

Causes of failure in Healthcare IT projects

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Abstract. IT projects in healthcare sector have many differentiating characteristics over other types of projects. These characteristics rise from the sensitive nature of the healthcare environment as well as the diversity in user groups and IT systems usually installed in hospitals. This paper studies healthcare IT project causes of failure compared to other types of projects. It shows how the different characteristics of healthcare environment affect the success of failure of IT projects, and it concludes by providing some guidelines that would help in increasing the rate of success of healthcare IT projects. This study is based on a 4 years survey conducted in Saudi Arabia and studying 52 healthcare IT projects.

Keywords: Healthcare IT, Project Management, PMP, causes of failure.

1. Introduction

The use of information and communication technology (ICT) in healthcare sector is one of the major factors that help in improving the services provided to patients [1].

The uses of ICT range from communications infrastructure such as networks to sophisticated systems such as hospital information system (HIS) [2], picture archiving and communication system (PACS) [3], Emergency Room IT system [4], electronic medical records (EMR) [5], Telemedicine [6], and others.

These systems are usually a part of every modern hospital especially large scale hospitals [7].

Projects involved in either implementing these systems or migrating from one system to another are long and complicated projects that require large investments of money and experience in order to implement them successfully.

Professional project management is essential for the success of healthcare IT projects especially projects involving system integration such as HIS. These projects are usually managed using Project Management Institute (PMI) standards as published in the PMBOK guide [8].

Project failure is defined as failing to meet the project objectives in terms of project scope, schedule, or cost [9]. As per Standish Chaos summary report for 2009 [10], only 32% of IT projects meet their objectives, while 24% of IT projects totally fail and 44% have difficulties in meeting their goals.

This study aims to compare the causes of failure in healthcare IT projects with those of other types of projects. It is conducted by examining the causes of failure for 52 healthcare IT projects in Saudi Arabia between 2007 and 2011 in some of the largest hospitals there. The budget of these projects ranged from 500,000 to 10 million US dollars.

We will start by discussing the major causes of failure in projects, then we will discuss the challenges facing healthcare IT projects. We follow by showing how the study of healthcare IT projects was conducted, and the results of this study comparing the causes of project failure with those particular to healthcare IT. We conclude by offering guidelines to help in managing healthcare IT projects.

2. Causes of Project failure

Research shows that the internal factors in project failure involving the project management processes and project team dynamics represent a larger cause for project failure than external factors involving customer and other external entities [11].

From project management point of view, there are many factors that may lead to IT project failure [12]. The main factors found to cause project failure are incomplete or unclear scope, failure to identify and involve stakeholders, communication problems and risk management problems [13] [14]. These factors lead to increasing the number of changes in project, unsatisfaction of customers, poor morals for the team members, problems in deliverables quality, extended schedule, and increased cost [15].

As shown, most of the issues involved in project failure are related to the planning phase of the project, the most common reason behind project failure being unclear scope [16].

3. Challenges facing healthcare IT projects

Healthcare IT projects are distinguished from other types of projects in several aspects such as the environment in which these projects are implemented, the diversity of systems and devices they need to work with, the need for integration between different systems, and the different groups of stakeholders that must be satisfied for project success.

Healthcare IT systems work in a very sensitive environment. This is because patient lives may depend on the proper work of these systems. For example, patient information received from HIS is vital to prescribe correct medicine to that patient. Failures in healthcare systems can result in severe harm to patients.

Hospitals are usually equipped with medical equipment from different vendors. Many systems such as PACS need to communicate with these devices. This presents a challenge for healthcare projects because although there are standard protocols to do such communication such as DICOM [16], in most cases special licenses need to be purchased resulting in an increase in the cost and complexity of the project.

The most serious challenge for healthcare IT projects is the need for integration between different, sometimes inconsistent, systems. Integration is a common factor in most healthcare IT projects. This is a direct result of the different and diverse sources of data in hospitals. Patients' data come from one system, their X-rays come from another, and their lab results come from a third one. Therefore to get all data for a patient all these systems must be integrated together.

More complications happen because in many cases, the data contained in these systems are inconsistent and require more processing before the integration succeeds. For example, in one of the projects in this study patient IDs were not unified among systems which forced the project team to initiate an ID unifying process before starting the integration.

Another major challenge facing healthcare projects is the different groups of stakeholders involved in using the system. Hospitals have different groups of users including doctors, nurses, clerks, patients, and visitors. All these groups may have needs and requirements in the system. Failing to meet the requirements of the user groups or not involving them in the projects can have a serious impact on project success.

All these mentioned challenges have a definite effect on the project; failing to handle any of these challenges can cause project failure.

The next section shows the effect of these challenges on healthcare IT projects cause of failure.

4. Research Methodology

This research was conducted based on a 4-year study of the healthcare IT projects in six of the largest hospitals in Saudi Arabia (2007-2011). The author was able to study those projects closely and in person as a project management consultant for the hospitals. During these four years 29 projects were studied. The budget for these projects ranged from \$500,000 to \$10million. The scope ranged from networking to HIS systems. Figure 1 shows the distribution of these project budgets and the number of successful projects for each budgeted project.

