

AN ABSTRACT OF THE THESIS OF

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In the construction industry, people seek to deliver a successful project. The major success performance measurements in the construction industry are cost, time, and quality. Several researchers have determined critical success factors for construction projects, and one of these critical success factors was management actions. Furthermore, there is an inadequacy of studies about the influence of management actions and qualities on project success. This research focuses on identifying management actions that are correlated to project success concerning cost, time, and quality. The main objective is to determine a list of the most effective actions that managers can implement to increase project success chances. Intending to accomplish the study objectives, a methodology has been developed to show that there is a correlation between successful construction projects and management qualities and actions. Data was collected by distributing two web-based surveys to numerous construction companies. The reason for distributing these surveys was to investigate what are the effective actions of the management associated with the success of construction projects. The first survey was used to collect information to determine whether the project is successful or not. The second survey was about manager actions that

the management team has performed during construction projects. The data were analyzed using Spearman's Correlation test. The results of this study reveal that six management actions can significantly influence project success concerning cost, time, and quality. The actions can be utilized by managers to heighten success probabilities.

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The Influence of Management Actions on Project Success Concerning Cost, Time, and
Quality

by
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Mohammed Alabdulmunem, Author

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1. Introduction

In recent years, the construction industry has been changing and expanding dramatically due to numerous technology developments and the involvement of varied stakeholders, where projects have become more complicated and challenging. Key participants are several and different in the construction projects based on what is the current phase within the project life cycle. One of the key members who influence the success of the construction project is the project manager. Thus, construction firms care about finding competent managers with the appropriate technical qualifications and managerial sense to meet project requirements (CII 1991; Pettersen 1991; Anderson and Woodhead 1987b).

In the construction industry, projects involve many uncertainties over the life of the project from the first idea to completion (Sanvido et al.1992). At the project start point, the management team supervises the construction project team and develops a comprehensive plan which includes specific schedule, precise budget, and provide high quality. In order to accomplish those goals, an experienced manager is required to handle and supervise the project. Project management actions are key for project success (Hubbard 1990).

There have been numerous studies conducted to identify the critical success factors for construction project and the impact of owner involvement in the construction project. However, there is a lack of researches about how management actions can impact or influence the project progress. A successful project is one that met the customers' expectations at the end of the process (Sanvido et al 1992).

The primary purpose of this study is to provide a list of practices that assure management team to be practically involve in the construction project to enhance the success chances. In order to provide this list, a literature review was conducted, and two web-based surveys were distributed and analyzed.

There are three objectives in this research. The first objective is to investigate the influence of management actions on project success concerning cost, schedule, and quality; furthermore, create a list of management actions from the literature review that are mentioned to be the common effective ones for project success. The second objective of this study is to collect data from construction engineers in order to examine the developed actions list. The third objective of this paper is to use the first and second objectives to examine the developed actions list and determine which are the most effective management actions or practices correlated with project success.

Previous studies have focused on the critical success factors of construction projects such as human-related factors, project-related factors, project procedures, external project environment, and management actions (Chan et al. 2004). The relationship between the impact of management actions and construction project success indicates to be a significant gap. Thus, the unique contribution of this paper is to investigate the impact of management actions on project success and to develop a list of management actions that are correlated to project success.

2. Literature Review

The following section presents a detailed literature review about successful projects and its measurements, project success factors, the definition of project management in construction projects, and project management actions.

2.1 Successful Project

Construction projects are considered as the result of a sequence of activities across the project life cycle, with various stakeholders and methods in a constantly changing situation. Stakeholders regularly seek to have a successful project, and their expectations were met through the project. Each stakeholder does not need to have the same expectations as others (Sanvido et al. 1992). There are several definitions of project success, where each expert defines it based on specific standards and the expectations of the majority of project participants. De Wit (1986) concluded a project is considered successful if it meets the technical performance specifications and achieves a high level of satisfaction among important people in the project team and the owner of the project.

A paper by Ashley et al. (1987) refers to project success as an extraordinary outcome and better than anticipated. The researcher defined project success based on the expectation degree of the stakeholders. In 1986, Tuman defined successful projects as having enough resources to deliver the project to the final users as predicted concerning the delivery time and including all its requirements.

It can be noticed that De Wit (1986) and Ashley (1987) agreed on defining project success as delivering the project as expected or better, where Tuman (1986) added the time and quality criteria. It has been widely accepted to use schedule, cost, and quality criteria, which is commonly referred to as the iron triangle, to define success (Atkinson, 1999). In 1981 a paper by Hancher et al. defined successful projects as the projects that meet the budget, deadline, and required quality according to the contract.

Sanvido et al. (1992) defined project success as to what extent the project aims and expectations are achieved. These goals and expectations might include technical, financial, educational, social, and professional aspects based on various project participants. Baccarini (1999) defined project success as the achievement of quality output standards and meeting time and budget objectives. Another paper by Gao et al. (2002) showed that budget and schedule performance in small capital-facility processes; such as team-building activities, core management group for small projects, maintenance contracts concurrent with small projects, and standard processes, are connected to different factors to determine whether the construction project is successful or unsuccessful. Long et al. (2004) find that it is accepted to consider a project is successful when it is finished on time, within budget, concerning specifications and stakeholders' satisfaction.

In the construction industry, the iron triangle of time, cost, and quality have long been defined as the baseline of measuring project performance and success (Tabish et al. 2012). Managers can use budget, schedule, and quality as the key performance indicators to measure the level of participants' expectations and fulfillment in the construction project (Dey et al. 1996).

