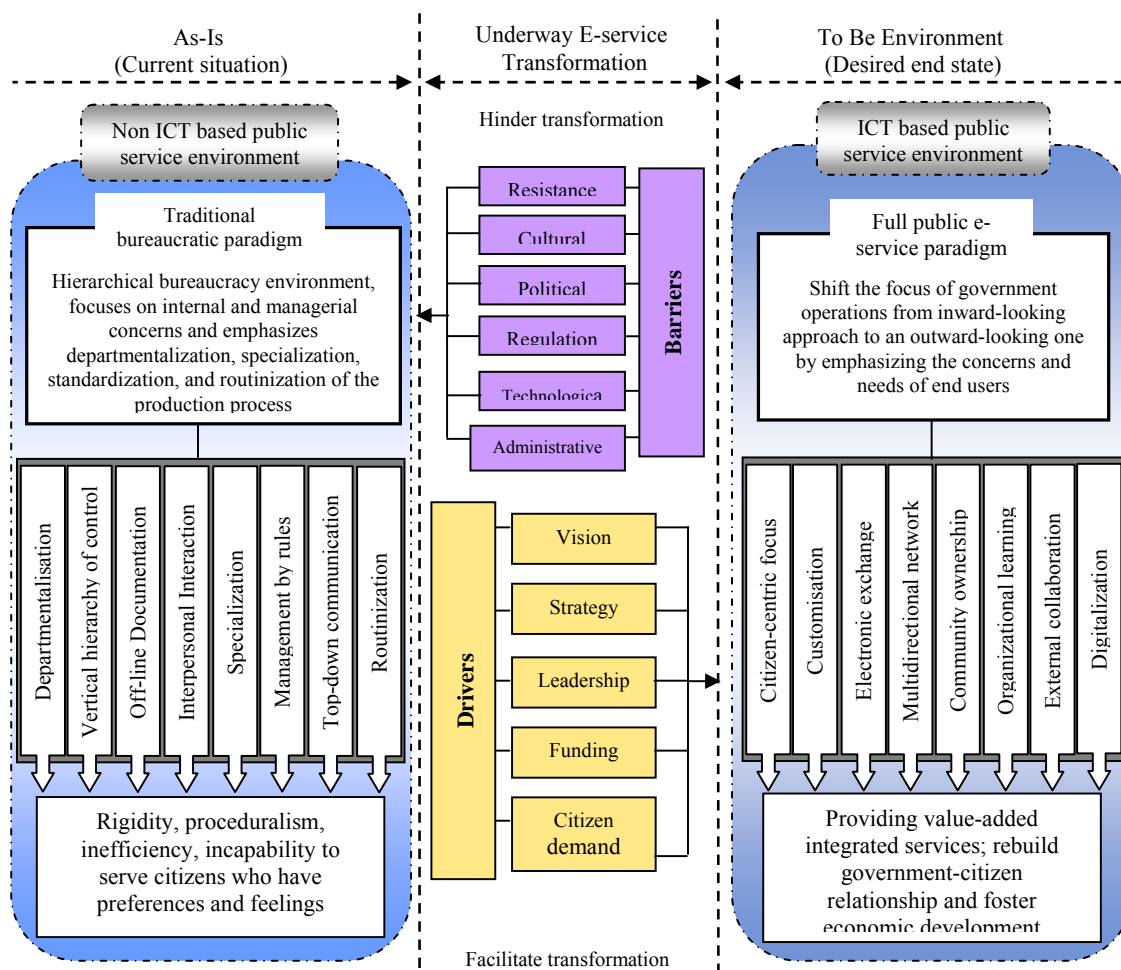


Fig. 1: Proposed framework explaining barriers and drivers of public e-service development.

government. ICT can promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens. This full e-public environment can deliver services via the Internet, telephone, community centres (self-service or facilitated by others), wireless devices or other communications systems. This paradigm is also characterised by emphasizing:

- The citizen-centric focus, which gives attention to the concerns of citizens and provides services when and where they want them with greater flexibility and control.
- Community ownership principle, which empowers citizens to take ownership of community problems and urges officials to partner with citizen groups to identify solutions and deliver public services effectively.
- Service customisation and personalisation based on citizens preferences and needs.
- Electronic exchange, where the internet (besides using other electronic means) can create a seamless way of communication and interaction between citizens and officials, rather than face to face interaction. Citizens no longer need to know which departments are responsible for what
- Multidirectional network, direct communication with internal employees, interdepartmental teamwork and information sharing.
- Innovation, organizational learning, facilitation and coordination among parties, and entrepreneurship so that government can continue to reinvent itself.

