

## STUDY AND IDENTIFY KEY SUCCESS FACTORS IN DEVELOPMENT PROJECTS

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### ABSTRACT

With the increasing expansion of the construction industry in developing countries, especially in the Islamic Republic of Iran, the need for the implementation of development projects, which is a symbol of this development, is felt. To achieve success in this area, the debate comes to development projects and also key success factors in these projects, with the very high but most important they can be in the form of project management, construction management involved coordination between relevant agencies, planning and project management and financing of projects. These factors are creating a very effective process in the project in case of damage to each of them leading to the failure of the project. The study on the operational definition of critical success factors and prioritize them according to their role and influence in the view of the four groups involved in the project (client, consultant, contractor and project management) is conducted. In order to respond to the fundamental questions raised about the effectiveness of the main pillars of the key success factors and identify procedures and the factors in the success of development projects on Renovation Company Project in Abbas Abad Area, Tehran (Tabiat Bridge) data should be analyzed and the results can be studied to identify the twelve key factor in the project and the most effective element in the success of development projects, in the four factors (management plan) are the main pillars of the project and realize the important role that was responsible for project management tasks are mentioned.

This study is descriptive – field that after reviewing previous studies and using the experience of the construction industry, factors into four categories, and among them, the elements that have contributed to this project were tested using a questionnaire, the population of this survey is available samples after collecting the information, answer sheets are evaluated and analyzed factors were rated.

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## **Introduction**

In general, the management of large projects in the world, especially in the Islamic Republic of Iran the necessity of adopting a scientific approach and the development and operation of their projects to a very great extent has been awarded. To this end, we have many projects that are currently being implemented and with the procedure and with the same approach should be implemented to make them scientific methods used. Scientific methods in the implementation of construction projects in the world have such an argument and the International Institute of Project Management for the project to achieve a common language, seeks guidance is involved in projects around the world, generally factors and involved in projects based on the context of the project in a way that the project has become successful, but in the same way as the memory of large projects or projects in a sense, the question asked, without delay those who have been confronted with the phenomenon of development and prosperity, or success of the project referred or failure to consider bitter experience of projects due to the inability of stakeholders in various ways, such as lack of funding by the employer, contractor bankruptcy, failure monitoring devices, incorrect choice of contractor, the inability of the contractors, a lack of quality in project implementation, and project cost. Grumbling are

generally complain and most importantly, the destruction of national capital.

This research project focused on Abbas Abad Area, Tehran in the Alborz Mountains range is located. Three big Tehran's main way Moddares, Hemat and Ressalat crossing point and it's divided into six large pieces. And each part has different uses and different projects based on state legislation, this research project managed to break the bridge called Tabiat. Bridge Tabiat is a non-automotive three-story bridge and sidewalk in Tehran. The bridge passes across the Moddares highway. Its length is 300 meters and its structure is 2000 tons. The bridge is Iran's largest non-automotive bridge. It is made under Abbas Abad Renovation Company. For the construction of bridge 14,000 pieces Steel of various sizes at an altitude of 40 meters above ground and cutting, burst and installed. Taleghani nature parks in East and, water, fire and ports in West Abbas Abad land are connected. Tabiat Bridge is 7,000 square meters. And according to the manufacturer's CEO, the new symbol for the city of Tehran. It took about two years to build the bridge structure. To build the bridge more than 102 km of welding and 6200 cubic meters of concrete has been done. The bridge was opened in 2013.

## **A review of the literature**

Rockart (1982) was the first person who spoke about the key success factors of projects and suggested that

these factors can predict the success of the project. (Sanvido 1992) [17] it then discussed the issue in various ways and in different fields were examined, but importantly, the issue is not just words, but also to achieve the key success factors of projects, those involved in the project by up their sleeves and project management as it deserves, in another sense, the project manager is responsible for project planning and must use modern technology to prepare schedules and other documents, as well as careful analysis of the project management act. However, some project managers to understand these processes and how to use them are unable, this is the worst impact of the project within a project makes a great body and reduce the chances of project success. [Baghdarsarian, p. 38] [3] For those who have been involved in the project, usually in order to achieve project success to some goal set by parameters such as time, cost, performance, quality and safety. But let us not forget that consumers and the general public about the project such goals are not predetermined, the expected output of the project and picked up one of the success or failure of the project will be different. (Lim & Mohamed. 1999) [14] Bazeghi Kismy in 2007 in the form of a thesis titled "Relationship between management skills and accelerate the implementation of projects and clinker cement silos" with a practical work done. The review of studies of Madhoshi, who in 1994 success factors

