



BUILDING A CONCEPTUAL FRAMEWORK FOR IT PROJECT SUCCESS: CIOs' PERSPECTIVE

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ABSTRACT

Organizations all over the world have invested a great deal of resources in achieving goals through the successful implementation of major IT projects, which can have a significant effect at the organizational level. Therefore, the importance of project success continuously motivates researchers to investigate this development, and many project success frameworks have been proposed by different scholars. This paper presents a new conceptual framework for project success in Saudi Arabian public organizations from the CIOs' perspective, based on the researchers' previous studies as this paper is part of ongoing work. The proposed framework consists of three components: the critical success factors as independent variables, the organizational culture as a moderator variable, and the project success criteria as a dependent variable.

Keywords: Project, success, framework; CIO; public; Saudi.

INTRODUCTION

Information Technology's (IT) role is crucial for any organisation to work more efficiently in order to improve its performance. The organisation goals and objectives can be achieved by utilising IT properly through the successful implementation of IT projects.

Most of the research related to project success has concentrated on project management success constraints which are called the golden triangle (on time, within budget, and according to specifications). However, there are many factors which could control the project success, and these factors are called the critical success factors (CSFs). Project success (CSFs and project success criteria) have been investigated by many researchers through the development of a framework in order to test the impact of the CSFs on the project success criteria.

A framework has been defined by the online Encarta World English Dictionary as "a set of ideas, principles, agreements, or rules that provides the

basis or the outline for something that is more fully developed at a later stage". Lester [1] defined a research framework as "a basic structure of the ideas (i.e., abstractions and relationships) that serve as the basis for a phenomenon that is to be investigated". The framework is a structure that identifies and describes the major elements, variables, or constructs, and it is used to hypothesise, understand, or give meaning to the relationships among the elements that influence, affect, or predict the event.

By conducting a comprehensive review of different frameworks in the project success literature, this study develops a new framework from the CIOs' perspectives as a part of ongoing work. This paper is organised as follows: in the next section the authors review the literature on project success frameworks. Then, the development process of the proposed framework and its components are presented in sections three and four respectively. Finally, conclusions and implications for future research are highlighted in the last section.



LITERATURE REVIEW

Many project success frameworks have been proposed by different researchers. Pinto and Slevin [2] built their framework based on ten factors which are: project mission, top management support, project schedule/plan, client consultation, personnel technical tasks, communication to recruitment/selection and training. Belassi and Tukel [3] grouped the factors into four areas: (1) factors related to the project; (2) factors related to the project manager and the team members; (3) factors related to the organisation; and (4) factors related to the external environment. A factor in one group can influence a factor in another group, and a combination of several factors from various groups might lead to project success or failure. Holland and Light [4] developed a CSF research framework based on a review of literature and the experiences of the organisations in their study. The model groups the CSFs into strategic and tactical factors. They based their initial selection of strategic factors on Dennis P. Slevin and Jeffrey K. Pinto’s list and then added legacy systems and ERP strategy. They also based their list of tactical factors (client consultation, personnel, client acceptance, monitoring and feedback, and communication) on Slevin and Pinto’s work and then added business process change and software configuration, which are unique to ERP implementation.

Nah et al. [5] built their framework based on four factors which are: top management support, project management, enterprise-wide communication ERP teamwork and composition. These factors are ranked among the top five factors in Nah and Delgado [6] case study on ERP implementations in two organisations. The four factors were the independent

variables and the success of ERP implementation was the dependent variable. They used the organisational culture as a moderator in their study. Tarawneh [7] classified software project success factors into four categories: organisational factors which are the presence of formal methodology, clear business objective, executive support and project scope, technical factors that are standard software infrastructure, understanding requirements and managing requirements changes and reliable estimates, people factors that are user involvement and experienced project manager, and the cultural factors which involve organisational culture.

Bradford and Florin [8] proposed a model for ERP project success in their study. It states that DOI factors (i.e., innovation, organisational, and environmental characteristics) will influence ERP implementation success both from a firm performance perspective and from a user satisfaction perspective. Based on Shang and Seddon suggestions, Annamalai and Ramayah [9] grouped CSFs into three domains: organisational CSFs (OCSFs), project CSFs (PCSFs) and technological CSFs (TCSFs). The OCSFs consist of long-term management support, setting up of ERP business goals and objectives, perceived ERP benefits, cross-Functional teams, ERP in-house training, and business process re-engineering. The PCSFs consists of five factors: project tracking, visible project phases, project phase update, interdepartmental cooperation and interdepartmental communication. The TCSFs consists of the following four elements: appropriate ERP architecture, strategic IT planning, data analysis and conversion, and ERP vendor support. Table 1 shows the summary of the project success factors frameworks that have been found in the literature.

