

SUCCESS FACTORS IN THE DEVELOPMENT OF INNOVATIVE E-GOVERNMENT SERVICES (STUDYING THE CHALLENGES AND MODELS)

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ABSTRACT

One of the basic applications of information technology is using it to create changes in the functional structure of governments. Since the main governments' challenge is to respond to the diverse demands of its citizens, the government sought a new way for citizens' access to public services through electronic media. The aim of this study is to examine the challenges, models and related success critical factors in the development projects of new services in e-government. To do this, at first it introduces the electronic government and development of new services, and discusses some challenges in the development of new services, then it studies using success critical factors for implementation of new services development. Hence, this research extends the development of new services in the realm of electronic government and explains the requirement for shaping further research considering new services development in e-government, which uses success critical factors.

Keywords: *E-government, Information Technology, New Services Development and Success Critical Factors*

INTRODUCTION

E-government has considered information technology and information systems to provide efficient and high-quality government services to citizens, employees, businesses and agencies and those who need these services. In addition, it has increased the accessibility and convenience of government and information services to citizens (Carter & Belanger, 2005). E-government or providing e-services using ICT, initiates a new phase of public sector life and it can have a good position in the public administration reform programs (Rezaie *et al.*, 2011). Amount of expected benefits that may be formed from the implementation of e-government caused the government invested mainly on the services and technologies. According to the nature of information technology and due to the experience gained from projects with a focus on high-tech in enterprises and companies in the past decade AD, successful implementation of these projects requires careful identification and attention to the success critical factors. Identifying the factors that can include a wide range of factors: technological, capital, productivity, social, cultural, political, legal and ..., are possible with different approaches.

The governments' goal of providing not only advanced services but also computer and creative services in e-government is expanding the scope of services innovation in the public sector and the development of new services. There has been relatively little research on the development of new services in e-government and public sector. In addition, e-government sometimes is considered as a sensitive issue in public administrative sectors (Yildiz, 2007). The main objective of this research is providing better understanding of the development of new services in order to ensure the success of e-government and it seeks to answer the question that how many dimensions are there in implementation of new services development in e-government and since e-government benefits are anticipated by governments and financial investments involve high risks, studying the factors ensuring successful outcomes for future investments and implementation of new services development in e-government is necessary.

Literature Research

Information Technology

ICT is a tool that by its correct, accurate and fast applying and using we can win the competition today. One of the basic applications of information technology is using it to create change in the functional

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structure of governments. According to the Moon (2002), IT has been changed to one of the key elements in the administrative reform and e-government that may appear dramatically in the future (Moon, 2002). Today, information networks have arisen as a result of information technology; have the most important influence in the world of industry and services. IT as network technologies has developed new services that its major economic result is standardizing processes of information processing, thus, in recent decades the governments to provide better service to customers, in addition to spending less time and cost try to use information and communication technologies and this will cause the emergence of electronic government (Mohammadi *et al.*, 2010). IT is a term that means the use of information technology in the cycle of production, processing, retrieval, dissemination and ... and is a new data acquisition method and processing system that makes work will be analyzed in a new way and effectively. In addition, it will also remove some of the uncertainty and variability utilized (Rezaie *et al.*, 2011).

Since the main challenge for governments is to respond to the changing demands of their citizens, whom the public sector earns its legitimacy, the e-government also sought a new method by using ICT for citizens' access to public services through electronic media (ibid, 107), and use of information technology in the public sector with the aim to complete implementation of e-government is inevitable.

E-government

E-government means using information and communication technologies for making more efficient and effective government, facilitating the provision of services, better access to information, and more government accountability to citizens. The United Nations and the American Society for Public Administration (2002) has defined E-government as follows: using the World Wide Web to provide government information and services to citizens'. E-government is known as a "paradigm shift" (Ho, 2002), and entitled "The use of technology to facilitate access to and providing government services to benefit citizens, businesses and employees." E-government has the power to create a new kind of public service, in which the public services offer modern, integrated services to the citizens (Silcock, 2001).

