

A qualitative approach to success factors of healthcare construction projects in Iran

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Abstract

The healthcare system, as one of the main subsystems of Iran, because of its complexity and technical matters is prone to excessive change while being in need of comprehensive management due to the expenses of medical treatment and more particularly building and maintaining medical centers. Since providing fairness and public satisfaction face the social services system with various responsibilities, success in medical treatment projects becomes a priority, and in other words, a chief goal for strategists and top managers of Iran's healthcare system. It goes without saying that other than managing financial expenses as a success factor, time and quality also have to be taken into consideration. Because of the fact that no inclusive study has been done over this matter in Iran, this study aims to identify the success factors in such projects. This goal has been achieved by selecting experts in the field of healthcare project construction with at least 15 years of experience through snowball sampling and interviewing them. The gathered data has then been analyzed through content analysis. The results show factors such as communication, sustainability, mental and emotional factors, environmental impacts, and interior design are involved in the success of medical treatment projects. The results of this study can be very useful in increasing the attainment of healthcare facility construction and can help preserve national resources.

Keywords

Healthcare facility construction, Healthcare system, Iran, Success factors.

1. Introduction

Construction industry has an important impact on health, environment and society (Yong and Mustaffa, 2012). Success of construction projects have direct effect on mentioned parameters. One of the problems, in project management, is unawareness of success factors which lead to its failure. All projects have been created for specific purposes and if a project reaches its predetermined objectives and definitions, it can say we have a successful project. Since the subject of success is importance, the numerous researchers have done their best in these intelligible activities that these studies will be considered in the review of the literature. Most studies have been conducted in Europe and East Asia and confirm the role of culture in determining success factors. In Iran, several disperse studies on the subject of success have been conducted but none of which was on the success of the healthcare projects. However, basically the

success of the project largely measured based on pre-determined parameters. These factors may be determined differently based on the project size and application. The aim of this study is to identify and assess the factors involved in the success of healthcare factors. This paper tries to examine and open the main factors of success through interviews with managers and engineers involved in the construction projects with having at least 15 years' experience in the client, consultants and the contractor companies.

2. Literature review

Several researches have been carried out about success of construction projects in different countries specifically in Europe and Eastern Asia. The study on the success factors of construction projects was first done by Rockart in 1982, on the elements which make the real difference between success and failure. Defining success factors of a project is based on it reaching its goals which should be provided for the participants. In any project "success" can be announced when it is completed according to the schedule, pre-planned budget and needs of stockholders. Project's proper function, profitability for contractors and arising no claims are factors of project success. Which can be divided into two groups: hard, tangible and measurable objectives and soft mental and spiritual and less measurable ones. Time, cost and quality criteria are widely known as the triangle of project management, while safety, environmental health and technical factors are also improving. Client satisfaction, proper communication among the elements of project and absence of dispute are factors that can guarantee a project success. In academic literature client satisfaction is a variable in project success during last decades in and by the time of completing the project evaluating client satisfaction and project success are very close to each other. A number of researchers have investigated project success factors. Among them, Madhooshi (1994) can be mentioned, which analyzed the success and failure factors of construction projects and presented a model for predicting success. Although this model has considerably helped to analyze factors of success, the development of single model for all construction projects is not valid because of differences in size, nature and level of complexity of these projects. For instance, the success factors for road projects are different with the success factors for healthcare projects that are of the most complex projects (Mousavian, 2015) and mostly several contractors are working at the same time needing a more accurate investigation of success factors. Shokouhinia (2010) recognized and evaluated the factors influencing success of oil, gas and petrochemical projects. He studied the projects of Aria-Petro-Gas Company and presented a model for the success of such types of projects. Piran (2012) evaluated and predicted project success by using the indexes of business environment and development a model. He determined the importance of the key factors influencing project success by identifying them. Despite of the valuable research, it should be noted that the accurate identification of success factors depends on deep analysis and investigation of the projects, the use of expert's opinions and reviewing the literature and it is impossible to dominance these factors only by studying journals and dividing the factors into two groups of internal and external factors. In this direction, Abolhasani (2012) studied South Pars (the largest gas project in Iran) and evaluated the different key factors of the success of project management by using group decision-making technique. That research was also focused on oil and gas sector. The identification and evaluation of the key success factors in the project-based organizations was performed by Dalirpour (2012). Regarding the importance of the performance and the position of these organizations in the country and their need to improve and progress, the research was focused on the project-based organizations and not the projects in. In a different attempt, Minaie (2013) placed on the agenda the identification and prioritization of the key success factors of mass buildings construction. In such types of projects, there are many similar and standardized activities, however, less similar activities exist in the healthcare projects and each part has its special standard. As it can be seen, the identification and prioritization of the success factors of healthcare projects is not studied specifically, and doing such a research is necessary more than ever.