and failure of projects and models predict it done, can be used. Three factors that senseless on the failure of the projects apart from the other elements in the name of the poor, failure to use appropriate management techniques and other planning and control needs of the project, it was, in his study cited. Bazeghi management techniques in the form of financing and liquidity management capabilities, coordination, expertise and experience, the ability to monitor and assess implementation and evaluation program is placed. After a scientific study of past empirical research became more confident, and even came to believe that document the skills and duties of the project manager, you can avoid the extra cost of the project. [2] It should not be forgotten that the general documentation or data collection project without an integrated system that can assess all the details is not possible or very difficult. Farahmandian et al in 2009 in an article entitled "Evaluation of Gas Project Management by Project Management Body of Knowledge (PMBOK) in the gas company of Zanjan province one of their findings was as the first priority, having known the unified management and project risk. It also requires a project management team in order to create harmony between the other units considered and this is attributed to the key success factors. [5] And considering that this project risk is mentioned as a first priority, we can say:

Whatever it more accurately evaluate the success of the project would be more likely. Reminds that the risk estimate when the project requires less qualitative data and the ability of contractors, consultants and communication between them, or, in general, the factors involved in the project this matter has caused the researchers in this field have also research.

In 2011 Feizi and Daneshvar in an article entitled "model employer and contractor of communication in the successful implementation of large projects in the downstream oil industry of Iran" one of the most important factors in the success of projects in the name of communication studies and have concluded that the success of large-scale projects that are important connections but the impact of individual factors to the success of information technology projects have been more. [6] of course we should not forget that to get the key factors and indicators should be used in the project.

Ruben and Seeling in 1967 in his article "Experience as a factor in the selection and performance of project managers" concluded that concrete data (success factors) such as cost, schedule and quality performance indicators to measure the success of the project. [16] In this regard, Tukel & blaciiin 1996 in an article entitled "a new framework for determining the critical success factors and failure of project" with the vision of Ruben and Seeling the indices measured

on the three traditional iron triangle (Client, Advisor, contractor) factors raised and examined. [10] The results of this study led to the identification of the key success factors of a group with iron triangle, called the management plan, the fourth factor is used and play a significant role in the implementation of projects in addition to other factors involved are examined. Plan management is plenipotentiary representatives of the employer.

Ashley et al (1987) in an article entitled "Factors affecting construction projects," the study concluded three major factor in the success of the projects, which include sufficient resources, prioritization of objectives and transparency in the contract. [9] Of course, the success of projects in all countries of the world are generally divided into three major operating cost, time and quality in general and in a sense, successful project that features high-quality, cost and time optimization is performed according to the project.

Bjeirmi & Munns (1996) in an article entitled "The role of project management in achieving project success," pointed out that in determining the success of such a project is successful if viewed as a product, orientation towards the completion of the project is concerned. But if the success of the project management considered the success during and at the end of a project is measured. [15] and that Turner in

1999 concluded otherwise. Time that is considered one of the factors in the success of the project but from the perspective of project management is quality of the product. [18]

Sometimes because of the mismatch between the views of stakeholders on project success or failure of the project, to negligence on the part of one (or maybe from another group) may be necessary in this regard to the study conducted by the researchers, define success or failure more common way of expression in which the elements are involved in the project, by the same token can also be noted scholar in the field of research, Latorre (2009) states: evidence indicates that construction managers is a sense of quality and a bit of success in mind and the concept of success include personal satisfaction and special aspects of end-user and project [13]. Even that may be years before someone else comments on the concepts Latorre cited. "De Wit in 1988" in an article on the theme "Successful project management" showed that the overall success of the project should be measured against the wider goals of the views of all stakeholders, but the opposition could succeed in a project for a group and the other is a disaster. [11] for example, the projects according to project quality, with predictable costs and time taken and also been exploited if the contractor has not yet addressed or contractor claims have been paid.