E-government is a form of electronic commerce that is used by the public sector. There are two main parts of public domain and in E-government: the government domain prepares services and information to provide to the public domain.

In government domain safety systems, the interaction between systems, communication standards and government reference site are of crucial importance. Public access is also an important prerequisite and in fact, this factor refers to the public domain and enables citizen to receive on-line government services through communication intermediaries (Rezai *et al.*, 2011). E-government means servicing and information exchange internally / externally that is done through the use of technology-based tools and it is defined as the relationship and interaction between elements: government and citizens, government and business sector, government and employees, government and government.

E-government does not directly mean to use the technology or technological innovation. This type of government is the interplay between technology, politics and the various stakeholders to work together well to create and provide new or improved services to citizens. Technology itself is what an e-government should be and it doesn't define what will be. The latter that is important is that the e-government includes new event with major investment that is formed in public sector institutes at all levels (Angelopoulos *et al.*, 2010).

The e-government's Objectives

We can say that the goal of e-government is using ICT potential to change the government, from agency-centric model and providing limited services to the citizen- centric model and providing comprehensive services to citizens, businesses, and so on. Therefore, one of the main objectives of the government is providing better services to citizens, having more efficient government, increasing confidence and improving the democratic process. Therefore, it can be argued that the implementation of e-governance leads to a change in the status quo to achieve the desired goals and objectives (Al-Azri *et al.*, 2010).

Some of the e-government benefits for citizens are increasing accountability, transparency and participation in democracy and improving the quality of services that all have considerable role in approaching the government management to citizens and in restoring public trust in government

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(Nargessian, 2008), and finally it leads to improve public perception of the government and creates closer ties to the government, which is a key factor in increasing citizen participation in state affairs.

Implementation of e-government: the Challenges of New Services Development

E-government is one of the most important phenomena resulted from applying information and communication technology that has created profound changes in the lifestyle of modern man. On the other hand, people's expectations about the products and services and quality of providing them increasingly are changing and the government must be responsive to the needs and expectations (Nobakht and Bakhtiari, 2008).

Major changes occurred in the economic structure of most countries, along with the existing services have been a major part of economic activity (OECD, 2000a and 2000b). Hence, it is not easy to deal with challenges of such volatile environments. Governments around the world are involved in several major projects that have been designed to deliver the best electronic service possible during the first decade of the 21st century. In this effort, the political leadership as well as several economic factors is very important (Center for Democracy and Technology, 2002). Systems and tools that are already used in government agencies to provide services and information to citizens are old and process of work in government systems is slow. They do not have much success in satisfying citizens. On the other hand, significant investments in the design and implementation of new systems in the public sector are not taking place.

According to Moghaddasi (2005), the creation of e-government is a continuous process and should normally be taken in several steps. Previous research examined issues related to the implementation of e-government using propagation models (Moghaddasi, 2005). Roger (1995) presents five sets of determining variables for the acceptance: Received innovative features, the type of innovation, communication channels, the nature of the community system and the amount of a change agent effort towards the development (Rogers, 1995).

Berry *et al.*, (1999) offered two models of diffusion and innovation, with titles of emission models and interior determining models. In their study, they introduced four groups of emission models, the four categories are: The national interplay (instructional model); the local publishing model, slow management models and models of industry influence. The goal is to integrate internal factors in predictive internal models (motivation, scope, resources, etc.) (Berry and Berry, 1999). In another study, Chaudhary and Lee (2004) found that using development of broadband in government sectors and agencies has improved the quality of public services and encourage the former bureaucratic organizations (bureaucracy) to plan their method of projecting the service to citizens again. Factors that play a major role in the development of broadband: Government, telecommunications policies to competition, internet promotion and dissemination of a vision for broadband (Choudrie and Lee, 2004). However, as Moon and Norris stated, no propagation model alone explain the whole situation in the best way (Moon and Norris, 2005).

