An Investigation to Reveal Why IT Projects Succeed or Fail in Saudi Arabia

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Abstract: In order to identify the main reasons for the success and failure of IT projects in Saudi Arabia; we have analyzed the responses of three hundred and eight project managers to an online structured questionnaire. In addition to that, semi structured interviews were conducted with eight project managers. The nationalities of those project managers were various and they have worked either in public or private sectors in Saudi Arabia. This study has found common reasons for failure of IT projects in Saudi Arabia. Organizational culture, conflict of interest, and the instability and lack of clarity of the set of requirements were characterized as the most important causes for failure. Additionally, Critical Success Factors (CSFs) that should increase the project success were also enumerated based on the questionnaire responses and the interviews. Those included: clear statement of requirements, the project manager leadership, and soft skills.
[Fahad Alfaadel, Mohammed Alawairdhi, and Mahran Al-zyoud, Muhammad Ramzan. **An Investigation to Reveal Why IT Projects Succeed or Fail in Saudi Arabia.** *Life Sci J* 2014;11(10):146-154]. (ISSN:1097-8135). http://www.lifesciencesite.com. 21

Keywords: IT Projects, CSF, Soft skills, Leadership, Saudi Arabia

1. Introduction

IT projects have certain characteristics that distinguish them from other projects like construction projects. IT projects are complex by nature and this is mainly due to the fact that they usually change existing business processes in organizations, which is often faced with great resistance. Also, IT projects face the challenge of uncertainty where it is very difficult to create complete and stable requirements [1]. Perceived flexibility and high risk are also among other characteristics.

Saudi Arabia has allocated huge budgets for high-profile Information Technology projects. For example, building the infrastructure needed to support delivering 150 electronic services has been allocated $800 million [2]. IT projects, such as the one mentioned, should be studied carefully in order to reach the needed success and realize the strategic goals.

After surveying the literature, it was obvious that there is very little about why IT projects fail in Saudi Arabia, or about success factors for projects there in general. There is little discussion of project management practice in Saudi Arabia, and this might be due to the recent interest in project management in Saudi Arabia and the region.

This research attempts to find the most important reasons for the failure of IT projects in Saudi Arabia. It also investigates the critical success factors (CSFs) of such projects and which ones are most important. In addition, it questions about the definition of project success, and which components are seen by project managers who worked in Saudi Arabia to be the most important ones. Finally, an approximate failure rate of IT projects in Saudi Arabia is presented.

The paper is structured as follows: Section II presents a literature review, section III talks about the questionnaire's objectives and the sample collected. Section IV shows the results and its analysis and finally section V concludes the work.

2. Literature Review

Project success or failure is an elusive concept that means different things to different people. Cooke-Davies distinguished between project management success that is measured by time, cost and quality and project success that is measured against the overall objectives of the project [3].

Baccarini proposed the logical framework method (LFM) as a way to analyze and understand project success [4]. The American Aid Agency developed the LFM in the 1970s for the Agency for International Development to improve the project management of development projects. Baccarini distinguished between two concepts: project management success and product success. According to Baccarini, the project management process focuses on the project process and in particular the successful accomplishment of time, budget and quality objectives. Product success focuses on the effects of the project's final product. Using the LFM, four objective levels are identified: goal, purpose, outputs and inputs.

Project success consists of delivering input and output objectives and has three components: meeting time/cost/quality objectives, the quality of the project management process, and satisfying project

stakeholders' needs. Product success consists of providing goal and purpose objectives, and it has also three components: meeting the project owner's strategic objectives, satisfaction of end users' needs and satisfaction of stakeholders' needs related to the product.

The key finding of Thomas and Fernandez's research in Australia is that companies who clearly define and effectively measure the elusive concept of IT project success have a greater chance of achieving success [5].

One of the widely discussed models of information system (IS) success is DeLone and McLean's (D&M) IS success model [6]. The model consists of six interdependent variables or components for information system success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. The practical application of the D&M model is dependent on the organizational context. However, it is important to note that this model measures the success of an IS and not the project itself. This is compared to the product success part in Baccarini's model discussed above.