In this sense, success for this project comes from the employer, but the contractor is achieved. In order to identify the key factors must be considered in all aspects. For example, if a project is physically completed and put into operation, the success of the project has been achieved. It should benefit all stakeholders in the project to share their commitment to real success and it will not be possible unless they take steps in stakeholder management project and they all have a common understanding of project success and success for all groups demand from their own perspective. In this case it can be said that some of the key factors in the success of the project depends on those factors that are stakeholder management. Jing Yang et al in 2009 in an article entitled "The key success factors for stakeholder management in construction projects" in Hong Kong on 15 key projects worked they were classified into three categories of key factors, after research and studies that concluded, stakeholder management and social responsibility is more important than other factors. Finally, 15 of them prioritized into five groups, which include the prerequisite factors to estimate the stakeholders, input information, decisions, and support sustainable and thereby showed the factors related to a specific group of stakeholder's project and all the factors involved in the project. [12]

Besides these factors, delays in projects should be one of the most important factors in project failure is simply passed. This lag is arguably the result of all those involved. For example, the factors responsible for the delay is that the employer interfered with such as delays in decision-making and limited by the employer to carry out the project in a short time and expertise, administrative bureaucracy in the organization of the employer, the type of contract for the transfer of the project, holding of tenders and selection of the contractor or the reasons that the contractor is considered as one of the contractors, incompetence and inexperience of contractors, poor site management, errors during implementation, lack of financial power contract or causes consultant involved, including (without full general terms and out in Iran and outside the field and based on actual project that has been mentioned a number of them.

### **Research Methodology**

The research method is based on exploratory research so we just adequate description exploratory study. However, in order to answer questions about the impact on the basic fundamentals of procedures to confirm or reject the pillars of the success of the project, several hypotheses have been examined.

Exploratory research often leads to insight and

conditions aristocracy treaty, quality control and supervision of works, design errors, incorrect estimates) and .... of course, factors relating to materials, quality, and lack, or delay in the supply of materials, changes in the type of technical specifications and materials or supply of human resources such as efficient manpower, expertise and skills as well as factors such as equipment and machinery (damage during the operation) and factors related to contractual relationships which led to major disputes or cause improper relationships between groups involved in the project are also significant. [7]  
[8]

General research methods to identify the key factors or to speak factors contributing to the success of these projects were carried understanding of the problem when used the researcher does not have enough information about the methodology used in this study includes data (secondary) and data from qualitative research expertise, such as interviews with the target group. (Churchill, Iran Nejad Parizi, p. 61) [1] The subjects expressed in this research effort should be made of the form (1) is applied in practice.