Information systems success model (Figure 1) and the technology acceptance model (Figure 2) have provided another way to study the implementation of e-government with determination the usefulness and received ease of using affecting on the willingness of individuals to use the system, this affects individual behavior tendency to use the system, and in fact, it determines the system actual application.

DeLone and McLean information systems success model is as a framework for measuring the complicated dependent variable in the study of information systems. According to Delon and McLane measuring the success and effectiveness of information systems is critical to our understanding of the value and effectiveness of management measures of information systems and information systems investments (DeLone and McLean, 2003). In the model of information systems success of D & M, system quality measures technical achievements, information quality measures semantic success, information, user satisfaction measures individual impacts and organizational impacts measure the effectiveness success. The six dimensions of the presented success are related to each other and they are independent. The model shows an information system contains various features which have varying degrees of system quality and information quality. Then administrators and users can test these features using the system, and the satisfaction or dissatisfaction can be tested by systems or products that contain related

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information. The use of system and its products information influence users' behavior and business individually and the sum of the individual effects lead to organizational effects. In this model it can be expected higher quality of systems leads to the user's satisfaction and using it, which resulted in a positive impact on individual productivity and thus improving organizational efficiency (DeLone and McLean, 2003).

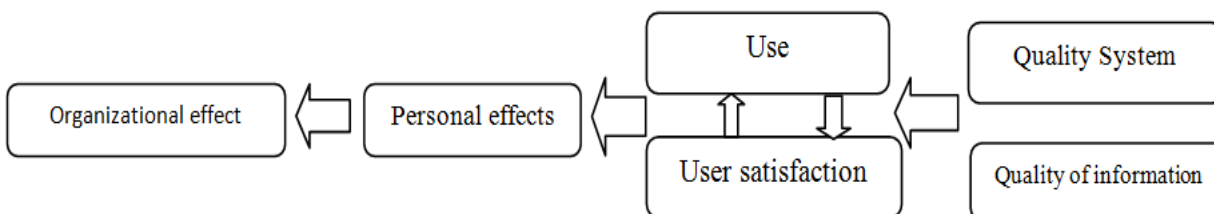


Figure 1: Delon and Maclean Information Systems Success Model (DeLone and McLean, 2003)

Success factors presented in the Davis model are consistent with the adoption of organization software, but for various applications and different systems and user acceptance, e-commerce has been tested and user acceptance of e-government projects is influenced. However, creating the technology acceptance model provides the user's subjective evaluation of the system and the system is unable to demonstrate compliance purposes (Carter and Belanger, p. 5).

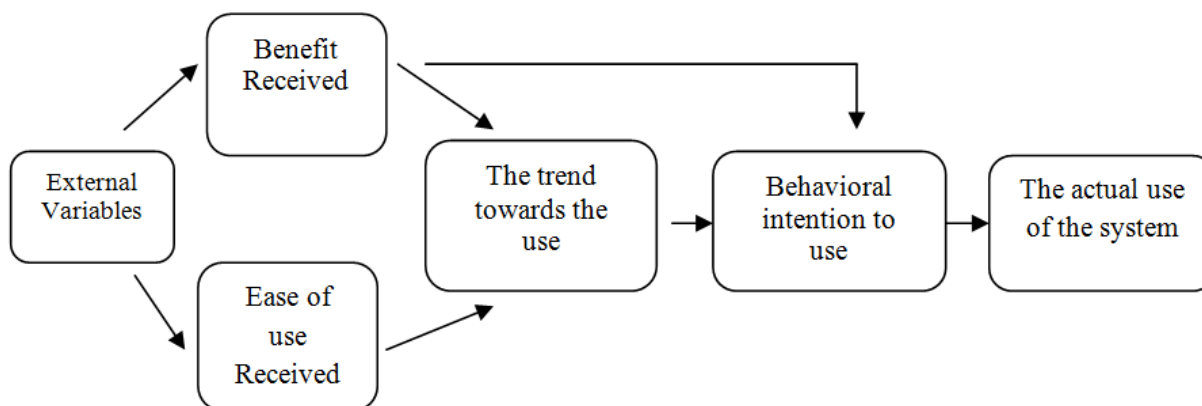


Figure 2: Davis Technology Acceptance Model (Angelopoulos *et al.*, 2010)