Westhuizen and Edmond extended the work of Baccarini. In the product success part of the model, they used the updated D&M model to accurately describe the project's end-product success. They concluded by identifying the following success dimensions for an information system product: the quality of the project management, whether it is within time, whether it is within budget, specified system quality, specified information quality, specified service quality, project stakeholder satisfaction, use of the system, user satisfaction and net benefits (to the organization and others) [7].

Nowadays, projects extend into different countries, and project members come from different cultures bringing with them their cultural values. However, the discussion about national culture and its influence on project management receives very little emphasis in the literature. Shore and Cross used the outcome of two case studies where culture dimensions are linked to project management to explain the preferences that guide manager behavior and decision-making [8]. Low and Shi used two case studies for construction projects in China to explain that national culture has an impact on decision-making, support for employees and communication between the project manager and employees [9]. Azimi and Manesh also believe that CSFs in the developed world cannot be adopted in the developing world without changes due to cultural and social differences [10].

Kanter and Walsh identified the following as major causes of failure in manufacturing development projects: lack of communication, unreasonable schedules, lack of the right skills at the right time, inadequate design, incomplete or unstable requirements, ineffective project leadership, an inadequate initial plan as a baseline, the inconsistent application of resources, an incomplete testing plan and environment and, finally, an inadequate monitoring system and control [11].

Young highlighted the fact that not having clear requirements, a lack of alignment with business strategy and un-attainability are some of the main reasons for IT project failures [12]. She clearly states that the main reason for project failures is people problems, not technical or business problems.

Taxonomy for IT project failures was presented in [1], it consisted of the following: project management factors (for example, user involvement and scope management), top management support, technology factors (lack of competencies and commitment), organizational factors (culture, structure and conflicting interest), complexity/size factors (complex projects and large and multifaceted projects) and process factors (for example, an unsuitable project management process). Saunders highlighted the fact that poor planning, a weak business case and lack of senior management involvement are the main reasons for IT projects to fail [13].

3. Questionaire

A. Preamble

The data for this study was primarily collected through a structured questionnaire hosted on the web where respondents answered research questions online. Online questionnaires have their valuable advantages which include: the possibility of a large and geographically dispersed sample size and the low likelihood of contamination or distortion of respondent's answer. In addition, using this approach reduces the problem of questionnaire fatigue mentioned by Collis and Hussey that refers to the reluctance to respond to questions because the respondents are inundated with the questionnaires [14]. Using online surveys will reduce this problem by giving respondents ease of access in terms of using their private time and place.

The other problem mentioned by them is non-response bias which is a problem that appears when generalizing research findings on the whole population. It is reduced by this research design by sending second and third follow-up email reminders to non-respondents.

For triangulation purposes, semi-structured interviews were also used where more rich and in-depth data could be obtained. This also added another perspective to the answers of the research questions.

The philosophical research paradigm for this study is mainly a positivist paradigm. Positivism is a "paradigm that originated in the natural sciences. It rests on the assumption that social reality is singular and objective, and is not affected by the act of investigating it. The research involves a deductive process with a view to providing explanatory theories to understand social phenomena" [14]. In such paradigm, the researcher is more concerned with facts rather than impressions [15].

B. The Sample

The questionnaire is distributed online using esurveyspro.com web tools, which send personalized email invitations. Respondents were given 40 days to complete the questionnaire. After all the responses had been collected, they were carefully reviewed and verified and a number of incomplete responses were rejected. A total of 308 responses were collected and analyzed, which represents a 17.6% response rate.

The sample is mainly dominated by male respondents (95.13%), and this shows the fact that IT jobs in Saudi Arabia are mainly for men. The majority of respondents (63.96%) work in private sector companies. The educational level is high with bachelor degree holders being a majority (55%), followed by higher degrees like PhD and master's degrees (42%). The majority of respondents (34%) have more than ten years of experience in project management. The majority of respondents have more than ten years of experience in project management. In addition, the majority of respondents are not PMP certified, and only 18% of respondents are PMP certified.

C. The objectives

The questionnaire aimed at answering four main questions:

1. What are the reasons for the failure of IT projects in Saudi Arabia?
2. What are the CSFs of IT projects in Saudi Arabia?
3. What are the Success Components of IT projects in Saudi Arabia?
4. What is the rate of failure of IT projects in Saudi Arabia?