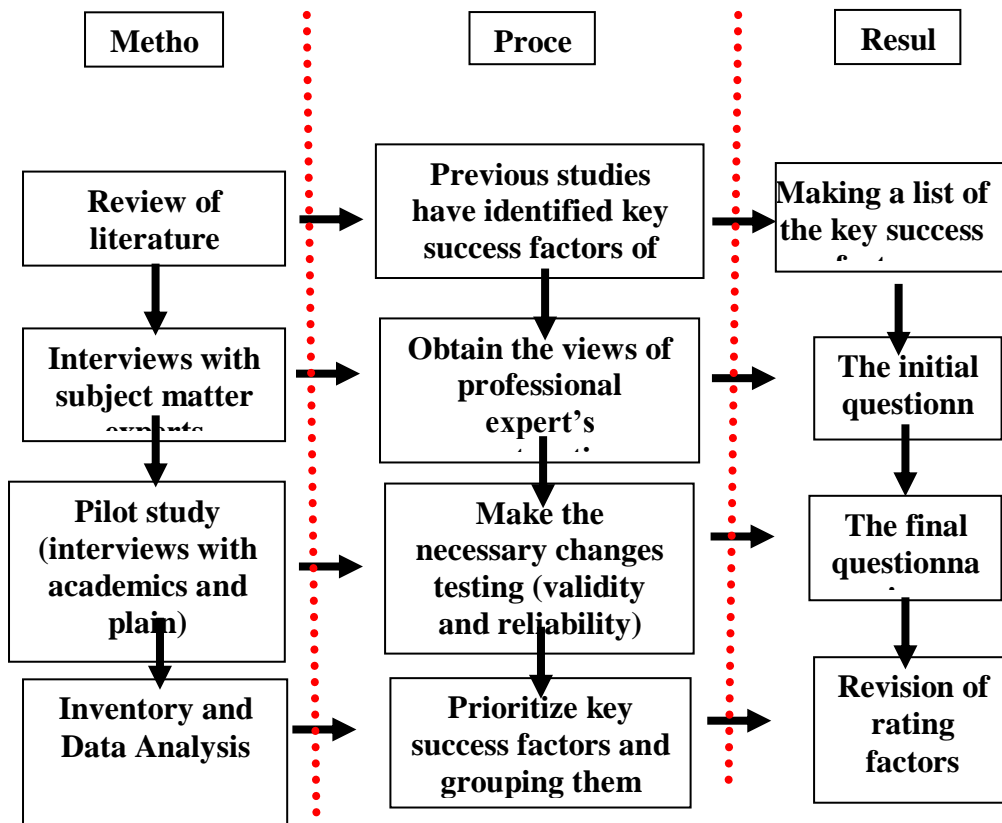


Figure 1 chart associated with the general method of investigation

To quite brief description of the chart the above method described. At first a study of previous research on the review of the literature, can be used to identify the key factors of success or failure of the projects, achieved in the second stage of the research process is named, these factors classified. Also aware of the accuracy of these factors, with construction subject matter experts in the areas of project development is interviewed, and the result of a number of key factors have been obtained. However, with this list of factors, the initial questionnaire was prepared and given to academic experts and others, was to ensure its validity after which the necessary reforms and its reliability (0.95) determined in the final questionnaire of four basic elements involved in the project (client, contractor, consultant and project manager) was set up to answer questions. The analysis focused solutions, and finally to prioritize the key elements proposed and guidelines based on the knowledge provided to those involved with the projects you might want to use it. In this research project the nature of a dozen key bridges mentioned. Of course there are other factors that have worth noting that this study, like previous research and used the same technique in the

contributed to this success, and but were not important. It added that previous studies sixty success factor in achieving the project was achieved. The study was done similar factors closer conceptually merged and finally was forty-six. Then, on the basis of the project, including defining, executing and closing is divided into four categories, which are: (factors related to the employer), (factors related to the consultant), (factors related to the contractor and factors related to the management plan).

### **Data Analysis**

In the study, according to this classification, a questionnaire has been prepared and given to the head of the workshop, project manager, financial manager, CEO contract, senior managers of workshop, design management, construction, mechanical and electrical projects related to management consulting firm and was placed on managers and skilled to respond to them responder with questions and opinions were gathered. After collecting information from the questionnaires, information classification and analysis that results in Tables (1) to (4) listed. It is questionnaire that was used in a sense similar to the mentioned study, in other words, the scale of



five options range from "very favorable," "somewhat agree", "idea", "disagree" and "very hostile" is used. To what extent awareness of the impact of four key success factors are prioritizing projects were set up tables they were set and twelve key factors selected. Table 1 show the key

success factors in the area of responsibility of the employer so that the table can be seen factors 1, 2 and 3, respectively, in the area of responsibility of the employer (compared with other factors) are a high priority.

Table (1) the key success factors in the area

No	Success Factors (SF)	Description
١	Payment of appropriate wages and benefits	Suitable substrates to pay
٢	Provide timely financial resources	Budget follow-up required
٣	Measures necessary to keep the project	Measures necessary to keep the project such as the creation of specialized committees in the workshop
٤	Elimination of opponents after victory at the right time (traffic, civil, etc)	Possible obstacles before and during operations
٥	No delay in the delivery of the project where the contractor	Lack of land and delays in timely delivery of the project
٦	Avoid the rush in the opening projects	Social and political reasons the project should be completed before the opening
٧	No change of management at different levels of employer	No change of management at different levels of employer
٨	No delay in employer obligations	Timely payment if the contractor
٩	Employer representative's sufficient knowledge of project planning	Experts have notified the employer of planning and project control
١٠	Technical ability of the employer to control and studies	Enhance the technical capacity of the representatives of the employer in check
١١	The employer representative in the coordination between engineers	Employing experienced representative to coordinate engineers
١٢	Determine the appropriate time, based on scientific studies	Specifying the duration of studies based on reality
١٣	Employers can address financial documents	Employer representative capacity to address financial documents
١٤	Enough studies	All full activity to provide full map
١٥	The exact timing plan	The actual timing is based on the forecast

The Table (2) reflects that the first three factors were significantly higher priority in terms of responsibility of the consultant.