Despite the creating and studying frameworks for predicting IS success and in this case, e-government, there are still obstacles here. For example, high price or low security of required infrastructure can be an obstacle to the implementation and adoption. Integration of IT applications and internal and external components of organizational boundaries because of the heterogeneity of computer environments involved in public sector is costly and time consuming. The works in this field agree that governments are faced with a lack of technical infrastructure. This lack is a great barrier in the development of the capabilities of government agencies in order to provide online services and transactions. They also agree that unreliable IT infrastructure in public sector organizations; certainly cause degradation of e-government performance (Angelopoulos *et al.*, 2010).

New Services Development

As the services importance increases in our community, the importance of systematic approaches to develop these services (NSD) new services development) is also increasing. Over the past decade, the public sector worldwide has begun a broad spectrum of reform and we have witnessed a steady growth of e-government projects. Public sector organizations are increasingly looking for new tools to improve performance and provide better services to their citizens (Al-Azri *et al.*, 2010).

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NSD is a relatively complete method and describes the key processes. In addition, it covers all life-cycle stages of services including design, analysis and development to launch (Riedl *et al.*, 2011).

NSD includes the development of services such as financial services, health care services, telecommunication services, leisure and hospitality, information services, legal services, education and many other services.

Riedl *et al.*, (2011), introduced four key areas of NSD, including:

1. The types of innovation in services, 2- Success background 3- Process Models 4- Public and organizational aspects.

1. Innovation in services includes: concept development of services (the customer requires the consent), - system of services (resources for services) and processes of services.

2. The success background: is related to the different types of technology. Two sets of factors leading to success are important:

- Factors resulted from the development of new services (new services success- conclusion of the development process of new services)

- Measuring performance (new services development process)

3. The process models: for process models, in comparison with traditional services, NSD can cover all life cycle of services phases as a relatively full method. A broad set of process models has been defined to develop new services and Johnson and Menor according to a study conducted in 1997, suggested a basic model consists of four phases:

1- Design, 2- analysis, 3- development and 4- launch

4. Public and organizational aspects: the last field analyzes that how developing new services is done within the organization. NSD at different levels of the organization including project teams, business units, perfect agencies, organizations networks has been proposed (Riedl *et al.*, 2011).

By a brief review of the existing literature on e-government and the development of new services, to answer the question of what kind of link is there between the e-government and the development of new services and how can we predict the factors influencing the success, proposing the framework and methodology based on CSF, may be used.

Success Critical Factors

Several factors provide conditions for implementing e-government that all are resulted from technological development and complicating human life. New development has been a critical factor for the performance of large companies and reviews related to success factors in the process of innovation, have been done both for products and services. Some experts believe that the study of the factors involved in the provision of e-government services is the key point. Different countries are implementing e-Government projects through different methods. But, as mentioned, some of them have been encountered with total or partial failure.

Critical success factors briefly called CSF, is essential tool for identification of activities that must be performed in order to achieve the goals and missions of business or project. By defining CSFs, a common reference point can be created to guide and measure the success. Critical factors are factors determined by the senior management of each company, organizations' success or failure depends on effective implementation of the critical factors. These factors due to activities, size and functions of each organization varies from organization to organization and it is important that organizations identify them in order to avoid risks in the implementation of projects that may have failed and simultaneously use opportunities that may able them to be successful in exploiting them (AL-Kaabi, 2010).

Concepts related to the critical success factors were introduced for the first time in 1960 by Ronald Daniel, but in the late 1970s and early 1980s, with the passage of time and with the development of information systems, organizations have found themselves in the context of information developments and revolution. Development of information systems in organizations raised large volumes of data. Research showed that senior executives still do not have the necessary information to make decisions therefore; efforts were made to develop an approach that will help managers to identify their information needs transparently.