There are a lot of reasons for the failure of IT projects that have been cited in the literature. These were mapped onto a more robust model, which is in this case the taxonomy of the reasons for IT project failure developed in [1]. Their model presents six dimensions of the root causes of IT project failures. We have chosen this model since almost all other reasons for project failure can be mapped onto one or more of these six project failure dimensions. Moreover, this model is mainly derived from studying different IT projects, which means it takes into account the complex and unique nature of IT projects and it is not derived from studying other projects like manufacturing projects.

The reasons for failure were then presented to practicing project managers for them to decide how relevant they are and also to rank which ones are the most important ones in terms of their day-to-day practice.

The next research question tried to identify which are the most important CSFs of IT projects. Almost 60% of the CSFs cited in the literature are the opposite of the reasons for failure cited earlier. The list of CSFs cited in the literature are listed and categorized. Practicing managers will then choose which ones they have experienced in their projects, and which ones are the most important from their point of view.

The third questionnaire question tried to identify the perception of project managers with regards to what does and does not constitute a success component. The success components are mainly derived from the model developed in [7], which is an extension to the work in [4]. This question actually tries to understand what project success is for practicing project managers in Saudi Arabia. By studying different components, it would be interesting to see if the project managers attribute project success to project management success or to product success.

The D&M model mainly identifies the success components of information system products. In the product success part of Bacarrini's model, Westhuizen and Edmond used the updated D&M model to accurately describe the project end-product success. They concluded by identifying the following success dimensions for an information system product: the quality of the project management, whether it is within time, whether it is within budget, specified system quality, specified information quality, specified service quality, project stakeholder satisfaction, use of the system, user satisfaction and net benefits (to the organization and others).

The fourth question attempted to estimate the failure rate of IT projects in Saudi Arabia. The definition of failure, challenged, and impaired projects used by the Standish Group (The Standish Group International, 1994) were used here. They attributed success to the project if it is completed on time and within the budget, with all features and functions as initially specified. The project is considered to be challenged if it is completed and operational but over budget and over the time estimate and offers fewer features and functions than were originally specified. And finally if the project is cancelled at some point during the development cycle then it is said to be impaired.

The project failure rate will be the percentage of all those projects identified as either challenged or impaired. The main reason for using the definitions given by the Standish Group's CHAOS report is the ability to compare the failure rate in IT projects in Saudi Arabia with others in the world. However, it should be noted that the Standish Group only studies software projects in the US, and this research studies software projects and others in Saudi Arabia. However, software projects constitute the main troubled projects in the IT industry everywhere.

4. Results

A. Reasons For IT Projects' Failure And The Most Important Reason

Regarding the reasons for failure, ten reasons were presented:

1. Lack of a clear project goal and value
2. Not having clear, complete and stable requirements
3. Lack of project manager competency and leadership
4. Poor planning (unrealistic schedules, users are not identified, etc)
5. People issues (lack of communication, conflicts, etc)
6. Project team expertise and commitment
7. Lack of proper risk management and control
8. Complexity of the project (for example, new technology)
9. Lack of top management support
10. Organizational culture and conflict of interest (politics).

A Likert-style rating scale from strongly disagree to strongly agree was used. The mean score for each of these reasons for failure ranges from 2.87 (SD=1.21) to 4.11 (SD=0.974), which shows that the majority of these reasons for failure are found to be relevant by project managers in Saudi Arabia where most of them score more than 60% in "agree".

The reasons for failure that were found to be most relevant were, in order, "Organizational culture and conflict of interest (politics)" (scoring 83.12%, followed by "Not having clear, complete and stable requirements" (82.79%), then "People issues" (81.82%) and then "Poor planning" (80.19%). It was surprising to see that "Top management support" ranks eighth out of ten reasons for failure, which is much less than anticipated in the literature, where some studies conclude that it is the single most important reasons for failure [13].

For inferential statistics, factor analysis – which is a data reduction technique – was used. Smaller set of components or factors are used to represent a large set of variables. Factor analysis was appropriate for us since the data have passed the Pallant's requirements [16]. According to Pallant, the sample size should be more than 300 cases and we should test the strength of the inter-correlation among variables.