Table (2) key success factors of the consultant's area of responsibility

No	Success Factors (SF)	Description
١	Enough studies during design	Due to the design of studies have perfect or less perfect
٢	The timing for implementation	Provide real time applicable in various projects
٣	Coordination with other relevant organs and bodies	Communication and interacting with other executive devices
٤	Nobles administrative issues	Enhance the ability of personnel in executive and administrative issues
٥	Executive vision and design workshops	Owing to its design enable the use of executive visibility
٦	No delays in processing documents	Address in the short-term contract
٧	Technical and managerial capacity of the observer	Especially the experienced observers using observer
٨	Timely removal of technical and administrative problems workshops	Timely identify and solve their technical problems and workshop
٩	Control the time schedule	Continuously and integrated control schedule
١٠	No delay in packaged maps	Speed up action plans designed to provide
١١	Planning Power	The use of skilled personnel familiar software programming

Table (3) is also key success factors in the contractor's area of responsibility. As can be seen in the table, the first three factors are seen in order of preference

Table (3) key elements of success in the area of responsibility of the contractor

No	Success Factors (SF)	Description
١	Provide appropriate materials	Creating high-quality and timely supply of materials in the workshop
٢	Contractor personnel skilled manpower	The use of specialists and experienced workers
٣	Rewarding	In order to accommodate the interests of employees with the interests of remuneration for work in excess of duty
٤	Changes in management posts	Stability in managerial positions the project as much as possible
٥	Providing appropriate tools	Due to the delicacy required to provide useful tools

۶	The price of a good contractor bid	Depending on the type of project and estimate the real price of real
۷	Fitness machines with workload	The use of all types of vehicles on various projects
۸	Contractor in the executive management	Employing experts in project management and workshop managers
۹	Power in financial resource management contractor	Use of experienced managers in the field of financial management
۱۰	Planning and control of projects	The use of modern project management software for real reporting to the management contractor
۱۱	According to the notes client and consultant	The necessary coordination with the consultant's instructions and wishes of the employer
۱۲	Timely information to the consultant and the client	Information from the project and provide real solutions to accelerate operations

Timely information to the consultant and the client

The last of these factors Table 4 key elements in the area of responsibility of the management plan in place and, as the table shows, the first three factors were a higher priority than other factors are allocated.

Table (4) the key success factors in the area of plan management responsibilities

No	Success Factors (SF)	Description
۱	Adequate supervision	PBO supervision standards and national regulations
2	Coordination with organizations	Cooperation and coordination with the agencies that will be involved with the project
3	Reduce bureaucracy	Create a strong business sector and create a modern system
4	Proper timing of approval	Approval on the basis of real time and non-management considerations
5	Enforcement	Obtaining guarantees of performance tracking and collection due to legal issues
6	The use of new engineering contracts	The use of new contracts and the implementation of new projects
۷	Identify the Article 53 (Dispute Resolution)	The accuracy of the draft contract
۸	Early reports record Weekly	Robust reporting system in the workshop for records

The respondents in terms of education, age and years of service are as graphs (1) to (3). So that all can be seen easily a dozen people according to their characteristics critical in Table 5 were considered for the study, responded.