3. Methodology

At the beginning where the existing literature on success factors in projects was studied and the focus was particularly on the resources that identify success factors in different countries and healthcare projects. Review of literature helped this research to recognize factors of project success in other countries. To focus deeply on the subject and identify its hidden angles of this research, qualitative method has been used. This helps the target of this research which is to recognize success factors in healthcare projects. This method helps the researcher in order to focus on experiences of experts, interviewing has been chosen as the main data collection method. To identify success factors in Iran, 25 interviews have been conducted with experts involved in the construction industry of Iran with at least 15 years of experience. All of the interviewees have the experience in constructing healthcare projects and they have been chosen by snow ball sampling method. Snowball Sampling is a non-probability sampling that is used for the case study units which are not easily identifiable, especially when the units are extremely rare or to form a small part of a big community. The method of identifying or selecting first unit helps choosing the second sampling unit. Similarly, other units are identified and selection of samples is dumped (Biabangard, 2010). The demographics of the interviewees are shown in Appendix 1. Interviews have been conducted in open ended manner so the interviewees feel at ease explaining their points of views. Then the interviews were transcribed. Gathered information regarding the subject is based on valuable experts' experiences. Qualitative analysis was done by coding method. In this method the researcher recognizes the theme by reading the interviews transcription. Gathered information is categorized in this fashion and each group has been integrated which would be discussed in data analysis part.

4. Qualitative data analysis

The collected data are based on priceless experiences of experts which envelop rich information in relation with the area under discussion. For analyzing such data, the content analysis method was selected. In this approach, research read the interview text to make out the themes. In fact, the data was classified via such technique then put in a well-knit category which is applied in analyze section. According to the gathered information, accomplished factors in healthcare projects are divided into 10 groups which are explained below. It worth mentioning that, this information is context- dependent and cannot be generalized to wider settings.

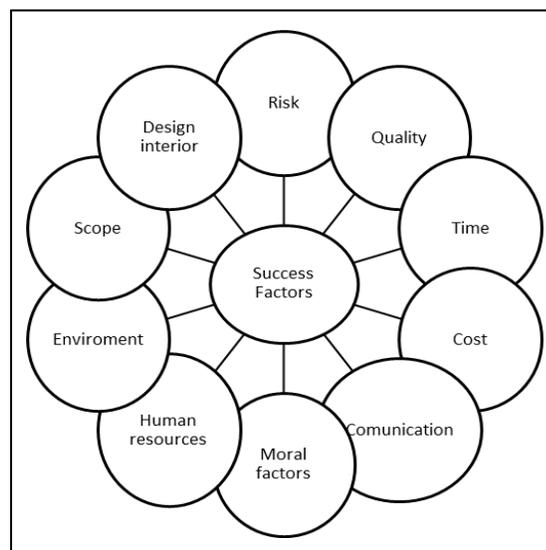


Figure 1: Identified Success Factors

4.1 Human resources

Staff working in the organizations is the most important assets in the hands of managers. Human resources are component of assets that requires qualified and committed management (Asadi, 2005).

