Critical Success Factors of E-Government: A Proposed Model for E-Government Implementation

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Abstract
This paper draws on the extant literature on e-government policy formulation, implementation and execution. The purpose of the synthesis of this literature is to advance our understanding of the factors leading to success and failure and to elaborate on the underlying enabling and inhibiting conditions. This exercise is significant with respect to research and practice to avoid the pitfalls of imposing universal approaches to research and policy practices. Rather, it will draw a distinction between generic (general) and specific (context-contingent) factors. With this fundamental understanding, we can suggest the kind of factors that have strategic importance and which are irrelevant in terms of e-government policy formulations. The paper, further, provides a model for successful e-government implementation.

Keywords: e-government implementation, critical factors, e-government model, technical factors, govern factors, organizational factors

1. Introduction

Governments around the world are working continuously in order to improve services for their citizens. However, most governments face problems with their current systems such as bureaucratic tendencies in governance system, centralized decision-making patterns, complexity of redundancies in the public sector, lack of coordination and information sharing between the public sectors, and the lack of effective Information and Communication Technologies (ICTs) infrastructure.

In recent years, government agencies around the globe have embraced e-government initiatives, which can be seen operating in practically all walks of life. The e-government concept has attracted substantial attention in the public administration sector for its efficiency and effectiveness in public service decentralization and its better processes. Through e-government, government and public sectors will gain a lot of benefits and opportunities such as reducing the time and cost (supply and demand) of providing service to the general public, solving the problem of "red-tape", and increasing the efficiency and effectiveness of civil agencies.

Governments are embarking on providing e-access for public service delivery to citizens so that they can benefit from the emergence of the digital age. Such e-service contributes to overall system success in terms of customer satisfaction and it enables service providers to achieve the long-term goals of user retention and expansion into other areas [1]. Although they add to our understanding of e-service, most e-service definitions are grounded in private sector service delivery. However, understanding e-service in terms of the public sector requires an understanding of the e-government.

Norris et al. describe e-government as "the delivery of services and information, electronically, to business and residents, twenty-four hours a day, seven days a week" [2]. In contrast, West defines e-government simply as "the delivery of information and services online through the internet" [3]. Governments around the world are racing to implement the e-government concept in their countries. However, previous studies have indicated some examples of e-government failure [4, 5]. Beynon-Davies indicates that many public sector organisations are trying to implement the e-government concept and deliver their services electronically. However, some of them have suffered failure in adopting this concept [6].

According to Heeks, in developing countries, 35% of e-government projects are total failures, 50% are partial failures, and only 15% are successes [7]. Therefore, scholars have recommended further studies in this area [8, 9] in order to avoid e-government failure. In addition, Wood-Harper et al. declare that studying the factors involved in e-government delivery is an important issue. Countries around the world are implementing e-government using different approaches [10]. However, as mentioned above, some of them have faced total or partial failures. On the other hand, other initiatives have successfully resulted in huge steps in e-government implementation through the availability of certain factors such as leadership in Singapore [cf. 11].

These different initiatives have pointed to different critical factors for e-government implementation. This paper indicates critical factors from different initiatives around the world that have influenced the success or failure of e-government implementation. These factors are categorized into three groups (governing factors, technical factors, and organizational factors).

The paper identifies and reviews the framework of e-government implementation, highlighting a comprehensive set of potential factors influencing the successful adoption of e-government. Furthermore, the paper presents the development of a conceptual e-government model and concludes the analysis by providing recommendations. The findings are significant for both researchers and practitioners in this field. Exploring the critical factors for e-government implementation helps to implement the e-government

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project successfully avoiding the probability of failure, which can lead to undesirable consequences.

2. Critical Factors for E-Government Adoption

The paper identifies the critical factors for successful e-government implementation. The critical success factors for e-government implementation are Governing Factors, Technical Factors and Organizational Factors. In addition, each of these three factors has sub-factors.

After identifying these factors, a conceptual model is drawn up for successful implementation of e-government. Previous studies have indicated a number of e-government initiatives implemented by various countries have resulted in failure because they have emphasized the importance of certain factors such as technological factors, ignoring other important factors. This leads to a failure to see the initiatives from all dimensions. The following section identifies the governing factors for successful e-government implementation.