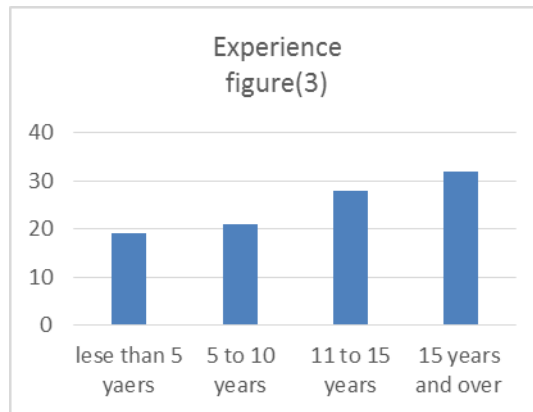
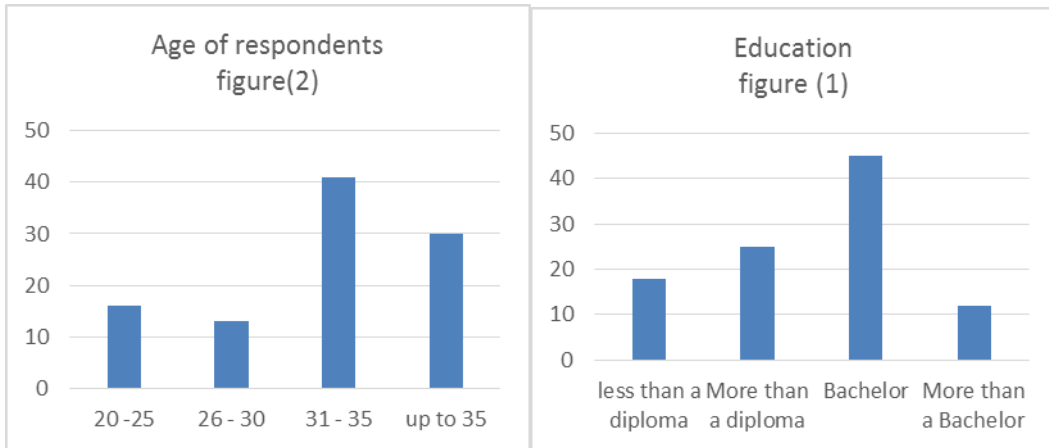


Table (5): the key success factors in the nature of the breakdown of the main pillars of the bridge project

No	Success Factors	Main Category
1	Payroll	Employer
2	Financial resources	
3	Measures necessary to keep the project	
1	Enough studies	Advisor

2	The timing for implementation	Contractor
3	Coordination with other organs	
1	Highly qualified manpower	
2	Reward	Project Manager
3	Required materials	
1	Adequate supervision	
2	Coordination with organizations	Project Manager
3	Reduce bureaucracy	

When respondents were asked questions about the twelve key factor, in order to determine which of the main series (employer, consultant, contractor or project manager) in recognition of the key factors contributing to the success of the projects have a greater impact of the necessary measures were taken that resulted in the table (6) is inserted. So that the table can be seen, the project manager for 27.89 percent is allocated on a priority basis. The consultant is 24.7% and contractor 18.4% and the employer 21.46%. In other words, the content

of the table (6) suggests that, contrary to the theory suggests, these four priorities were set by the employer, consultant, contractor and project manager in determining the key factors affecting the results of the projects are of utmost importance, these results show that the first priority project manager and consultant, contractor and employer located.