In the way of transformation from the bureaucratic environment to one in which citizens and public employees and officials embrace the promise and need for electronic efficient paradigm, a number of barriers hinder the e-service progress. While reviewing the literature, the author came

across a variety of elements that get in the way of e-service development. Those elements can be grouped under six major categories. However, many elements can fall under more than one category, depending on different perspectives. These categories are:

A. Political barriers

Those barriers are related to the political leadership such as lack of potential will and support, lack of vision and strategy, absence of an E-government champion, over-ambitious milestone, and absence of detailed policy.

B. Administrative barriers

Those barriers relate to the complex issues that can arise as a result of poor organisational infrastructure, complexity and poor project management, lack of coordination among organisations/ departments, conflicting priorities of organisations, old structure and processes, lack of e-service applications, lack of partner readiness and cooperation difficulty in reengineering of internal processes.

C. Resistance barriers

This category relates to barriers around resistance to innovation by all levels of government personnel which can slow down, impair or prevent the necessary redesign of organizations and their processes required to deliver effective e-service. The employees may resist the shift of power resulting from the introduction of e-service. Further, this initiation will require structural reforms in the organization, modification of job descriptions and change in duties.

D. Technological barriers

Many e-services are based on the evolution of earlier public administration systems and ICT network infrastructures, which can create technical incompatibilities between systems within one administration. Other technological challenges include developing secure identification and authentication systems, poor infrastructure, lack of standards for quality, design of websites/portals, unreliable internet connections and issues related to security and privacy.

E. Cultural barriers

Are those associated with either organisational or social culture. Examples may include: lack of awareness/information, inactive citizens' participation, opposition by professional or union interests, e-literacy, multi-lingual/ multi-cultural issues, resistance to change by citizens, and government's reluctance for citizens' involvement.

F. Legislative barriers

Related to the existence of appropriate laws, regulations, directives that allow or facilitate the deployment of electronic services. Lack of suitable legal framework/ Unsuitable legislations, complexity of required policies and lack of methods for productivity and progress monitoring, are examples of the legislative barriers.

While barriers hinder the e-service progress; drivers motivate and force it. They are behind the success of the e-

government service projects; so they should be well identified and recognised.

1. Vision

Planning for e-service should begin by establishing a broad vision that flow from the large goals or concerns of the society. Citizens should also be included in the government e-service vision. It should be developed for the government e-service initiative for the administrative area, citizens' area and for the society.

2. Strategy

To manage change resulting from introducing the e-service initiative, a specific plan of action should be developed first. A strategy should be included to motivate the organisation towards achievement of the e-service program. A strategic plan should anticipate uncertainties such as technology, seeing it as the means not the end and integrating IT with broader reform objectives.

3. Leadership support

It is familiar to consider leadership support as a driver for public sector e-service development and success. E-service projects should be under the supervision of a special minister who holds a cabinet position in the government. High-level leadership involvement is essential to ensure e-service project planning, to acquire the necessary resources, to motivate staff, and to ensure coordination across ministries and organisations.

4. Citizens' demand

This factor derives for reform from outside government and exerts pressure for change. It is a motivation for the government to implement e-service project when there is citizens' demand and pressure for it.

5. Funding

In order to implement an e-service project, the government needs to understand what resources are available to be devoted to achieve the project's reasonable and attainable goals. The availability of such sufficient funding is a significant factor for public organisation to move towards e-service success.

