# Critical Factors for Project Success With Reference to e-Government Projects

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**Abstract:** Even though there is an abundant research regarding the critical factors for project success, there is still room for exploring particularly the questions related to projects for e-government. Several questions arise with this regard: First, what are the critical factors for success of such type of projects that governments need to take into consideration in order to provide their successful achievement; and, second, how these factors can be categorised? With respect to this, the aim of this paper is to explore the concept of project success and the critical success factors through analysis of different approaches, literature review and experiential knowledge. The attention will be paid to identification and categorisation of the key success factors of e-government projects as a precondition for their successful implementation. In this context, in this paper we have created a new systematised review of the success factors for e-government projects in several categories according to their nature, type and characteristics.

**Keywords:** critical success factors; e-government; project

## 1. Theoretical background of the project success

Projects generally are realised to meet customer requirements and represents a sequence of complex, unique, non-routine connected activities limited by time, budget, resources and performance specifications (Gray & Larson, 2011; Ofori, 2013). Alternatively, the project can be defined as "a temporary endeavour undertaken to create a unique product, service, or result." (PMI, 2013) or "endeavour to accomplish a specific objective through a unique set of interrelated tasks and the effective utilization of resources" (Gido & Clements, 2015). However, one of the most interesting definition for project, given by Joseph M. Juran, is that "the project is a problem scheduled for solution" (Lewis, 2007). This definition shows that the project solves some "problems" but not always understood in negative context. All of the previous given definitions converged around several main ideas and any project has common attributes: well-defined goals and objectives; complexity; non-routine activities; resources; unique deliverable(s); specific time frame.

Generally, the project goal is to achieve an intended individual, corporative or social change. It is worth to mention that the projects are focused on solving particular problem or need of specific group i.e. fulfilment of particular requirements and expectations by using new ideas, techniques and by upgrading the existing opportunities and potentials as well. It has been proved that an appropriate project management is of great importance for successful realization of the projects. With respect to this, the concept of project management has been treated and defined by several authors. According to Kerzner, the project management is defined as a process of planning, organising, directing and controlling of human and material resources for achieving particular defined goal (Kerzner, 2009). On the other hand, The Project Management Institute (PMI) defines the project management as application of knowledge, skills, tools and techniques in the project activities in order to achieve the specific project requirements (PMI, 2013).

The project success is the most discussed themes in the field of project management and often it is controversial because of the opposed views it attracts among the researchers and practitioners. By analyzing the definitions of a project, the key notions such as: time, budget, resources, performance specifications, customer requirements, unique product, service or result, realization of expected outcomes etc. point out to the principal elements that should be used in evaluation of the project success. However, besides these notions in the evaluation of the project success it is necessary to take into account a number of dimensions such as: efficiency, customer satisfaction, team effectiveness, business success and preparing for the future. (Stefanovic & Shenhar, 2007). It has been often emphasized in the case of business projects that it is indispensable for the project' success their incorporation in the organizational goals, since it has been widely acknowledged that the project is temporary organization within organization which aims achievement of specific organizational goals (A. J. Shenhar, 2001).

Traditionally, the project success is defined as meeting the shareholders' expectations with respect to realization of the project within the planned budget (costs), time (schedule) and performances (scope) (Gray & Larson, 2011). In addition, Pinto & Slevin argue that successful realization of the projects depends on four distinctive criteria: time criterion (on-schedule); monetary criterion (on-budget); effectiveness criterion (achieves the goals originally set for it); client satisfaction criterion (accepted and used by the clients) (Pinto & Slevin, 1987). However, the project success is a multidimensional strategic concept since the measurement of its success requires overcoming the classical "triple constraint" of meeting time, budget and requirements goals (J. Shenhar, Milosevic, Dvir, & Thamhain, 2007). In PMBOK, having in mind that projects are temporary in nature, it has been emphasized that "success of the project should be measured in terms of completing the project within the constraints of scope, time, cost, quality, resources and risk as approved between the project managers and senior management" (PMI, 2013).

Nonetheless, it is more than evident that stakeholders have key role in measuring the project success as well, since different stakeholders have different expectations and perceptions for the project success. Hence, the consumers evaluate the project success according to the utility of the product which has been produced as a result of the project; the investors consider as successful the project which result in higher return of the investment relative to the initial costs; for the corporate management the project is successful if it contributes to market growth and achieves strategic objectives, which means that the definition of project success varies according to the perceptions of stakeholders (Kerzner, 2009). In this context, Freeman & Beale argue that "an architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollars spent under budget, a human resources manager in terms of employee satisfaction, and chief executive officers rate their success in the stock market." (Freeman & Beale, 1992) which means that all stakeholders have a specific definition of "project success" (Shokri-Ghasabeh & Kavousi-Chabok, 2009). In relation to this, Van Aken simplifies that the project success on first place depends on "the satisfaction of all stakeholders" (Westerveld, 2003).