Our sample size is just adequate (308 cases) and regarding the second requirement, two statistical measures were generated by SPSS to help assess the factorability of the data: Bartlett's test of sphericity and a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. In our case, Bartlett's test of sphericity was significant with a value of 0.00 (should be 0.05 or smaller). Moreover, the KMO measure was 0.793 (should be 0.6 or above).

In order to determine how many components to extract, we have used Kaiser's criterion. The result was that only three components should be kept (those having their eigenvalue equals 1 or more). These three components explain 55.393% of the total variance. The rotated three components solution showed that five items loaded on component 1 strongly (with 0.4 or above), and three loaded strongly on component 2, while only one loaded on component 3, which suggested a two-component solution for further study. Hence, the same test was repeated again forcing SPSS to use only two factors where the reasons for failure loaded equally strongly on two components producing a simpler solution. The results of this analysis support the use of positive effect items and negative effect items as separate scales.

Respondents were then asked to choose one single reason for failure as the most important reason they have seen when they have managed their projects in real life.

"Not having clear, complete and stable requirements" is by far the most important reason for projects to fail empirically (having 27.92% of responses). This is followed by "Organizational culture and conflict of interest (politics)" (15.91%) and then "Poor planning" (14.61%). One can notice that the reason for failure "Lack of proper risk management and control" and "Complexity of the project (for example, new technology)" are seen by project managers to be not that important.

Studying the reasons for failure in IT projects in relation to project manager experience can reveal valuable information about variance of reasons in different experience categories. Project managers who have many years of experience must have experienced different types of projects and witnessed different reasons for projects loosing track and ending up failing.

We have used a non-parametric test since the results of Kolmogronov-Smirnov statistics, which assess the normality of the distribution of the respondents' scores for the most important reason for

failure, produced a significance value of zero and hence violating the assumption of normality. The Kruskal-Wallis test was used in this case since the independent variable, experience, has four categories (less than 2 years, 2-5 years, 6-10 years, and more than 10 years of experience). The Kruskal-Wallis test revealed statistically insignificant scores for the most important reason for failure variable across different experience groups. The chi square was 0.892, p=0.827, which shows that there is no statistically significant difference between scores for the most important reason for failure question among different experience groups.

B. Project Success Definition And The Most Used One

Using the extended model of Baccarini by incorporating the D&M updates in the product success factors, Westhuizen and Edmond's model was used to define the following as the main characteristics of project success. A project is successful if

- it is completed on time and to budget, with all features and functions as initially specified
- the quality of the project management used is satisfactory
- it meets the needs of the project stakeholders
- the project achieves its business goals and purpose
- the end product is used frequently (the degree and manner in which users utilize the capabilities of the end product)
- the system information quality is high (for example, management reports, web pages are accurate and understandable)
- the service support from IT department is satisfactory (responsiveness, technical competency, etc)

The mean ranged from 2.51 (SD=0.78) for "A project is successful if the service support from IT department is satisfactory" to 3.38 (SD=0.667) for "A project is successful if the project achieved its business goals and purpose", which shows variance between different scale items.

The percentages of the responses regarding the project success definition were as follows: the highest percentage was the definition "A project is successful if the project achieved its business goals and purpose" (having 92.21% of responses), followed by "A project is successful if it is completed on time and to budget, with all features and functions as initially specified" (88.31%) and then "A project is successful if it meets the needs of the project stakeholders" (86.69%). Other success definitions have had low percentages: "The quality of the project management used is satisfactory" (57.14%), "The end product is used frequently" (53.57%), "The service support is satisfactory" (50.32%), and finally "The system information quality is high" (48.05%). Apparently, there is no single definition from the scale items that has been completely ruled out.

The seven items of the question were subjected to principal component analysis (PCA) using SPSS. Prior to using PCA, the suitability of the data for factor analysis was assessed. An inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The KMO value was 0.663, exceeding the recommended value of 0.6 [16]. Bartlett's test of sphericity reached statistical significance supporting the factorability of the correlation matrix.