Table 1: Summary of Project Success Frameworks

Framework	Investigated Factors	Comments
Pinto and Slevin	Project mission, top management support, project schedule/plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting.	<ul style="list-style-type: none"> The ten factors have been linked together in an interdependent quasi-sequential framework
Belassi and Tukel	Top management support, project organisational structure, functional managers' support, project champion, Project manager, project team members, and project characteristics, and the external environment (political, economical, social and technological).	<ul style="list-style-type: none"> Group the factors into four areas which related to: the project; project manager and the team members; organisation; and external environment.



Holland and Light	Project mission, top management support, project schedule/plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, troubleshooting, <i>legacy systems, ERP strategy, business process change and software configuration.</i>	<ul style="list-style-type: none"> • Based on Pinto and Selvin list • Group the list into strategic and tactical factors • Add more factors (<i>italic</i>)
Belout	Project mission, top management support, project schedule/plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting.	<ul style="list-style-type: none"> • Use same list of Pinto and Selvin • Include moderator variables and project success as dependent variable
Nah	Top management support, project management, enterprise-wide communication ERP teamwork and composition.	<ul style="list-style-type: none"> • Use organisational culture as moderator
Tarawneh	formal methodology, clear business objective, executive support and minimised project scope, standard software infrastructure, understanding requirements and managing requirements changes, reliable estimates, user involvement, experienced project manager, and organisational culture.	<ul style="list-style-type: none"> • Use organisational culture as factor
Bradford and Florin	Technical compatibility, perceived complexity, business process reengineering, top management support, organisational objectives consensus, training, and competitive pressure.	<ul style="list-style-type: none"> • Group the factors into three categories: innovative, organisational, and environmental characteristics
Bradley	ERP integration, project manager (full time, experience and reporting level), use of consultants, top management involvement, champion and steering committee, user resistance, and training quality and quantity.	<ul style="list-style-type: none"> • Use ten factors from the IT and ERP literature • Use project success as dependent variable
Chung	User related variables (output, job relevance, image, result demonstrability, compatibility and system reliability) and project related variables (internal support, function and consultant support).	<ul style="list-style-type: none"> • Classify the success of ERP systems into two categories; the success of ERP adoption and implementation
El Sawah	Top management support, company wide support, Egyptian organisational culture, effective project management, users' training and involvement, consultants' and vendors' support, business process reengineering, careful package selection and minimal customisation.	<ul style="list-style-type: none"> • Use organisational culture as moderator • Use project success as dependent variable
Al-Mudimigh	Top management commitment, business case, change management, project management, training, and communication	<ul style="list-style-type: none"> • ERP system implementation has been subdivided into three levels: strategic, tactical, and operational. Each level contains a number of critical factors.
Annamalai and Ramayah	Long-term management support, setting up of ERP business goals and objectives, perceived ERP benefits, cross-Functional teams, ERP in-house training, business process re-engineering, project tracking, visible project phases, project phase update, interdepartmental cooperation, interdepartmental communication, appropriate ERP architecture, strategic IT planning, data analysis and conversion, and ERP vendor support.	<ul style="list-style-type: none"> • Group the CSFs into three domains: organisational, project and technological CSFs • Use organisational culture as moderator

RESEARCH CONCEPTUAL FRAMEWORK

Developing a conceptual framework will help the researchers to hypothesise and test certain relationships in order to improve the understanding of the situation [10]. The research conceptual framework presents a holistic picture of the critical success factors (CSFs) that influence the project success criteria in public organisations in Saudi Arabia. The content of the framework consists of three essential components. The first component of the research conceptual framework is the project success criteria that needs to be predicted through testing the model. The second component of the research framework is the organisational culture that can be introduced in the model as a moderator variable. The last and most difficult component is to

DEVELOPMENT PROCESS

identify the success factors that may have an influence on the project success and can be included in the model. This component of building the research conceptual framework has been processed through different studies by the authors.

Consequently, this research conceptual framework was developed based mainly on the findings of the outcomes of the literature review and the researchers' previous studies: exploratory study part I (Almajed and Mayhew, 2013a), and exploratory study part II (Almajed and Mayhew, 2013b). The researchers have adopted a three stage's procedure, and these stages take the form of chronological sequences (Figure 1).