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This concept was developed in the 1980s by Rockart, lecturer and professor at MIT University in United States. For the first he applied critical success factors in the field of information systems and project management. According to his definition "critical success factors point to a few areas in any project or business; if they lead to the desired results, they will guarantee suitable performance and competitive advantage for the organization ». Rockart stated that critical success factors include areas that should be considered more by managers (Rockart, 1979).

Characteristics of Critical Success Factors

It is important to understand the characteristics of critical success factors. Some key features are summarized below (Gates, 2010):

CSF hierarchy

CSF Types

Uniqueness

Stability over time

CSF Hierarchy

Rockart and Bollen (1981), showed the hierarchy of critical success factors and identified four specific levels of CSF: at industrial, organizational, and individual levels.

Caralli (2004) introduced the critical success factors at the operational level, that their existence in partnership to support the overall objectives and the organization mission as well as to support the concept of functional units in the framework of information technology strategies is concentrated. The hierarchy of critical success factors has been shown in Figure 3.

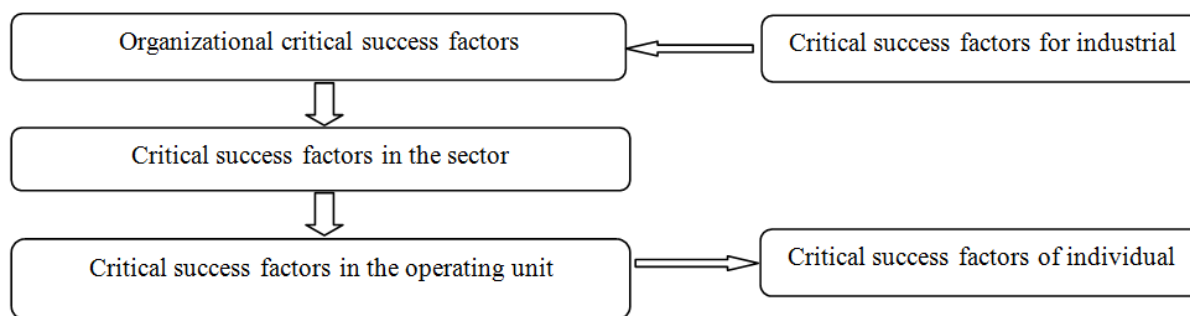


Figure 3: Hierarchy of critical success factors (Gates, 2010)

Critical Success Factors Types

In addition to a variety of critical success factors that has been introduced by management levels, Rockart presented five types of critical success factors through which the organization achieves its mission (Rockart, 1979).

- 1- The specific industry structure (critical success factors in the industry)
- 2- Competitive strategy, industry and geographic location (strategy critical success factors)
- 3- The macro environment (environmental critical success factors)
- 4- Problems or challenges in the organization (temporal critical success factors)
- 5- Management perspectives (management critical success factors)

Critical Success Factors Uniqueness

According to Gates (2010), some researchers concentrated on understanding the critical success factors that are unique to an industry, organization or manager. However, critical success factors are not necessarily unique to the organization, department, or individual operating unit for which they are intended (Gates, 2010). Rockart (1979) concentrated on the critical success factors in management level with the critical factors in the organization and department level, although he acknowledged the critical success factors in the industry too. He also noted that the critical success factors can be non-exclusive (shared across the industry) or limited to internal and external factors other than the relevant industry (Rockart, 1979).

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Critical Success Factors' Stability over Time

Although critical success factors may be relatively constant over time, in Bullen and Rockart view, changing in critical success factors, is created in case of changing the industry, company condition in industry and particular opportunities or problems." Rockart also notes that the critical success factors are not key parameters for standard measures that can be used in all parts of an organization. There are many techniques for identifying critical success factors. Rockart (1979) introduced a two-stage method based on interviews starting with a discussion of critical success factors and key performance goals (Ibid).