2.1. Governing Factors for E-Government Adoption

In this section, the governing factors for successful e-government implementation are discussed. Governing factors influence people's decisions to adopt e-government initiatives and furthermore can assist or limit the public sector's effort to diffuse e-government initiatives. The first dimension of e-government adoption is the governing factors, which are as follows:

Vision: The purpose of government is to further the shared goals of a society. Therefore, e-government implementation begins by establishing a broad vision. Vision is the roadmap for how to reach the intended objectives, which becomes the goal for all decisions and plans in the whole agency. The commitment to turn a vision into reality leads to successful implementation of e-government.

Strategy: Any project that involves change should develop a strategy to motivate the organization toward achievement of the goals [12]. Strategy is an important factor for e-government implementation. For example, Singapore's success in providing public services online can be attributed to the strategies adopted [11].

Top Management Support: In order to achieve a successful project in civil agencies it has to be endorsed by top management. Strong support from top management is important and is needed throughout the implementation. Top management needs to publicly and explicitly identify the project as a top priority [13]. Through strong top management support, it can avoid e-government implementation facing obstacles such as resistance to change. Top management support is a critical success factor for e-government adoption.

Leadership: Strong leadership is one of the critical pre-conditions upon which e-government success hinges. E-government adoption needs a leader who can put e-government onto the agenda, set it within a broader reform agenda, and who can make it happen.

Citizen-Centric: In the private sector, customer expectations are now predicated on speed combined with excellent service. The same service is expected from the public sector by citizens, such as being accessible 24 hours a day, 7 days a week. Mintzberg points out that we do not have to call someone a customer in order to treat them well or ensure that services are designed with them in mind. Customers buy products or services, but citizens have rights "that go far beyond those of customers" [14]. E-government activities today are aimed at achieving efficiency in creating and delivering services to citizens. E-Government services should be designed so as to help citizens get in, find their information or transact their business, and then get out as efficiently as possible.

Funding: E-government initiatives around the world are mainly related to lack of funding [cf. 15]. According to Okiy "The importance of funding in providing excellent service cannot be over emphasized. It is the glue that holds the building, collections and staff together and allows attaining goals" [16]. Funding is a critical factor for starting e-government initiatives. Furthermore, it is a requirement for the continuation of e-government implementation.

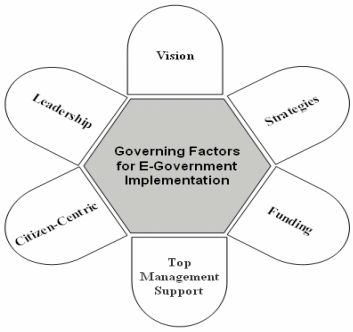

Figure (1) Governing Factors Model for E-government Adoption

2.2. Technical Factors for E-Government Adoption

The determining technical factors are the infrastructure, tools and applications required to enable government agencies to participate in the adoption of e-government. Furthermore, the technological information determinants require an environment to support the implementation of e-government initiatives. For the second dimension, the technical factors are as follows:

Information Technology (IT) Infrastructure: IT infrastructure that is capable of supporting and enabling the execution of e-government is a requirement for successful e-government implementation. An e-government infrastructure, in general, is comprised of an infrastructure application server environment and its security, data and content management tools; application development tools; hardware and operating systems; and a systems management platform. The infrastructure is considered to be the heart of the e-government concept.

Information Technology (IT) Standards: IT standards are an important requirement for e-government implementation. Many obstacles appear in the collaboration between government agencies, and the hardware and software in different systems in the government may not work together,

leading to e-government failure. Therefore, to optimise implementation of e-government there should be IT Standards.

National Information Infrastructure (NII): Another requirement for e-government implementation is a National Information Infrastructure (NII). The NII consists of physical technologies such as the Internet, landlines and telecommunication systems. The NII is an extremely important development [17] and in e-government implementation, it should be accessible to enable them to perform services without difficulties.

Collaboration: Collaboration between agencies is one of the important requirements for accomplishing e-government adoption. Government departments are individualized and make decisions on their own. However, it is important that there is effective communication between departments and agencies. To do this, internal applications need to be developed and utilized by employees to share information and improve communication such as E-mail. Implementing successful collaboration will result in the provision of different services by different departments from a single point.