Literature Review
 Exploratory Study I
 Exploratory Study II

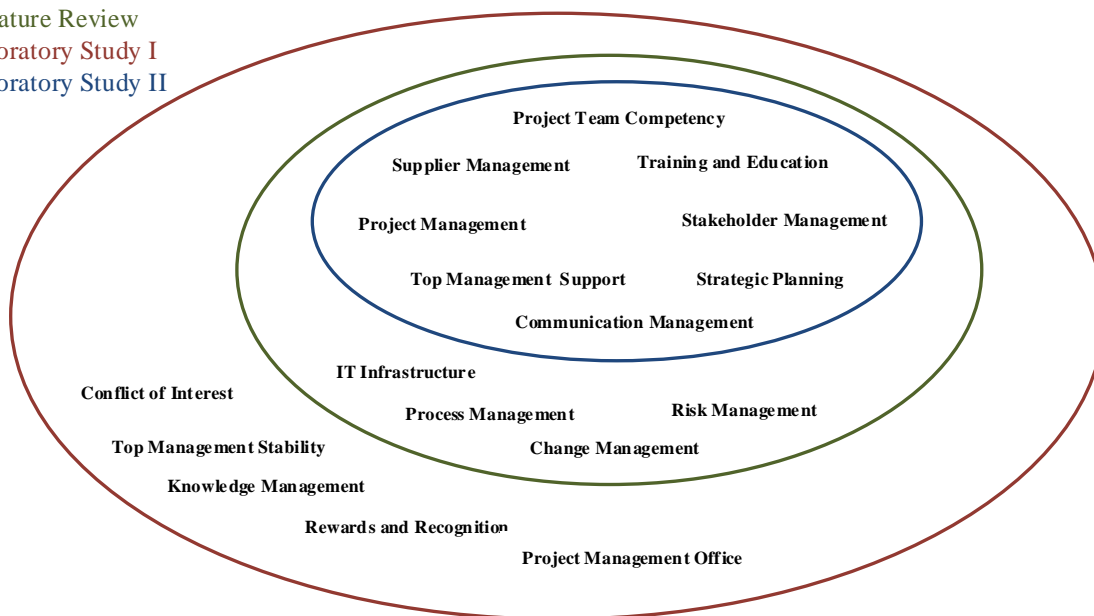


Figure 1: Research Conceptual Framework Development Process

The first stage was the literature review, which suggested a number of factors that should be involved in the preliminary conceptual framework as the base for the study. This includes twelve factors. These factors are common in the IT field literature especially in the ERP studies, and they are: (1) top management support and commitment; (2) strategic planning; (3) project management; (4) process management; (5) project team competencies; (6) IT infrastructure; (7) change management; (8) risk management; (9) communication management; (10)

training and education; (11) supplier management; (12) stakeholder management.

The second stage was the exploratory study part I, the objective of which was to test the importance of the factors that mentioned in the literature (stage one) in a different environment with different cultures, from the point of view of the CIOs. The other goal of this stage was to see if there are more important elements that can be added to the pool of the factors and that may influence the project success criteria. The study



was conducted with CIOs in the public sector in Saudi Arabia using a qualitative approach (semi-structured interview). The first part of the outcomes was assured and the results of the interviews confirmed the importance of all the factors (12 factors) that had been proposed by the literature review (stage one). The second part of the outcomes is the factors list; the CIOs (interviewees) believed in their importance so they were added to the list. These factors are: (1) conflict of interest; (2) knowledge management; (3) rewards and recognition; (4) top management stability; (5) project management office (PMO). Thus, the outcomes of this exploratory study part I have expanded the knowledge of the organisational success factors from real world experience by synthesising the existing literature in this area.

The final stage of developing the research conceptual framework was to examine the importance of all the factors from the previous stages in order to focus on a practical number of factors to be included in the research model. This exploratory study part II was conducted with experts in the IT fields, including CIOs, IT consultants and IT professionals in Saudi Arabia using a quantitative approach (questionnaire). The outcomes of the questionnaire filtered the seventeen success factors which had been proposed by both the literature review and the exploratory study part I down to be eight factors which would be

included in the final stage of building the research framework. These factors are: (1) top management support and commitment; (2) strategic planning; (3) project management; (4) project team competencies; (5) communication management; (6) stakeholder management; (7) partner and supplier management; (8) training and education.

The research framework will be tested in the future by the authors to find out the effect of the final list of the success factors on the project success criteria, and to ascertain whether organisational culture influences on these relationships as a moderator. The following section will present the research conceptual framework components in more details.