E-government Critical Success Factors for

Critical success factors include a method that results in identifying a series of critical success factors that indicate the key areas of performance necessary to accomplish the mission of the organization.

Al-Azri and colleagues in 2010 investigated the key factors that facilitate the successful implementation of e-government projects. Their research results showed that organizational, IT and end users paradigms, each of which contains a set of factors affect the success of e-government:

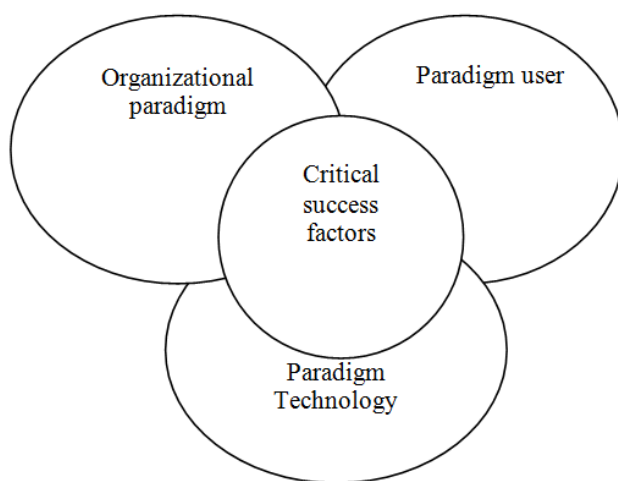


Figure 4: Three paradigms of the successful evolution of electronic government (Al-Azri *et al.*, 2010)

Anjlopolz *et al.*, (2010) proposed a based CSF conceptual framework in their research. The proposed conceptual framework, study the relationship between organizational behavior to service innovation, gathering ideas resources, and actions taken based on the development, impact of organizational structure, influence of resources allocation within the organization as well as its impact on the relevant market in order to identify factors that describe event of describing new services (Angelopoulos *et al.*, 2010). Finally, by identifying CSF, the potential success or failure can be predicted for future projects.

Many writers divided critical success factors into different categories, for example Altamim (2006) has divided these factors into three categories, which are:

First paradigm (government factors): These include the creation of a common understanding of the vision of e-government projects, strategy, support and commitment of senior management, strong leadership, and financial assistance for the implementation of e-government.

Second paradigm, critical factors (technical factors): These factors include IT infrastructure and standards, cooperation among organizations and managing the relationship with the citizens.

- Third paradigm (organizational paradigm): These paradigms are political and legal factors, quality of service, remuneration and training system. This paradigm must be followed by creating a shared vision, knowledge and understanding of how to manage e-government successfully (Al-Azri *et al.*, 2010).

According to Al-Azri and colleagues, some researchers have studied critical factors effective in the successful implementation of e-government, such as: Wood and colleagues (2004), who in his article introduced three important factors for successful implementation of e-government from Altamum model

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and colleagues (2006), according to them considering these factors is necessary to create a successful e-government project. First factor includes people as government officials with regard to the skills and knowledge of the issues, their emphasis is on user participation, their knowledge and attitude. The second element is that the processes should be transparent, updated and secure. The third factor is creating a reliable, accessible and safe system. They also stressed that culture and social aspects are opposite of implementation of e-government (Ibid).

Moreover, Al-Fakhri *et al.*, (2008), introduced human, economic and administrative factors as core elements of e-government during the process (Al-Fakhri *et al.*, 2008).

Dezelak and colleagues in 2006 examined critical success factors for the implementation of e-business. According to them organizations to use the full benefits of e-business solutions need to identify the critical success factors in the implementation that some of these factors include: the support and involvement of senior management, transparency of purposes and planning, compatibility, market forces, users capabilities, government support, strategy, process reengineering (Dezelak *et al.*, 2006).

According to Anjelopolz and colleagues (2010), although many principal methods can be used, but CSFs approach has been the best approach in the area of IS (Angelopoulos *et al.*, 2010).