Security: One of the important factors in e-government implementation is securing the government's information from unauthorized access. Underestimating the importance of this factor can result in unauthorized access to sensitive information, loss of trust etc, which unfortunately lead to e-government failure. On the other hand, a high level of confidence and trust among all users (citizens, businesses and government) will be the foundation of a successful e-government initiative.

Relative Advantages: Relative advantage is defined as "the degree to which an innovation is perceived as being better than the idea it supersedes" [18]. Furthermore, relative advantage may refer to the use of web technologies over other means of government interactions. Relative advantage is the perception that a new system allows one to accomplish a task more effectively or efficiently than the current system. E-government initiatives will be promptly adopted if their merits can be identified and presented to stakeholders. In addition, relative advantage is seen as an important motivator by all adopters. In the case of e-government, people may try to adopt it if they find that they save time and money in using the service [18]. According to Tornatzky and Klein, relative advantage is considered to be an important factor in determining adoption of new innovations such as e-government [19].

Citizen Relationship Management (CzRM): In e-government, citizens are seen as parallel to customers. Governments have a large amount of information about their citizens in their databases. Therefore, Citizen Relationship Management (CzRM) is crucial in any e-government implementation related to customer relationship management. CzRM is about making better use of the considerable amounts of information that the government already collects [20].

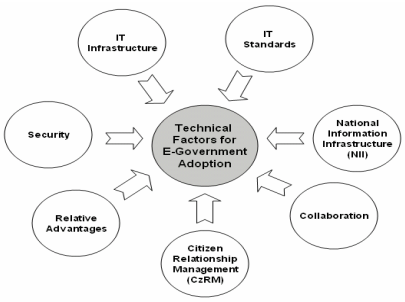

Figure (2) Technical Factors Model for E-government Adoption

2.3. Organizational Factors for E-Government Adoption

E-Government projects are located all around the world. However, some of these projects lack critical factors such as technical and managerial skills. These factors need to be considered both in the implementation phase of the project and during its subsequent operation.

This section of the paper discusses the organizational factors influencing e-government initiatives. Information and Communication Technologies (ICT) are often conceived of in terms of machinery and engineering, rationality and objectivity. Many e-government systems are designed according to these conceptions. The trouble is that many government and civil society organisations do not adhere to the organizational factors. The organizational factors for successful e-government implementation are as follows:

Policy and Legal Issues: Since the concept of e-government is radically changing the way the public sector is doing business, new legal issues continue to arise [15]. As a result, e-government implementation requires the development of policy and furthermore a range of legislative changes.

Quality: In recent years, the main effort has been invested in improving the quality and efficiency of service delivery, mainly through different e-government initiatives. One of the main objectives of e-government is the improvement of public service quality and the way in which services are delivered. Most of the literature discusses on-line service quality in the private sector with only limited discussion in relation to the public sector. Quality in terms of e-government can be defined as citizens' general assessment and judgement of the value and excellence of offerings in on-line services. Speed and ease of use of web sites are examples and indicators of quality in the public sector.

Reward System: E-Government is considered a new concept and Heeks suggests that one way to alter stakeholder motivations to support the introduction of a new system is to use a reward system [21]. Employees will be more willing to give their time and effort to projects if senior management recognize and appreciate their contribution. Thus, the implementation of e-government projects requires employee involvement and a reward system that motivates them to participate and produce high-level work.

Implementation: Implementation plays an important role in making plans realistic. Implementation in general can be simply defined as putting plans into practice or a series of governmental decisions and actions directed at putting an already decided mandate into effect [22]. Going from

strategies to action plans is a necessity if the strategy's objectives are to be accomplished. Procedures associated with execution may be modified, but not goals. However, poor implementation can lead to long-term adverse consequences for the society and economy of the destination.

Training: Learning is the focal element of current and prospective initiatives of e-government. Norris posits that governments have often argued that their employees are not very well trained in using information technologies and this inadequate training result in resistance to change [23]. Meeting and maintaining e-government skills requires the development of proper training programmes. Training is a critical success factor that helps to avoid facing obstacles in e-government adoption.