RESEARCH CONCEPTUAL FRAMEWORK COMPONENTS

Based on the researchers' previous studies [11, 12], the researchers were able to develop the conceptual framework of IT project success in order to help to achieve the research aim, which is to investigate the impact/influence of critical success factors on IT projects' success within Saudi Arabian public organisations from the CIOs' perspective. Figure 2 shows the research conceptual framework.

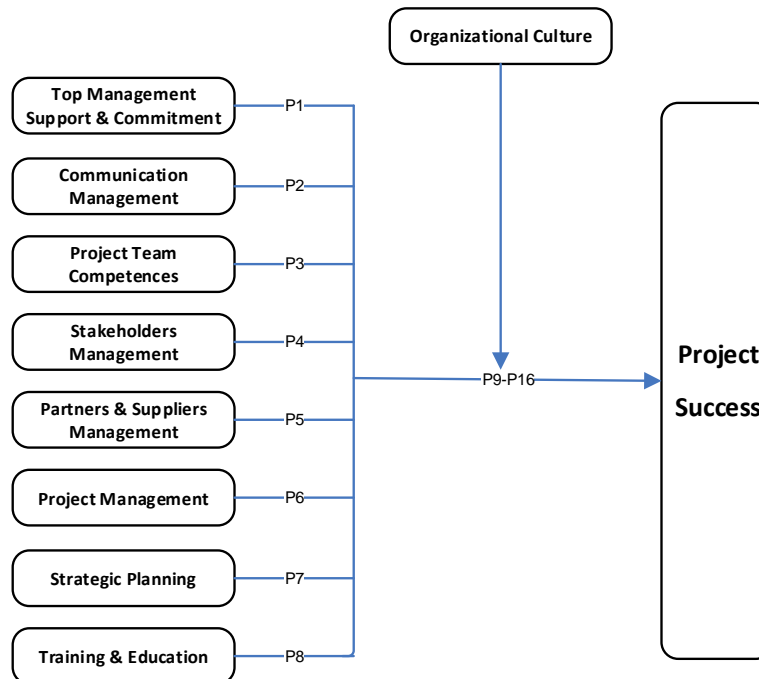


Figure 2: Research Conceptual Framework

Hence the following propositions were developed:

- P1: There is statistically significant relationship between top management support (TMS) and the project success criteria.
- P2: There is statistically significant relationship between communication management (CM) and the project success criteria.
- P3: There is statistically significant relationship between project team competencies (PTC) and the project success criteria.
- P4: There is statistically significant relationship between stakeholder management (SM) and the project success criteria.
- P5: There is statistically significant relationship between partner and supplier

management (PSM) and the project success criteria.

- P6: There is statistically significant relationship between project management (PM) and the project success criteria.
- P7: There is statistically significant relationship between strategic planning (SP) and the project success criteria.
- P8: There is statistically significant relationship between training and education (TE) and the project success criteria
- P10-P16: Organisational culture has interaction effects on the relationship between CSFs (TMS, CM, PTC, SM, PSM, PM, SP and TE) and project success criteria.

The definitions of the eight factors (independent variables), organisational culture (moderator), and project success (dependent variable) are presented in the following subsections.



Top Management Support and Commitment

Many researchers identified “top management support and commitment” as one of the crucial factors in IT project success, and it is the most cited CSF in the literature literature [5, 13-16]. Top management support and commitment refers to top management’s willingness to champion projects within the organisation and to allocate the resources required for IT projects’ success [4, 17, 18]. However, the amount of resources allocated depends on the attitude of the top management to the project, and the commitment of all the employees in the enterprise to the project might be reinforced by top management sponsorship and support. Overall organisational commitment can be raised by top management, and then IT projects success can be increased by organisational commitment (Bingi et al., 1999). Top managers should dedicate time to reviewing plans, following up on results and facilitating management problems. This should be done through their involvement (personal belief of the importance of IT), participation (in IT planning), liaison with the CIO (objectives, business environment, changing priorities, project development policies) and provision of authority and financial resources with long-term commitments [19].

Furthermore, the project has to be recognised as a main priority by top management [6, 17, 20, 21]. Jiang et al. [22] conducted a survey on IT project implementation success factors, and found that top management support was ranked as the third most important amongst thirteen factors.