PCA reveals the presence of three components with eigenvalues exceeding 1, explaining 33.6%, 17.7% and 16.6% of the variance respectively. To aid in the interpretation of these three components, oblimin rotation was performed. The rotated solution revealed the presence of a simple structure with all three components showing a number of strong loadings and all variables loading substantially on one component.

When asked to specify empirically the single most frequently used definition of project success, most project managers (45.45%) have seen that "A project is successful if it is completed on time and to budget, with all features and functions as initially specified" is the most frequently used definition, followed by "A project is successful if the project achieved its business goals and purpose" (29.55%) and then "A project is successful if it meets the needs of the project stakeholders" (15.91%).

Even though a lot of respondents do agree that "A project is successful if the project achieved its business goals and purpose" is a very relevant information in a previous question, however, when asked about the most frequently used definition in their projects they chose "A project is successful if it is completed on time and to budget, with all features and functions as initially specified".

We have used a non-parametric test since the results of Kolmogronov-Smirnov statistics produced a significance value of zero, which violated the assumption of normality. The Mann-Whitney U test was used due to the fact that independent variable had only two categories (certified PMPs and non-certified PMPs). The test revealed no significant difference in the most frequently used success definition for certified PMPs (Md=56, n=3) and non-certified PMPs (Md=252, n=3): U= 6377, z=-1.203, p=0.229, r(effect size)=0.06. This means that the scores for the most frequently used success definition by certified and non-certified PMPs are not statistically significant.

C. CSFs and The Most Important One

The following CSFs are the most widely cited in the literature:

1. Project Management Office (PMO)
2. Suitable organizational culture
3. Proper project planning
4. Clear vision and objectives
5. Clear statement of requirements
6. Top management support
7. Stakeholder management
8. Suitable national culture
9. Project team expertise and commitment
10. Project monitoring and feedback
11. Project manager leadership and soft skills

It was quite obvious from the results that almost all of the CSFs that have been published in previous literature are relevant to IT project managers in Saudi Arabia. There were five items that score more than 90% in the respondents' choices. The highest was "Clear statement of requirements" (having 93.51% of responses), followed by "Project manager leadership & soft skills" (92.86%), then "Proper project planning" and "Clear vision & objectives" (92.21%), then "Top management support" (90.26%). The other CSFs had lower percentages with "Project team expertise & commitment" scoring (89.94%), then "Project monitoring and feedback" (86.69%), then "Stakeholder management" (78.25%), followed by "Suitable organization culture" having (75.97%), then "PMO" (66.56%), and finally "Suitable national culture" having the lowest percentage (51.62%).

It is interesting to see that some items like "Top management support" are not regarded by IT project managers as a reason for failure; however, it is an important CSF.

The data was suitable for factor analysis with many coefficients in the correlation matrix having a value of 0.3 and above, a KMO value of 0.842, and with the Bartlett's test of sphericity reaching statistical significance supporting the factorability of the correlation matrix.

The 11 items of the question were subjected to PCA using SPSS. PCA revealed the presence of two components with eigenvalues exceeding 1, explaining 38.426% and 11.466% of the variance respectively. To aid in the interpretation of these two components, oblimin rotation is performed. The rotated solution reveals the presence of a simple structure with only one component showing a number of strong loadings. The results of this analysis support the use of positive effect items and negative effect items as separate scales.

When asked to specify a single most important CSF, the majority of project managers responded with "Clear statement of requirements" (20.45%) as the most important CSF, followed by "Top management support" (18.51%) followed by "Proper project planning" (16.56%) and then "Clear vision and objectives" (11.69%). Other CSFs like national culture and organizational culture scored low in this question.

Non-parametric test was used due to the results of the Kolmogronov-Smirnov statistics. For inferential statistics, we have tested the variance of the dependent variable, which is in this case the most important CSF, between different groups of experience (the four mentioned earlier categories). The Kruskal-Wallis test revealed statistically insignificant scores for the most important CSF variable across different experience groups. The chi square is 2.171, p=0.538, which shows that there is no statistically significant difference between the scores of the most important CSF question among different experience groups.

D. IT Projects' Failure Rate In Saudi Arabia

Respondents were then asked about the total number of projects they have managed. The project success and its challenged and impaired definitions from the Chaos report (The Standish Group International, 2001) are then presented. According to these definitions, respondents were asked to decide how many of all their projects are successful, challenged or impaired. The results are shown in the table below.