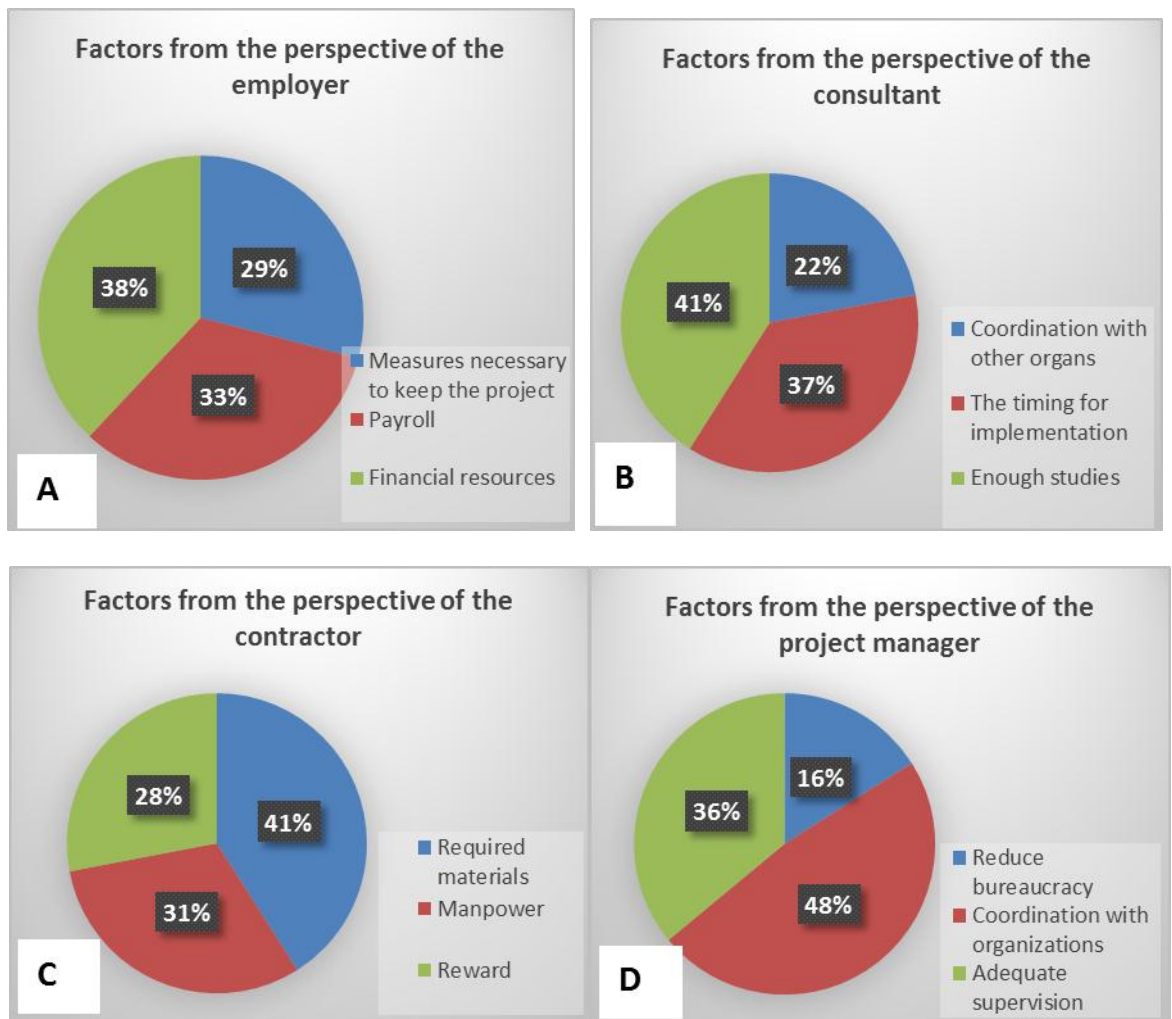
Table 6: Key success factors in the success of the project from the perspective of the factors involved in the project

Factors related to:	Employer view	Consultant view	Contractor view	Project manager	Geometric mean
Employer	<b>%40</b>	<b>%12</b>	<b>%17</b>	<b>%13</b>	<b>%20.50</b>
Advisor	<b>%26</b>	<b>%38</b>	<b>%13</b>	<b>%29</b>	<b>%26.50</b>
Contractor	<b>%20</b>	<b>%16</b>	<b>%39</b>	<b>%17</b>	<b>%23.00</b>
Project Manager	<b>%14</b>	<b>%34</b>	<b>%31</b>	<b>%41</b>	<b>%30.00</b>

To aware that the success of which priority are twelve, after the determination of the four main categories (employee, consultant, contractor and project manager) Figure (4) is ongoing. To those in the diagram (4 - a) can be seen, the employer (of the sample), the first priority is to "finance" (38%) have been made. The diagram (4 - b) noted

that the consultants' studies have "(41%) are in high priority. Comment on evaluating different contractors and "materials necessary" (41%) are at the top level in the diagram (4 - c) is clear. Finally, from the perspective of project manager as graphs (4 - d), "in coordination with the organizations" (48%) has high priority

Figure 4: Factors of view (employee, consultant, contractor and project manager)