Project Management

Project management is defined as “*the application of knowledge, skills, tools, and techniques to project activities to meet project requirements*” [23], and it is accomplished through the application and integration of the project management processes of initiation, planning, execution, monitoring, controlling and closing [23]. Project management, which refers to determining timetables, milestones, equipment, workforce, and budgets, is vital in the complex environment of IT projects [16]. Successful IT project implementation requires excellent project management which includes a clear definition of objectives, development of both a work plan and a

resource plan, and careful tracking of project progress [24]. Effective project management is crucial because project success is usually assessed on whether the allocated time and budget are exceeded or not [16].

Setting up an official implementation plan, giving a realistic time frame, arranging periodic meetings for observing project status, having a qualified project manager and participating project team members are commonly the five core components of IT project management [25]. Many scholars emphasise the fact that the scope of the project should be clearly established and controlled [5, 26], and any suggested changes should be assessed along with the organisation’s goals [20, 27]. Moreover, any additional time and cost of the suggested alterations should be evaluated and coordinated with all the affected parties of the project [5], and all conflict issues should be escalated and managed [28]. In order to track the project’s progress, project indicators should be clearly examined on a periodic basis [27-30]. From the best practical point of view, project management related methods, tools, techniques, and processes should be managed and continuously improved to optimise the use of resources and ensure stakeholder satisfaction [31].

Project Team Competency

IT projects impact the most functional departments in any organisation, therefore, the importance of project teams has been emphasised in the IT project literature [5, 16]. The IT project team should recruit the best individuals in the organisation [5, 17, 20, 28, 32-34]. Furthermore, research has shown that companies demonstrated their commitment to IT projects by assigning the best people to them [35]. The IT project team should work closely with the external experts so that they can gain the necessary knowledge and improve their technical and business skills to facilitate project success [4, 16]. In addition, the project manager and the project team should be authorised to make decisions [17, 36].

Compensation and incentives should be given to the team to assist them in working together and achieving the project goals within the allocated time and budget [5, 20]. In order to influence business processes, the project team should have the proper technical and business skills, and have to incorporate



business functions with the capabilities of the system [5]. Jiang et al. [22] conducted a survey on IT projects' implementation success factors, and found the project team's competency was ranked as the fourth most important factor, and they found that a competent project manager was the second most important factor in that study. The collaboration between consultants and the project team has a direct impact on IT project success [37].

Communication Management

Communication management is important in IT project success, and therefore, IT project goals and expectations should be communicated with all the parties affected by the project, and open communication can leverage successes and facilitate enterprise-wide learning [20, 34]. Communication includes the announcement of project progress to the rest of the organisation [4], [34]. In order to keep users informed about the project's progress, communication means such as regular e-mail updates, newsletters, bulletins, and weekly meetings can be employed, and this communication needs to be two-way to avoid any misunderstanding occurring during the collection of the project's requirements [5].

To enhance IT project effectiveness and efficiency, the users and the project team should be kept up to date about the project objectives, plan, and activities [16, 27]. Moreover, goals and objectives should be flexibly communicated in IT project implementation, and users' input and feedback should be received, managed and treated which may help the project to be successful [28]. Jiang et al. [22] conducted an empirical study on the ranking of IT implementation success factors, and found that communication management is ranked as the sixth most important factor.

Strategic Planning

Strategic IT planning establishes a clear vision and measurable objectives for the use of IT in an organisation, prescribes strategies to achieve this vision with the knowledge of the available IT capabilities and opportunities, provides measures for success and possibly suggests concrete initiatives for implementing the developed strategies [38]. It improves key stakeholders' understanding of IT

opportunities and limitations, assesses current performance, identifies human resource requirements, and clarifies the level of investment required. Strategic IT planning generally serves as a mechanism for managing and directing all IT resources in line with organisational strategies and priorities [38].

According to Gunasekaran and Garets [39], "the ultimate goal of IT strategic planning is to provide a broad and stable vision of how IT contributes to the long-term success of the organisation". There are documented approaches to IT strategic planning [39-41]. IT strategy refers to a global level of thinking about IT and its integration with the rest of an organisation. Enterprise architecture concepts focus on the importance of aligning IT strategies to both cross-cutting (organisation-wide) and mission-specific requirements. The project management system should be integrated within the organisation's strategy, and the selection of projects should be carried out in line with the organisation's strategy [31].

Training and Education

The need to include training as a critical part of IT project implementation has been referenced by a substantial number of citations. Another vital consideration is to have a plan for training facilities [42]. The need for training in general has been mentioned by most researchers. However, some researchers have specifically mentioned the need for project team training [43], and others have focused on user training [32, 43-45]. Finney and Corbett suggested that the training should encompass the development of IT skills [42]. Aladwani recommended that the training should be hands-on [46].