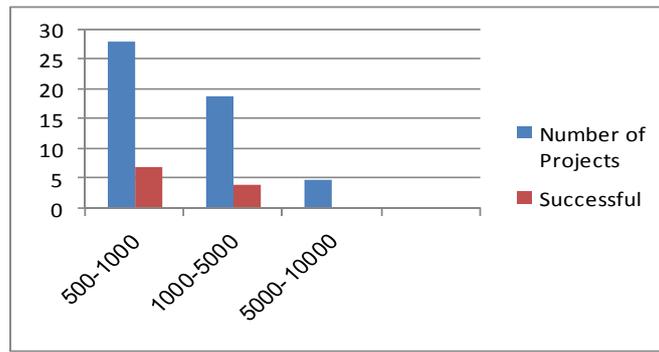


Figure. 1: Number of studied projects per budget (in \$1000)

Out of those 52 projects, 41 failed to meet their goals, while 11 projects reached their targets.

The first result obtained was that most of the successful projects were of low budget (less than \$ 1 million) while projects with higher budget failed to meet their goals.

This is justified by the fact that budget is dependent on the project scope, so low budget projects imply a small scope with a high chance of success.

The failure metric used for this study is the failure to meet scope, schedule, or cost goals.

After identifying failed projects, the causes of their failure were examined and categorized in a Pareto chart as we will describe in the next section.

Identification of the sources of failure was done by reviewing the project scope statement, project management plan, minutes of meetings, issue and risk registers as well as meeting with different project stakeholders involved in the project and gathering their input.

Next, we analyzed the major causes of failure to identify the factors that led to these causes in order to find solutions for them.

The next section will describe and discuss the results of this study, and will show the relation between the causes of failure for healthcare projects and other types of projects.

5. Results and Discussion

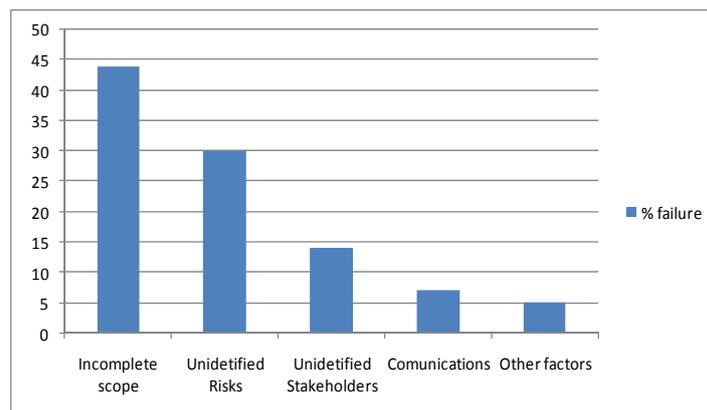


Figure. 2: Pareto chart for causes of Failure

Figure 2 shows the percentage of contribution of the major factors affecting healthcare IT projects.

As the figure shows, the main causes of healthcare project failure agree with previous research related to IT projects. The main causes of failure being unclear scope, failure to identify and analyze risks, failure to identify stakeholders, and communications.

Other factors resulting in project failure include insufficient budget, lack of sponsorship, and lack of technical experience. These factors represent about 5% of the reasons behind project failure.

When more analysis is performed on the main failure causes, it is found that these causes are closely related to the challenges facing healthcare IT systems mentioned earlier.

Unclear scope resulted in most cases from the failure to identify the complexity of the system, and the integration requirements of that system, resulting in significant delays and cost during the execution phase in order to deal with these issues. It also resulted from failure to specify the details of the deliverables such as the system features, hardware specifications, or even user interface which led to increasing the number of changes during the project life cycle. Unclear scope was the biggest cause behind project failure.

The second cause, unidentified risks, was evident in the failure to identify risks associated with data integration, incompatibility with existing systems, and data inconsistency. The project team had to spend more time and money to solve the problems resulting by those issues.

The third cause related to failure to identify stakeholders and identify their needs was caused by the diversity of user groups in hospital environments with each group having its own requirements and needs of the system. For example different features of a PACS system are used by physicians and radiologists with each group having its requirements in the interface and features.

Failure to identify stakeholders resulted in customer being not satisfied, and having to redo many parts of the project in an attempt to satisfy the users.

The fourth major cause, communications issues, was caused by the failure of the project team to communicate the actual status of the project to the customer, and to communicate scope to subcontractors which led to customer dissatisfaction.

The different causes mentioned above result in 95% of the causes of failure in healthcare IT projects, and therefore the project team must be very careful and precise when dealing with these aspects of project management in order for the project to succeed.

6. Conclusion

In this research 52 projects were surveyed to identify the main factors behind healthcare IT project failure. These factors include unclear scope, failure to manage risks, failure to identify stakeholders, and miscommunications.

These factors were further analyzed to find their root causes which were found to be closely related to the nature of healthcare IT systems.

In order for the project team to eliminate these factors, special attention should be given to project planning processes especially the ones resulting in most cases of project failure.

When specifying the scope, the complexity of the system must be carefully considered, as well as the integration requirements with other systems. Different specifications must be clearly communicated to the customer to avoid later changes.

Risks should be managed throughout the project, and different stakeholders must be involved in this process. Risks related to integration and other systems should be identified early in the project and mitigation plans should be made to deal with these risks.

Stakeholder identification should be a continuing process and the project team should involve them in the project to avoid changes and to satisfy different users of the system. Other types of stakeholders that need to be identified are regulatory departments and suppliers of other systems who can cause serious damage to the project.

The project team should make a very specified and clear communication plan to provide accurate and timely information to different stakeholders.

To summarize, project team must take the nature of healthcare environment and its complexity into consideration while managing the project and must modify different project processes to deal with this environment.

7. References

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