Human Resources include the processes that organize, manage, and lead the project team. Project team members may have various skill sets, may be assigned full-time or part-time, and may be added as team members during planning. This adds their expertise to the process and strengthens their commitment to the project. Moral factors, team work and knowledge are three reviewable groups of human resources. The role of human resources is undeniable in the success of a project (C3). Human resources could be parameter of success when they go along order, accuracy, honesty and working consciousness. Doing the work just for the sake of getting it done would not help the project (O7). C5 and N2 while confirming O7's ideas added lack of motivation in human resources of a project is one of the concerns of contracting companies. While confirming previous ideas mentioned a project in which lack of motivation by human resources led to delay. O1 referred to teamwork and its effect on working efficiency, believing wrong and sudden decisions and personal interest of some top executives are strong inhibiting factors for reaching success. C4 and O5 consider using experts as the easiest way for reaching success and believe using inexperienced and irresponsible human resources is a parameter that healthcare projects are facing. O8 agrees with this idea and expresses education is a fundamental and undeniable parameter and believes that using young, educated and well aware of new technologies human resources along experienced ones is a fast way to reach success.

4.2 Environmental

Since the emergence of human being on Earth, he has dealt with nature and has always tried to control its destruction (N2). Humans have altered the nature along their needs and this alteration went on until the point that humans are the main reason of destruction of the environment. Thus, environmental protection while completing a project has an important role in its success, but unfortunately it has been ignored (O2). O5, by approval of this view, believes that the effects of administrating the projects should be considered in primary studies of project and proper solutions must be offered for these undesirable effects. C1 refers to a project in which improper design of wastewater control system of the project cause problems for the region's ecosystem. O7 believes before constructing healthcare projects their adverse effects on the environment should be studied to choose a location with the least harm to the environment.

4.3 Scope

Scope includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Plan Scope is the process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled. The key benefit of this process is that it provides guidance and direction on how the scope will be managed throughout the project (Project Management Institute (PMI), 2013). All project managers use project scope management throughout the project life cycle to identify and control all aspects involved in a project without a planned scope so practical deliverables are not possible. That is the importance of Scope in Project Management. Based on gathered information, scope management project in healthcare construction projects could be evaluated under two categories of pre-construction studies and feasibility studies. According to O1 one of the biggest owners' problems is not knowing the scopes of projects. Weak pre-construction studies of consulting companies are due to not knowing the details of projects and it has happened many times that there has been no concordance between the culture, climate and the assigned land. C1, C2 and C3 are all expert managers who are aware of the importance of the early studies and they believe that it is one of the reasons of project failure.

4.4 Time

Time includes the processes required to manage the timely completion of the project and is one of the most important factors in healthcare projects (PMI, 2013). Planning, scheduling, political reasons and lengthening of correspondences are four groups of factors that challenges time. N2 believes that project completion is only doable when it is done according to the schedule but N3, N5 and O5 deem precise planning more important than scheduling which is less important. N1 implicitly confirms the above mentioned but believes that accurate determination of priorities and implementation of enforcement activities in more detailed and fragmentary in order to specify prerequisite for any activity are important factors to reach an accurate schedule. But all of the interviewees believe completion of projects in recent years has always been increasing and usually projects face delays. O3, a manager with more than 35 years, emphasizes political reasons increase the time of healthcare project completion and sometimes even suspend them. O6 and C7 mentioned decrease in profitability of projects as the impact of delay in project completion. C6 and C5 mentioned converting old office system to automation to decrease time of correspondences. Although it doesn't seem helping to the reasons of project success, in fact any requests by construction agents are under impact of corresponding time.

4.5 Cost

Cost includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (PMI, 2013). Based on gathered information, adding to the above mentioned factors, value engineering is also a parameter in project success. Most of interviewees believe that cost is the most important factor in project success (O4, O8, N3, C7, C2 and C4). O3, with high management and administrative experience in healthcare, projects believe injecting credit to projects is one of the most effective factors in project success. O2 believes the opposite and emphasizes that credit injection without control over the cost not only does not lead to project success but also is one of the factors that challenge it. C5 and C6 approve O2's idea and believe that low but controlled fund has better impact on project success than high and uncontrolled one. C4 mentioned project Y which was completed by value engineering which is an efficient parameter to reach success in projects. O7 confirmed C4's opinion, commenting that using value engineering is not possible in all projects and a deeper look should be taken at the funding but he did not mention a method to replace value engineering.