Partners and Suppliers Management

It is important for the IT vendor's staff to be knowledgeable about both business processes and ERP functions. The vendor should be carefully selected, since vendor support plays a crucial role in shaping the ultimate outcome of implementation [47]. Project success is found to be positively associated with fit and compatibility with the IT vendor employed [48].



Price has no meaning without a measure of the quality being purchased, and without adequate measures of quality, business drifts to the lowest bidder, with low quality and high costs being the inevitable result [49]. Organisations should select their suppliers on the basis of quality rather than solely on price, so the supplier becomes an extension of the buyer's organisation to a certain extent [50]. Therefore, a mutually beneficial relationship between an organisation and its suppliers will enhance the ability of both to create value [51].

Stakeholder Management

PMI [23] defined stakeholders as “*persons or organisations, who are actively involved in the project or whose interests may be positively or negatively affected by the performance or completion of the project*”. The project, its deliverables, and the project team members can be influenced by stakeholders. In order to determine the project requirements, the project management team must identify both internal and external stakeholders. Identifying stakeholders and understanding their relative degree of influence on a project is critical. Even though stakeholders often have very different or conflicting objectives, an important role of the project manager is to manage their expectations [23].

Many researchers mentioned stakeholder management as one of the factors that impact IT project success [52-55]. Communication and cooperation between stakeholders have been strongly related to project success [56]. Project success and failure are directly linked to stakeholders' perceptions [57]. Poor stakeholder management is one of the influencing factors on the implementation of IT projects [58].

Organisational Culture (The Moderator)

Johnson, Scholes and Whittington [59], defined the organisational culture paradigm as “*a set of assumptions held relatively in common and taken for granted in an organisation*”. It includes collective experience, values, beliefs, and behavioural norms. These assumptions exist at the organisational level, and they have worked well enough to be considered valid. An organisational culture that promotes learning and innovation can be especially influential on the success or failure of an organisation's IT

innovation or strategy [59, 60]. Scott and Vessey [61] provide case study evidence to show that organisational culture can impact on the success or failure of IT project such as ERP. According to Sitkin [60], the proximity of an organisation towards a “learning” state would, in theory, greatly facilitate the process of change.

An organisational culture that promotes learning encourages participation and adaptation. Skok and Legge [62] highlight the importance of cultural as well as business process changes. According to them, ERP problems commonly lie with the employees feeling uncomfortable with the cultural changes, which follow from process changes in the ERP implementation. Thus, unless the organisational culture promotes openness in communication and facilitates learning, the employees may behave in a detrimental fashion towards the new system, causing its failure.

Based on some studies [5, 16, 63, 64], the organisational culture is considered as a moderator in the research conceptual framework. The moderating variable is one that has a strong influence effect on the independent variable (CSFs) and dependent variable (project success criteria) relationships. In the current study, the organisational culture will be considered as a moderator.

Project Success Criteria (The Dependent)

Many researchers incorporate both the project management success and the project product success components in the measurement of the project's success [65-73]. This provides the basis for an instrument to measure the dependent variable, project success. Therefore, the success criteria that had been found in the literature [72, 73], and had been confirmed by the CIOs in the exploratory study part I will be used for this study. These criteria are time, budget/cost, quality, stakeholders' satisfaction, business goals and use. As a result, the researchers will consider a project to be successful if:

- it is completed on time
- it is completed on budget
- it is completed with all features and functions as initially specified
- it meets the needs of the project stakeholders
- it achieves its business goals and purpose



- the end product is used frequently (the degree and manner in which users utilise the capabilities of the end product)

CONCLUSION AND FURTHER RESEARCH

Based on the findings of the researchers' previous studies, the conceptual framework was developed and presented. It depicted the project critical success factors as independent variables, organisational culture as a moderator, and project success criteria as a dependent variable. Moreover, the conceptual framework components' relationships were presented, and the research propositions were developed. Each component of the framework was

described in more detail, including all the eight critical success factors, the project success criteria and the organisational culture.

The authors are testing this framework (results will be presented in a forthcoming paper) in order to investigate the impact/influence of the critical success factors on IT projects' success within Saudi Arabian public organisations from the CIOs' perspective. The proposed framework can be applied to other areas, so future research can be conducted to test it in the private sector in Saudi Arabia or any other developing countries. Also, more empirical investigations can be carried out to modify the framework by incorporating other factors or altering any of its components.

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