Table I (Statistical Results based on respondents' answers)

Total Number of Successful Projects	2,613
Total Number of Challenged Projects	2,017
Total Number of Impaired Projects	863
Total Number of Projects	5,493
IT Project Failure (%)	**52.43**

It should be noted that this failure rate is lower than the global failure rate in the CHAOS report which is approximately 72%. The CHAOS report scope focuses mainly on software projects that are more failure prone, while this research studies software projects and other projects like computer networks among others.

Non-parametric test was used. For inferential statistics, we have tested the variance of the dependent variable, which is in this case the total number of successful projects, between different groups of experience. The Kruskal-Wallis test revealed a statistical significance in the scores of the total number of successful projects variable across different experience groups; the chi square is 34.339, p=0.00, which shows that there is a statistically significant difference between scores with project managers having more experiences of achieving success.

A similar test is performed on the certified PMP variable, and also on the type of organizations (public or private company). Test results clearly showed that the total number of successful projects has a relationship with certification, with certified PMPs achieving more success than non-certified PMPs. It also showed that private sector companies are delivering more successful projects than their counterparts in the public sector. However, there was no relationship between education and the total number of successful projects.

E. Reliability Analysis: Validity of Scales Developed

A Cronbach's Alpha coefficient of 0.759 was reported in the reliability test of the relevance of reasons for failure in IT project managers in Saudi Arabia which is considered to be good. The coefficient for the scale of the question that measures the IT project success definition was 0.641, which is acceptable. However, the same coefficient for the question that measures the CSFs for IT projects was 0.826 which is great. In conclusion, findings from reliability test analysis shows reliable scales developed in this study with Cronbach's Alpha coefficient ranging from acceptable to good to great.

F. The Interviews

Eight project managers were interviewed; five of them work in the private sector.

The top five reasons for failure that were found to be most relevant by the interviewees were, in order, "Not having clear, complete and stable requirements" (having 27.60% of responses), followed by "Organizational culture and conflict of interest (politics)" (15.91%) then "Poor planning" (14.61%) then "Lack of project manager competency and leadership" (10.71%) then "Lack of a clear project goal and value" (10.06%).

On the other hand, the highest CSF was "Clear statement of requirements" (scoring 20.45%), followed by "Top management support" (18.51%). then "Proper project planning" (16.56%) then "Clear vision & objectives" (11.69%) followed by "Project manager leadership & soft skills" (9.42%).

There were many reasons for failure mentioned by the project managers interviewed. The following reasons were frequently stated in the interviews: poor planning, weak project management process, not enough resources allocated, office politics and, finally, the IT department and business users not speaking the same language. These actually support the findings of the questionnaire.

The CSFs highlighted by the project managers in the interviews include team work, a clear statement of requirement, a competent project manager, top management support, organizational culture and clear project goals. These also support the findings of the questionnaire.

When asked about their definition of project success, some of the project managers define it as project management success while others define project success as achieving business goals and satisfying project stakeholders' needs.

Finally, when asked about their expectations regarding the IT projects' failure rate, their expectations ranged from the most conservative of 50% going all the way up to a project failure rate of 85%. However, this study finds that the IT project failure rate in Saudi Arabia is approximately 53%, which supports the interviews' conservative findings.

7. Conclusions and Recommendations

The attention of Saudi Arabian organizations on project management as a vehicle to deliver strategic goals is fairly new, with some organizations being more mature than others. Organizations usually get help from overseas companies to deliver critical IT projects in the country. However, having a counterpart project team from the organization itself is a must to achieve project goals.

There has been no effort in Saudi Arabia to study the practice of project management. This study is the first to discuss IT project success and failure in Saudi Arabia. It is just a first step in understanding more deeply the failure of IT projects in Saudi Arabia. Regarding the IT projects' failure rate, it has been estimated that 52% of IT projects fail. It was also found that project success has a positive relationship with a project manager's experience and certification. Projects in the private sector have higher success rates than their counterparts in the public sector. However, a project manager's educational background does not have much of a relationship with project success.