4.6 Quality

Quality includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. Quality requires policies and procedures to be implemented within the project's context and the organization's quality management system since, if deemed appropriate, it supports continuous process improvement activities as undertaken on behalf of the performing organization (PMI, 2013). Quality works to ensure that the project requirements are met and validated. Based on gathered information, quality as a parameter could be studied under seven groups: (1) standards compliance, (2) cost estimation, (3) proper building methods, (4) role of sub-contractors, (5) machinery, (6) Technology, and (7). Quality material. O4 and C7 believe standards compliance satisfies the required quality of projects but C3, O6 and O7 reject this and believe standards compliance just leads to completing the project and does not have any roles in achieving the necessary quality. For reaching proper quality in healthcare projects, proper administrative and materials should be used. O8 with 40 years of experience in this field believes choosing proper sub-contractors and up-to-date technology usage are important factors in project implementation. C4 and O1 mentioned the important role of proper cost estimating in reaching high quality and added improper cost estimating would lead to challenges regarding machines usage and the quality of the project is greatly threatened by wrong choices. O6 while confirming this topic declared by developments in knowledge, technology and variety in software had increased the mistakes in costs

estimation in recent years. C2 is a well-known specialist who emphasizes on the quality of the project which has a direct effect on hospital working efficiency and people's health and decrease in quality sometimes leads to doubling the patients' illness. He pointed that in a project lack of required quality in patients' room's worsened five patients' health conditions.

4.7 Risk

Risk includes the processes of conducting risk management planning, identification analysis, response planning, and controlling risk on a project. The objectives of project risk are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project. Proper risk management could be one of the factors in success of projects. The importance of project risk management has been needed more and more but activists in construction industry are still facing the problem of risk being unknown and unidentified. Identifying the risks of a project and finding proper solutions could improve the success of the project (N4). C7 agrees with N4 and believes the uncertainty of project could be decreased by ensuring of identification of risk.

4.8 Communications

To make an idea become a reality, there must be a plan. And when a plan is developed, there should be a communication with people who are involved in its implementation. In this regard, Communication is the starting point for all administrative tasks and also it is a process of exchanging and receiving information (Tourish, 2009). Without communication, planning, organizing and controlling are not possible for the reason that there is no transmission of information (McNamara, 2001). Communication is the process of sending information from a person to another and understood by the recipient, Means that transferring and sharing of thoughts and ideas or facts in such a way that the receiver gets and understands (Digest, 2006). Communication can be examined in five branches, the relationships among contractor team members, contractor and consultant, contractor and client, consultant and client, client and the other stakeholders. N1 supposes the relationship between the consultant and contractor of teams to work more closely with the client.

4.9 Moral factors

People's mental and emotional reactions against unanticipated conditions play an important role in their decisions. The ability of a person to control these emotions and use it practically and usefully is called emotional intelligence (Clarke, 2002). Emotional and psychological factors studied in the three dimensions of emotional intelligence, stress and Cultural Intelligence. C8 considers that the stress of project managers leads to make wrong decisions and sometimes has undesirable effects on the project's whole project. C9 and C10 think that, the project managers during operating the remedial constructions first examine the geographical area at the same time consider culture specifically. O2 and N3 cultural and emotional intelligence in project are an important factor in success of project.

4.10 Interior design

C2 believes that the most significant aspect in the success of a project is interior design. C10 While acknowledging the C2 in terms of access to all sectors of society requires standards-based design. He pointed out that private hospitals in terms of design are more desirable than public ones. C9 rejects C10's opinion but believes that these ideas are rejected because of personal tastes. And notes that a good design is based on a standard design community needs, budget and geographic consideration of a region. C9 contrary to O1 believes the standards of the Ministry of Health points out the fundamental flaw in the design of their old says.