On the other side, there are different types of projects with specific goals and complexity which makes it difficult to reach a general agreement for unique success criteria (Müller & Turner, 2007; Westerveld, 2003). This means that different project activities need to managed differently in order to achieve a successful project (Wideman, 2004). According to Morris and Hugh, the project success depends on "a realistic goal; competition; client satisfaction; a definite goal; profitability; third parties; market availability; the implementation process; the perceived value of the project" (Munns & Bjeirmi, 1996). Taking into account all these analyses, it is necessary to make difference between project success as a measure for overall objectives of the project and project management success as a measure for traditional criteria for evaluating the project performances such as: cost, time and quality (Prabhakar, 2008).

## 2. Critical success factors of the project vs. Project success criteria

Generally, in the literature can be distinguished two different concepts for the project success: project success factors and project success criteria (Müller & Turner, 2007), which sometimes in the literature of project management are incorrectly used as synonyms (Lim & Mohamed, 1999). In fact, those are different concepts since "criteria are used to measure success whilst factors facilitate the achievement of success" (Baccarini & Collins, 2004). With respect to this Cooke-Davies points out that it is particularly significant to answer three key questions: "What factors are critical to project management success; What factors are critical to success of an individual project; and What factors lead to consistently successful projects?" (Cooke-Davies, 2002).

Critical success factors (CSFs) are the few key areas of activity on which a manager should focus his attention in order to achieve the required goals (Bullen & Rockart, 1981) and "to identify what is necessary to meet the desired deliverables of the customers" (Kerzner, 2009). These are a limited number of characteristics or variables that directly affect the effectiveness and efficiency and provide competitive performances of a given organization, program or project in the case they are met by the management (Fortune & White, 2006). In the Cambridge Business English Dictionary, the critical success factor has been defined as "one of the most important things that a company or organization must do well in order for its business or work to be successful". Some authors argue that success factors facilitate the achievement of success (Baccarini & Collins, 2004) and represent elements of a project that can be influenced to increase the likelihood of success (Müller & Jugdev, 2012).

An early development of a concept for the factors of project success, generally encompasses theoretically based interpretation and to less extent an empirical verification (Pinto & Prescott, 1988). In this context, Schultz et al. have attempted to create generalized critical success factors that would hold for different types of projects and organizations by defining an instrument known as project implementation profile. CSFs based on project implementation profile includes 10 factors: project mission, top management support, project schedule and plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communications and troubleshooting (Schultz, Slevin, & Pinto, 1987). The analysis of results from the respondents in some surveys shows that there are no significant variations between the answers of respondents from different industries with respect to CFSs which means that they can be generalized (Baccarini & Collins, 2003). However, besides this generalized concept, it is evident that a set of CSFs may not be transferable from one project to another (Liu & Walker, 1998) and particular set of project success factors may not be appropriate for all industries (Lim & Mohamed, 1999) taking into account both, the internal (organizational) and external factors that influence project implementation (Jugdev & Müller, 2005).

Besides the above discussed critical factors, the project success is measured by using project success criteria that can have different characteristics. For instance, some of the project success criteria can be considered as "hard" or tangible criteria which are easily measurable such for example the project goals, time, cost, resources and technical standards, while others are known as "soft" success criteria which are intangible, more subjective and difficult to be measured such for example the attitudes, the stakeholder satisfaction, the reputation etc. (Archibald, 2003). According to Atkinson, the criteria for measuring project success are divided in two stages: delivery and post-delivery stage. The first stage measures the process criteria (cost, time, quality, efficiency) and is focused on doing things right, whereas the second stage measures the system criteria (maintainability, reliability, validity, information quality use etc.) and the benefits (organizational benefits and stakeholder community benefits) (Atkinson, 1999). It is worth mentioning that Patanakul and Milosevic observe the project success criteria from three different perspectives: criteria from organizational perspective; criteria from project perspective and criteria from personal perspective (Patanakul & Milosevic, 2009).

In the case the project manager has intention "to lead a project towards high levels of success, he should know the criteria by which it is measured (i.e. success criteria)" (Milis, 2008) and consequently the success criteria provide information whether the defined goals of the project are met, or in other words they are "measures by which we judge the successful outcome of a project" (Chan, Scott, & Chan, 2004). Therefore, in order to manage project successfully the focus must be put on these criteria (Adinyira, Botchway, & Kwofie, 2012). Even though the wider literature in the context of project success criteria emphasizes time taken, cost and the extent to which requirements are met (White & Fortune, 2002), "success criteria will differ from project to project depending on a number of issues, for example size, uniqueness and complexity" (Wateridge, 1998). Based on the literature review Els et al. (2012) have systematized the following categories of success criteria: Stakeholders' appreciation, Completes within Time, Meets the required Quality, Completes within Cost.