V. IMMEDIATE STEPS

Several immediate steps should be taken to accelerate the transformation to the desired end-state. These include:

1. Institutionalize regular dialogue, shared vision and partnership among the top organizational leaders.
2. Organisations should employ managers (HR, finance, IT, program) with the necessary hybrid set of skills - management, technology and process.
3. Involve employees and all stakeholders in problem solving and process improvement programs driven by actively concerned leaders.
4. Create a government-wide risk management training and risk incentive programs.
5. Develop a steady and secure IT budget for the entire

government, taking into consideration balancing risk against value.

6. Obtain executive and legislative agreement on how to transform cross-agency business processes and funding.
7. Establish formal methods which organisations can use for productivity and progress monitoring and accountability; and evaluate cross-organisation e-government systems and projects.
8. Establish national legislative appropriations committee or group to separately fund e-government projects.

Formalize incentives for managers to create temporary inter-organisation teams that solve problems and create solutions and implementation strategies.

VI. CONCLUSIONS

By placing special emphasis on the developing countries context, this paper presents a conceptual framework which aimed to contribute to the explicit understanding of the E-service development; and explaining the main barriers and drivers along the process. Several immediate steps were identified that, if taken, would accelerate the transformation to the desired full public e-service paradigm. Therefore, the paper provides a practical guide to be applied especially in countries in which e-service initiative is still in its infancy.

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REFERENCES

- [1] Beynon-Davies, P. (2005), "Constructing electronic government: the case of the UK inland revenue", *International Journal of Information Management*, vol. 25, no. 1, pp. 3-20.
- [2] Heeks, R. (2001), "Understanding e-Governance for Development", *I-Government Working Paper Series*, Institute for Development Policy and Management, University of Manchester, Precinct Centre, Manchester, UK. Paper no. 11, pp. 1-25.
- [3] Layne, K. and Lee, J. (2001), "Developing fully functional e-government: A four-stage model", *Government Information Quarterly*, vol. 18, no. 2, pp. 122-136.
- [4] Ronaghan, S. (2002), "Benchmarking e-government: A Global Perspective – Assessing the Progress of UN Member States", *United Nations Division for Public Economics and Public Administration*, United Nations.
- [5] Heeks, R. (2003), "Most e-Government-for-Development Projects Fail: How Can Risks be Reduced?", *I-Government Working Paper Series*, Institute for Development Policy and Management, University of Manchester, Precinct Centre, Manchester, UK. Paper no. 14, pp. 1-19.
- [6] Heeks, R. (2003), "E-Government for Development: Causes of E-Government Success and Failure: Factor Model", Institute for Development Policy and Management, University of Manchester.
- [7] Basu, S. (2004), "E-Government and Developing Countries: An Overview", *International Review of Law Computers and Technology*, vol. 18, no. 1, pp. 109-132.
- [8] Chen, Y. *et al.* (2007), "Electronic Government Implementation: A Comparison between Developed and Developing Countries", *International Journal of Electronic Government Research*, vol. 3, no. 2, pp. 45-61.
- [9] Ebberts, W. and Van Dijk, J. (2007), "Resistance and support to electronic government, building a model of innovation", *Government Information Quarterly*, vol. 24, no. 3, pp. 554-575.
- [10] Hassan, H., Shehab, E. and Peppard, J. (2008), "Adoption of E-service in Developing Countries: Issues and Challenges", in proceedings of

Cranfield Multi-strand Conference (CMC) 6-7 May 2008, Cranfield, UK.

- [11] Montagna, M. (2005), "A framework for the assessment and analysis of electronic government proposals", *Electronic Commerce Research and Applications*, vol. 4, pp. 204-219
- [12] Ho, A. T. K. (2002), "Reinventing local governments and the E-government initiative", *Public Administration Review*, vol. 62, no. 4, pp. 434-444.
- [13] Bozeman, B. (2000), "Bureaucracy and Red Tape", Upper Saddle River, N.J: Prentice Hall.
- [14] Huber, J. and Shipan, C. (2002), "Deliberate Discretion: The Institutional Foundations of Bureaucratic Autonomy", Cambridge: Cambridge University Press.
- [15] Chowdhury, F. L. (2006), "Corrupt Bureaucracy and Privatization of Tax Enforcement", Dhaka: Pathak Samabesh.