5. Discus

Life and health of many people are in the hands of healthcare organizations. From safely giving birth to infants to taking care of the elderly with respect to their dignity healthcare departments have a crucial and continuous responsibility to every individual throughout their live. Therefore, now the importance of successful delivery of health projects is more sensible. Reviewing the literature in this field in Iran and abroad, shows that researches have been mostly focused on the project success in fields of oil, gas, and petrochemical and general researches in the subject of success in healthcare projects are scarce and, more researches on this subject is highly desirable. The purpose of this research is to identify the factors of success in healthcare projects. Results from analysis of interviews, show that 33 factors are involved in the success of healthcare projects which are categorized in 10 classes. Interviewers believe that satisfaction or discontent of these factors are not likely to cause the fail or success of the project individually, however, they act in a chain model to increase or decrease the probability of success in projects.

6. Conclusions

Based on conducted analysis it could be said that interviewees are only well aware of the management triangle and believe money is the solution to all the problems. Proper choosing along with knowledge and using young human resources with management knowledge side by side with experienced managers could help the success of the projects. Due to the importance of healthcare projects, this research was conducted with the purpose of identifying factors of success in healthcare projects. To recognize its hidden angles, an interview was conducted with activists in construction industry with at least 15 years of experience. After interviewing 25 of them, the factors of success were divided into 10 themes which were fully explained. It seems that time, cost, communication, interior design and human resources are the most important success factors for healthcare projects. One parameter that can be mentioned is absence of a single manager for all the projects. Works in healthcare projects of Iran is in a way that each client, consultant and contractor have a project manager for the project with different styles of management. Lack of coordination and management knowledge along with weak communication among these managers cause long delays in completion of these kinds of projects or often lead to complete failure. In case that these problems are not solved, decrease in success of projects would be less and less. The time-informed the training and use of young human resources management knowledge with experienced managers can help the success of the project. If projects can be definite about the success of that project success factors can be observed.

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Appendix 1: The Demographics of the Interviewees

ROW	CODE	ROLE	Education	Field	Experience (year)	Organization Type
1	C1	Project Administrator	Bachelor	Civil Engineer	15	Client
2	C2	Physics	Specialist	Oncology	30	Client
3	C3	Project Manager	Bachelor	Civil Engineer	20	Client
4	C4	Project Manager	Bachelor	Civil Engineer	20	Client
5	C5	CEO	Master	Law	20	Client
6	C6	Project Manager	Master	Civil Engineer	20	Client
7	C7	Project Manager	Bachelor	Civil Engineer	17	Client
8	C8	Project Manager	Bachelor	Civil Engineer	25	Client
9	C9	Project Manager	Master	Civil Engineer	29	Client
10	N1	Project Administrator	Bachelor	Civil Engineer	25	Consultant
11	N2	Project Administrator	Bachelor	Civil Engineer	18	Consultant
12	N3	Project Administrator	Bachelor	Civil Engineer	16	Consultant
13	N4	Project Manager	PhD	Architecture	20	Consultant
14	N5	Project Manager	Bachelor	Civil Engineer	17	Consultant
15	N6	Project Manager	PhD	Civil Engineer	21	Consultant
16	N7	CEO	Master	Mechanics	30	Consultant
17	O1	Project Manager	Bachelor	Civil Engineer	25	Contractor
18	O2	CEO	Bachelor	Mechanics	35	Contractor
19	O3	CEO	Bachelor	Mechanics	36	Contractor
20	O4	Project Administrator	Bachelor	Civil Engineer	18	Contractor
21	O5	Project Manager	Bachelor	Management	17	Contractor
22	O6	CEO	Bachelor	Civil Engineer	35	Contractor
23	O7	Project Manager	PhD	Civil Engineer	16	Contractor
24	O8	Project Manager	Master	Civil Engineer	35	Contractor
25	O9	Project Manager	Master	Civil Engineer	40	Contractor