## 3. Critical success factors of the e-government projects

E-government can be considered as an efficient tool that enables government to provide better services and greater inclusion of citizens and businesses by using ICT. Generally, e-government has multidisciplinary character because it is not only an introduction of web based solutions by the government, but it encompasses a complex social system that covers a number of other questions that have technical, organisational, social and economic character (Fasanghari & Habibipour, 2009). The implementation of such a concept can help improving the services delivered by the authorities, reducing the bureaucratic procedures, increasing the efficiency, improving the accountability, decreasing the time needed to get the service and facilitating communication that will lead to improved standard of living. However, the implementation of the e-government is not an easy task since there are a number of critical factors that determine the concrete project success.

Taking into account the above considerations some authors have systematized the critical factors for project success and the initiatives for implementation of projects related to e-government. In this context, a systematic overview of the success factors defined by various authors is presented in Table 1.

Table 1. Critical success factors identified by various authors

| Authors | Literature reviewed | Critical success factors | |
|---|---|---|---|
| (Harti, Larastri, Achmad Nizar, Edson, & Putra, 2016) | Systematisation based on 10 relevant researches<br>Valdés, G., Solar, M., Astudillo, H., Iribarren, M., Concha, G., & Visconti, M. (2011);<br>Sundberg, H. P., & Sandberg, K. W. (2004);<br>Hossan, C. G., Habib, W. M., & Kushchu, I. (2006);<br>Prananto, A., & McKemmish, S. (2007);<br>Al-Azri, A., Al-Salti, Z., & Wafi, A.-K. (2010);<br>Al-Kaabi, R. (2010);<br>Altameem, T., Zairi, M., & Alshawi, S. (2006);<br>Abdelghaffar, H., Mohamed Bakry, W.-E., & Duquenov, P. (2005); Papantoniou, A., Hattab, E., Afrati, F., Kayafas, E., & Loumos, V. (2001);<br>Vir, D., & Bansal, G. (2008) | - Overall Vision and Strategy<br>- Technology Support<br>- Top Management Support<br>- Availability of Human Resource<br>- Change Management<br>- Effective Project Management<br>- Strong Government Leadership<br>- Business Process Reengineering<br>- Training<br>- Awareness<br>- Communication<br>- Coordination and Collaboration<br>- Organization Culture | |
| (Al-Naimat, Abdullah, & Ahmad, 2013) | Systematisation based on the researches of the authors: Al-Kaabi (2010); Al-Rashidi (2010); Al-Sobhi et al (2010); Altameem et al (2006); Heeks (2005); Karunasena (2012); Lam (2005); Lusa & Sensuse (2011); Schwester (2009) | - Funding<br>- IT Infrastructure<br>- Policy and Legal Issues<br>- Awareness<br>- Top Management Support<br>- Political Support<br>- User Computer Efficacy<br>- Reward System | - Resistance to change<br>- Vision & strategy<br>- Training |
| (Napitupulu & Sensuse, 2014) | Systematisation based on 230 papers | - User and Stakeholder involvement<br>- Good Planning<br>- Using Portal/Application<br>- Training<br>- Good system usability<br>- System campaign<br>- Prototype<br>- Good team skills and expertise<br>- Strong Leadership<br>- Good coordination between all project participants<br>- Best practice consideration<br>- Enough Funding<br>- Make Better business process<br>- Supportive government policy<br>- Political support and stability<br>- Good oursourcing strategy<br>- Supportive ICT Infrastructure/service availability<br>- User/citizen computer/internet literacy<br>- Good and clear organizational structure<br>- International support<br>- System security<br>- Legal framework<br>- Monitoring and evaluation<br>- Good partnership with other institution<br>- Good change management<br>- Supportive cultural environment<br>- Good system modeling<br>- Deal with bureaucratic processes | - Citizen relationship management<br>- Top management support<br>- Support interoperability<br>- Good project management<br>- Good information quality<br>- Good system quality<br>- Good service quality<br>- Trust<br>- Awareness<br>- Good Governance<br>- Citizen Satisfaction<br>- System Development Methodology<br>- Electronic Transaction<br>- User/Premium Fees<br>- Gradual Implementation<br>- Re-Usable<br>- Continuous Improvement<br>- Creativity & Innovation<br>- Willing to Change<br>- Reward & Recognition<br>- Highly Demand of Citizen<br>- Self-Sustainaible Revenue<br>- E-Participation<br>- Prioritization of e-Government<br>- Market Sinergy & Potential<br>- External Pressure<br>- Guidelines for e-Government Development |
| (Els et al., 2012) | Systematisation based on the literature review | - Team & Leadership<br>- Project Manager<br>- Communication<br>- Stakeholder management<br>- Planning | - Organisation structure<br>- Financial Resources<br>- Policy & Strategy<br>- Learning from experience<br>- External Environment |

| | | | |
|---|---|---|---|
| | | - Scheduling<br>- Monitoring and Control<br>- Quality Management<br>- Risk Management | - Procurement and Contract<br>- Contractor<br>- Technical<br>- Innovation |

Having in mind that the above listed authors have identified various factors with multidimensional character that have different impact in the project process it is necessary their further categorization in distinctive groups in order to provide greater clarity and coherence. In addition, the list of factors incorporates the specificities of the project and has different content depending on the type and nature of the project activity. In this context, we have categorised the critical factors for project success for the e-government projects in separate groups according to their complementarity and characteristics, but in the same time whether they originate from the internal or external environment.