According to the findings of this research, the most frequently used definition for a project to be successful is "A project is successful if it is completed on time and to budget, with all features and functions as initially specified". This is followed by "A project is successful if the project achieved its business goals and purpose" and "A project is successful if it meets the needs of the project stakeholders".

The project managers' views about a project being successful if it achieves business goals or if it satisfies the need of stakeholders actually confirm the extension needed to Baccarini's model (the model of Westhuizen and Edmond). This study empirically shows that there are other factors not included in Baccarini's model that should have been included.

The main finding of this research is the reasons for IT project failure. It has been found that "Not

having clear, complete and stable requirements" is by far the most important reason for projects to fail empirically. This is followed by "Organizational culture and conflict of interest (politics)" and then "Poor planning". One can notice that reasons for failure like "Lack of proper risk management & control" and "Complexity of the project (e.g. new technology)" are not seen by project managers as that important. Results show that these reasons for failure are the same for all experience categories of project managers.

From the reasons for failure, it can be seen that some of them could be overcome by training and certification. However, other reasons for failure like organizational culture might need time and effort from organizations to change. If organizations follow a mature methodology that has been used, it might avoid two reasons for failure, which are not having complete stable requirements and also poor planning.

The study also finds that "Clear statement of requirements" is the most important CSF, followed by "Top management support" and then "Proper project planning". Others like national culture and organizational culture are less important. Again, having a clear statement of requirements and proper project planning are CSFs and the lack of them is a major reason for failure. A similar suggestion can be made about organizations focusing on following a mature methodology to implement IT projects. Due to competition and the pressure of time, some important phases of the project are severely minimized and usually the planning phase suffers the most. This results in a requirement statement that captures only part of the end user's requirements. Not having proper project planning can severely impact the estimation of time and resources (financial and human). A lot of other important documents like a risk management plan and a quality management plan, end up being skipped.

It is obvious from the study that the project team, project manager and proper project methodology are important for success. However, this is not enough and the project organization including project sponsor and other stakeholders should be part of this success. As seen in the reason for project failure and in CSFs, organizational culture and top management support are fundamental to project success. Organizations can introduce governance structures where a steering committee including all stakeholders meet frequently to monitor and steer their IT projects in the right direction. In addition, "project manager leadership and soft skills" was found to be a reason for failure. Investing in training in leadership, communication and conflict resolution, besides project management courses, is a first step in the right direction.

This study is only the first step in understanding IT project failure and success in Saudi Arabia. Based on the findings, some recommendations can be presented to IT project managers, their organizations and other entities that promote the use of project management in Saudi Arabia.

For project managers, a plan should be in place to train and certify them in project management. As findings of this study suggest, "project manager leadership and soft skills" is a reason for failure. Investing in training in leadership, communication and conflict resolution, besides project management courses, is a first step in the right direction.

For public and private sector organizations, top management support is a must for IT projects to succeed. Governance structures should be introduced, and having a clear goal and vision of the projects is one of the CSFs. Organizational culture is another reason for failure organizations should avoid; however, changing an organization's culture may not always be easy, and it takes time and effort to achieve it.

Other agencies and entities in the country, like PMI-AGC and also the Saudi Engineering Community, have an important role to play. Awareness in the market and among professionals about the high failure rate and reasons for failure is a logical first step. Conferences and workshops targeting the topic are also desirable. Training, certification and also scholarships are among the least that could be done to increase project success.

In summary, the high failure rate in projects would severely impact the economy of the country. Companies and public sector agencies not being able to implement their strategic goals or five-year plans might suffer from failed initiatives that impact the whole economy of the country and its competitiveness.

For future research, the impact of top management support on project failure and success should be further explored. Another interesting area is the impact of project manager leadership and skills on project success. An explanatory study about the use of project management in IT projects in Saudi Arabia is needed since there are a lot of gaps in terms of the numbers of project managers, methodologies used, project organization and governance structures used..

Acknowledgements:

For this work, we would like to acknowledge and highly appreciate the support extended to us by ministry of higher education, kingdom of Saudi Arabia. We are extremely indebted to both Al-Imam Muhammad Ibn Saud Islamic University, Saudi Arabia and Saudi Electronic University for their

continuous encouragement and endeavors for promoting research.

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6/6/2014