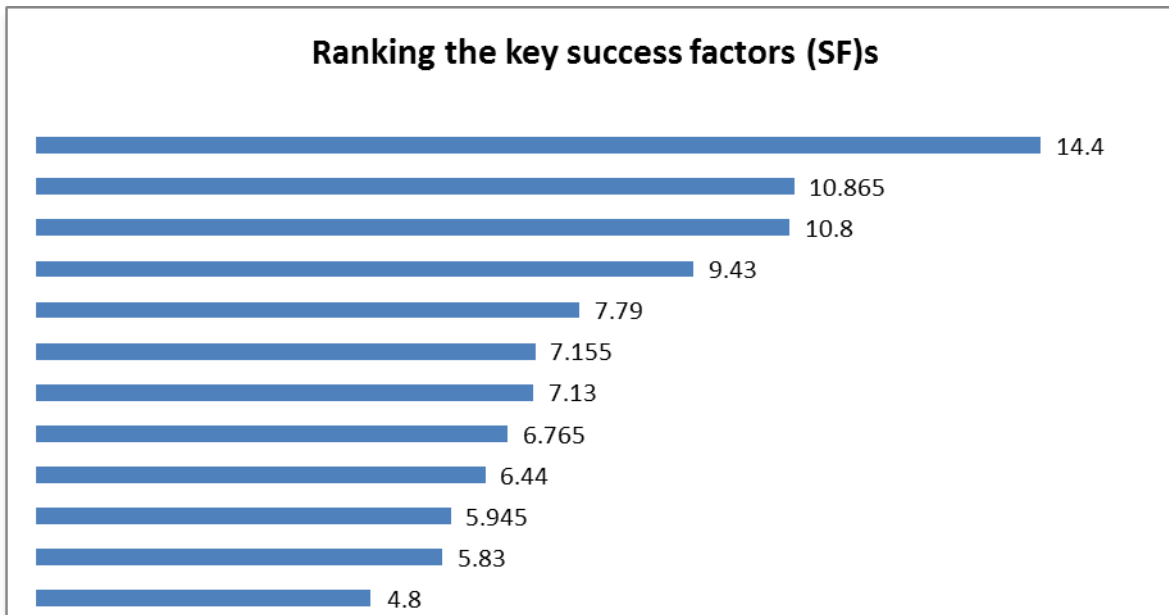
In order to determine the ultimate priority, these twelve factors (in the documentary), the main priority of the (project manager, consultant, contractor and employer) and apply the views of each of the three factors, the percentage of them beat each other per cent Table 7 were obtained. (Due to scalar multiplication is that both are important). As this table shows (and in Figure 5 is reflected in) the priority of the twelve critical (SF), respectively, include coordination with other agencies, enough studies, enough control, timing for implementation, Materials requirements, financial resources, human resources, payroll, bonuses, coordination with other organs, the necessary measures to prevent and reduce bureaucracy to stop the project

Table 7: Ranking the key success factors of nature views of the pillars of the bridge project

Pillar	Success factor				Rank
		The average percentage of success factors	factors influencing from the perspective of pillars	Experience with constant coefficients 100	
Employer	Financial resources	%20.50	%38	7.79	<b>5</b>
	Payroll		%33	6.76	<b>8</b>
	Measures necessary to keep the project		%29	5.94	<b>10</b>
Consultant	Enough studies	%26.50	%41	10.86	<b>2</b>
	The timing for implementation		%27	7.15	<b>6</b>
	Coordination with other organs		%22	5.83	<b>11</b>
Contractor	Required materials	%23.00	%41	9.43	<b>4</b>
	Manpower		%31	7.13	<b>7</b>

	Reward		%28	6.44	<b>9</b>
Project manager	Coordination with organizations	%30.00	%48	14.80	<b>1</b>
	Adequate supervision		%36	10.80	<b>3</b>
	Reduce bureaucracy		%16	4.80	<b>12</b>

Figure 5: Ranking the key success factors in the project



**The results and recommendations**

The speed and success in the implementation of development projects based on the results seem to suggest that the separation, for each of those involved in the project, is as follows

\* Client: improving the management development workshops and the establishment of dispute settlement committee in the workshop to keep the project on time payment statements of contractors, adjustment, etc., employing

specialists and familiar with development projects (eg project management) and prevent delays in the adoption and implementation of plans.

\* Author: correct estimation of the project without any consideration, careful planning on the basis of real time, before and during implementation, taking advantage of new software for project control.

\* Contractor: elimination of traditional methods in the execution of construction and development of



new methods, tender with regard to the real capabilities of financial and human resources and machinery needed for the project, using the tools of knowledge of the plan.

\* Project Management: advise the employer in dealing with organizations that managed the projects they are associated with, the use of skilled professionals in the commission of specialized monitoring during project implementation.

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