Table 2: Summary of critical factors that affect the success of e-government projects

References	Description	Factors	
Altameem <i>et al.</i> , (2006); Ke and Wei (2004); Burn and Robins (2003).	Roadmap for the implementation of e-government.	Perspective	Organizational factors
Altameem <i>et al.</i> , (2006);	Strong leadership style to provide security and transparency for the implementation team	Leadership	
Altameem <i>et al.</i> , (2006); Ke and Wei (2004); Wee (2000).	Support and commitment of senior management to provide the resources to accelerate the process is necessary.	Senior management support	
Wood-Harber <i>et al.</i> (2004);	Organizational environment is the key factor to encourage changes to e-government.	Organizational Culture	
Wood-Harber <i>et al.</i> , (2004);	Systems that are easy to use and not complicated.	user-friendly	Factors related to the system
Gebauer and Lee (2007); Wilson <i>et al.</i> , (2002)	The system can be modified; it is customized and adapted to the needs of future users.	Flexibility	
Wood-Harber <i>et al.</i> , (2004);	Information must be secure from unauthorized access.	Security	
Wood-Harber <i>et al.</i> , (2004)	The service should be available to users at any time and any place.	Available	
Masrek <i>et al.</i> , (2007); Stephens and Shotick (2002).	people belief in their ability to use technology to solve problems, make decisions, collect and disseminate information.	Computer user performance	
Altameem <i>et al.</i> , (2006);	E-government services have been heavily marketed to users.	Awareness	Factors related to the user
Altameem <i>et al.</i> , (2006); Pasmore (1988)	Training a vital element that must be included in the e-government implementation project.	Training	

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There are a limited number of key factors that being successful in them guarantees organization competitive performance and if the results are not satisfactory, organization's attempt in the considered period would not be satisfying. The important focus is that the key factors must be carefully and regularly monitored by managers. CSFs are quite directly dependent on strategic goals and organization missions. By studying conducted research it is clear that the critical success factors specifically are dependent on the strategic mission and goals of the project and they focus on the most important areas.

CONCLUSION

In recent years, governments around the world have made significant progress in the delivery of virtual services to citizens by adopting policies of e-government and information technology projects. Electronic government has attracted attention of many public decision-making bodies for efficiency in decentralization and facilitating providing public services. Considering that in the past few years, few academic studies examined the implementation of new services in e-government, therefore, implementation knowledge of new services in the public sector has not been a significant growth and despite increasing knowledge, our understanding of the processes of development of new services, in particular for electronic services, is still limited and implementation of new services has still a challenge for researchers and staff in this area and little research has been done on implementation of new services in e-government.

The study increases the value of government agencies by providing better services to citizens, simplifying operations, developing solutions to business and improving their performance through examining the challenges, models and critical success factors of e-government. However, despite the fact that e-government projects fail completely or partially, some projects are successful in developing new services. So in this study the importance of the critical success factors as effective factors for the development of new services in e-government was studied to provide a better understanding of the development of new services in order to ensure the success of electronic government. This study has examined the gap between the cases considered the relationship between development of new services and electronic government and considers it relevant to the development of successful and innovative e Government services. Since the implementation of new technologies can lead to changes in the structure and functioning of organizations and hence people resistance is encountered, Change Management should be considered for reducing resistance. Change management of course includes topics such as: changing in organizational culture, changing in work flows, process reengineering, also harmony, is the key factor for the success of the project. So it is essential to achieve proper coordination between the project team at all levels of the organization to obtain a common framework. Research indicates that governments are faced with a lack of technical infrastructure. This is a barrier in the development of the capabilities of government agencies in the provision of online services and transactions. Also uncertain IT infrastructure in public sector organizations, will certainly lead to executive degradation of the e-government. So by identifying potential success or failure of e-government executive processes, concepts are provided both for practical implications and for research and new thinking and greater scope are provided for researchers in the field of e-government success. Organizations should try to reduce risks by focusing on the critical success factors when implementing e-government in organizations. Since critical success factors for improving the success of IT projects and raising awareness about issues related to the management of the implementation of e-government is very important.

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