Organization structure: Within the field of e-government, there is a great need to develop a more comprehensive body of knowledge on the structure of the many and varied organizations that constitute e-government. Organizational structure has been a perennial problem for organizations and their relationship with information technology is a recognized area in information systems research. Organizational structure is a long-standing, chronic problem, especially for large organizations, and government organizations need to look into their structure and be changed, if necessary, in order to accommodate new e-government ideas and practices. In fact, existing organizational structures under significant pressure, in many cases are calling for new structures.

Technical Staff: Past research has indicated that an innovation with substantial complexity requires more technical skills and needs greater implementation and operational efforts to increase its chances of adoption [24]. E-government adoption requires a number of technical staff to help implement it. However, governments around the world suffer from a lack of technical staff. Technical staffs are an important factor in e-government implementation.

Change Management: In any e-government initiative, there must be some degree of change management as it is one of the critical factors in its implementation. However, the greater the degree of change is the greater the risk of failure [25].

Business Process Re-Engineering (BPR): BPR provides a systematic, business-oriented way of implementing projects involving the use of ICT to transform the way in which the city delivers its services and relates to its local community [26]. The aim of BPR is to maximize the efficiency and effectiveness of an organization by exploiting the full potential of ICT to enable radically new organizational processes. Therefore, BPR is an important and sensitive factor in e-government implementation.

Organizational Culture: French and Bell define culture as values, assumptions and beliefs held in common by organisation members [27]. In terms of changing organisations, culture plays an important role in the literature. Without forming the culture, it is very difficult to gain long-lasting results [28]. Organisational culture is the shared understanding of how an organisation works, and has a major impact and influence on successful change initiatives. It is critical to development and to breaking down the barriers of culture that permeate almost every organization in some way.

Awareness: Awareness in e-government refers to communicating e-government initiatives to the appropriate stakeholders and providing the means for individuals to realize projected e-government benefits. The rapid growth of e-government technologies and practices has resulted in a need for awareness creation for government organisations [29]. Such awareness is a crucial factor in e-government implementation.

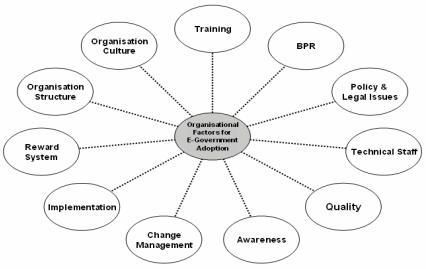

Figure (3) Organizational Factors Model for E-government Adoption

3. Juxtaposition of the governing, technical, organizational factors

The previous sections have indicated and described the sub-factors of governing, technical and organizational factors. Furthermore, conceptual models have been drawn for each of the three factors (figures 1, 2, 3). Integrating the above three models, the e-government adoption model shown in figure (4) below is concluded. It shows the three factors discussed. The conceptual model, as shown in figure (4), is proposed for e-government adoption as an enabler of a proactive and participative approach to implement and deliver government services effectively to beneficiaries.

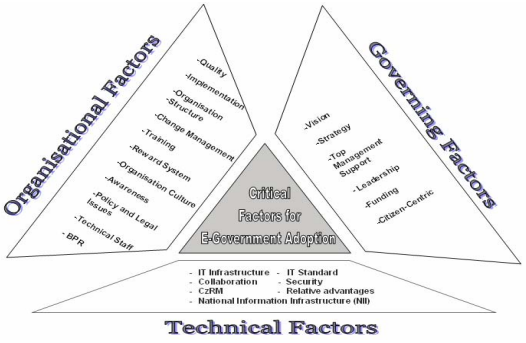

Figure (4) Critical Factors for E-Government Adoption Model

4. Conclusion

The paper identifies and reviews the framework of e-government implementation and indicates the factors affecting its successful implementation. Aldrich argues that a better understanding of the factors that contribute to e-government delivery may inform others as they deploy such programmes [30]. The paper presents the development of an

e-government conceptual model for adoption. However, the final model needs to be examined and validated. Therefore, as a recommendation, future studies should focus on validating the conceptual model discussed in this paper.

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