According to their characteristics, the identified critical success factors can be classified and systematized in the following categories: organizational factors, social factors, technical factors, financial factors, managerial factors, process factors, legal-and political factors. In this context, we should emphasize that each factor has different weight and intensity of influence as well as different importance in the realization of different phases of project activities. Therefore, this categorization might represent a good basis for further research and defining of more precise analytical framework for assessing the importance of particular success factors for e-government projects. Table 2 presents an authors' comprehensive classification of internal and external critical success factors for the previously identified categories.

Table 2. Classification of internal and external critical success factors

| | **Internal factors** | **External factors** |
|---|---|---|
| **Organisational factors** | Training<br>Organization Culture<br>Coordination and Collaboration<br>Reward System<br>Creativity & Innovation | |
| **Social factors** | Willing to Change<br>Values and motivation<br>Trust | Demand of the sitizens for e-government services<br>E-Participation<br>User/citizen computer/internet literacy<br>Citizens' Satisfaction<br>Awareness<br>Supportive cultural environment |
| **Financial factors** | Financial Resources | Funding |
| **Managerial factors** | Top Management Support<br>Availability of Human Resource<br>Change Management<br>Effective Project Management<br>Overall Vision and Strategy<br>Strong Leadership<br>Good coordination between all project participants | |
| **Process factors** | Planning<br>Scheduling<br>Monitoring and Control<br>Quality Management<br>Risk Management | |
| **Technical factors** | Hardware Availability<br>Software Availability<br>Network Accessibility | Technology Support<br>IT Infrastructure |
| **Legal and-political factors** | | Supportive legal framework<br>Supportive government policy<br>Political stability |

From the categorization of critical success factors for the success of e-government projects we can perform the following analysis.

Organisational factors are internal factors that reflect the organisational culture and valorisation system that spur the creativity and innovation of employees. This type of factors has to enhance the organisational learning as well as the horizontal (or inter-sectoral) and vertical (or inter-organisational) cooperation during the project realisation.

Social factors can have internal and external nature. The social factors consider the readiness and willingness for changes, the confidence regarding the concept of e-government as well as the values that it produces.

Besides the internal social factors, the citizens' satisfaction and their demand for e-services, as well as the awareness for the benefits from e-government play an important role.

Financial factors generally refer to financial sources necessary for development of the concept of e-government and support of e-government projects with external funding. .

Because the e-government projects are particularly complex, it is important to be supported by the top management that needs to show leadership and vision for development. To achieve these challenges it is necessary a good management with human resources as well as an effective project management that would enable coordination among all project participants.

An appropriate and continuous monitoring and control of activities are of critical importance for project success. In this context, it is particularly important to manage the quality and the risk of e-government projects starting from identification, analysis, evaluation and their continuous improvement.

Technical factors are an important precondition for successful realisation of the e-government projects because one of the necessary conditions for development of e-government is technical and particularly the information and communication infrastructure. The technical factors can have internal and external nature as well. For instance, the hardware, software and network infrastructure in the institutions are critical for implementation of e-government projects. In addition, the technological and ICT infrastructure of the country are significant determinants for successful realisation of e-government projects.

In order to appropriately implement the e-government project a strong and consistent political goodwill is needed as well as appropriate government policies that will stimulate development of such type of projects. An infallible part of these processes are the defined regulations that will enable their continuous implementation from the perspective of the related legislative issues.

## 4. Conclusion

The focus of this paper is on the discussion about the project success and particularly the critical success factors for implementation of e-government projects. In this context, a number of authors have contributed in providing a comprehensive analysis and definition of the critical success factors, but it is evident that this list has not been exhausted. The main contribution of this paper consists in the analysis and synthesis of the critical success factors of e-government projects by offering new and different perspectives for their systematisation. Namely, we make an attempt to systematise the existing internal and external critical success factors of e-government projects categorised in the following groups: organizational factors, social factors, technical factors, financial factors, managerial factors, process factors and judiciary-political factors. The obtained results can be used by the researchers and the practitioners as well. In other words, the above systematised framework can be used as a basis for further research and deepening of the research problem, providing answers to important questions for implementation of e-government projects and designing suitable policies for planning the projects in this field.

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