Also, those parameters can be used to classify the project status, whether it is over budget, ahead of schedule, and implement the quality requirements. It was not surprising that the budget and schedule were regarded by many studies as influencing factors because they were usually taken by the participants as the key measuring mechanisms for a construction project.

Project success, in this research, is defined as meeting budget, schedule, and required quality as planned and contracted by project participants. The following sections demonstrate the connection between the parameters cost, time, and quality, and their impact on project success.

2.1.1 Cost

In the construction industry, it is unlikely to succeed in a project without an established budget. Principal stakeholders (i.e. clients, consultants, and contractors) in the industry continually devote their abilities to reduce the project cost and increase the benefits. However, cost overrun is still one of the difficulties that endanger project success. Reliable cost estimation at the early stages of the construction project is the key to avoid cost overrun in projects (Hicks 1992). A paper by Holland et al. (1999) stated that the total cost of the project is the primary concern of stakeholders during the construction project's phases. Songer et al (1997) stated that staying on budget is more significant than meeting the user's expectations or staying on schedule in some project. Therefore, monitoring cost or budget of a project can be used as an instrument to achieve the planned budget and accomplish project success.

2.1.2 Time

The definition of on-time or on schedule in the construction industry is a project that is completed on or before the agreed date. People in the construction projects consider time as another measurement indicator of project success because schedule has a significant role in controlling the construction project (Songer et al. 1997). A well-planned project can assist in eliminating issues related to the design process and provide a schedule that becomes a precious instrument for project managers to monitor work during the construction phase (Dolson 1999). According to Haughey (2014), a reliable project plan should have a reasonable and practical time scale.

The over or under run as a percentage of the initial plan of the project is used as a schedule performance indicator (Tabish et al. 2012). Therefore, an accurate time schedule for a project is considered one of the crucial tools in monitoring the project and maximize the chance to complete on-time.

2.1.3 Quality

The third measurement parameter of project success is quality. Clients look for high-quality products that are reliable, durable, and meet the minimum requirements as agreed in the contract. Usually, quality refers to service degree, excellent product, reliability, safety, consistency, and consumer's perception. For example, Chan et al. (1997) stated that quality in public projects is not tangible; therefore, this is why recruitment processes are used by clients during the project tendering process to ensure all qualified tenderers can meet the minimum quality criteria established by client requirements.

Since there are some challenges in construction projects such as project size, involved parties, and lack of standardization, the quality definition is not definite in the industry (Hoonakker et al. 2010). A study by Stevens (1996) defined quality as meeting all customers' demands, and its process continually develops during the project. The continuous process of quality will be assisting customers in expressing their requirements, so their expectations are met. Another paper about quality by Loushine et al. (2006) reviewed twenty-six research papers about quality definitions in the construction industry. They revealed five definitions: (1) "meeting expectations of the customer," (2) "reduced rework or defects," (3) "repeat business," (4) "conformance with ISO 9000 criteria," and (5) "completion on time and within budget." The study defined quality as the satisfaction degree of the project according to the owner or end-user expectations.

Stevens and Loushine et al. (1996, 2006) agreed on the importance of the costumers' satisfaction and meeting their expectations. Construction projects can gain quality by the implementation of quality-assurance and quality-control procedures during the planning, design, and construction phases (Bubshait et al. 1992). The quality performance is measured based on the agreement/disagreement of the affirmed standards and specifications (Tabish et al. 2012). In this study, definition of quality is any completed project that meets costumer satisfactions and the minimum standards of performance in all areas.

2.2 Project Success Factors

Several studies were sought to determine the definition of project success factors and what are the most efficient ones that influence construction projects. Notwithstanding several studies on identifying the success factors, yet, the success factors of the construction project are not always known distinctly. Project success factors have different conventional definitions, occasionally depending on who is making the evaluation, which project phase is being evaluated, or standard values are being used to make the evaluation. In 1982 Rockart, mentioned “critical success factors (CSFs)” term in the context of project and project management for first time, and defined them as fundamental measures of activities where their results are essential to reach manager goals. The topic has since become a productive research area.

Ferguson et al. (1982) described success factors as any internal or external significant activities or situations to the project which require special recognition or proper management attention to avoid surprises or missing objectives. Those factors might impact the project positively or negatively, and might be identified by evaluating corporate strategy, environment, resources, operations.

A study by Boynton et al. (1984) concluded that success factors are those things that must function well to ensure success, and therefore, providing special and constant attention to those managerial or enterprise to operate activities and obtain a project high performance. Success factors are the fundamental concerns that are essential in the project and must be maintained efficiently and effectively (Rowlinson 1999).

In 1992, Sanvido et al. defined project success factors as those elements that assist in predicting success on projects. The adopted definition of success factors in this study is the factors that have an impact on the projects and help to succeed in meeting its objectives. Results of published papers and investigation about success factors in construction projects were collected and reviewed.

Some researchers proposed various factors that might influence project success, while others concentrated on developing predictive models. Successful construction projects and unsuccessful ones were compared by Jolivet et al. (1986), and they recognized some factors found only in successful construction projects. For example, management practices due to contracts, programs, cost, and quality. A study by Sanvido et al. (1992) indicated that management experience, project team, plan and specification, and technical performance are critical out of seven factors that were concluded from research.

A developed framework on success factors by Chan et al. (2004) suggested five main categories that might influence the success of the construction project, which include human-related factors, project-related factors, project procedures, project management actions, and external environment.

In this study, the concentration is on what are project management actions and how those actions could influence the project and heighten its chances to succeed concerning time, cost, and quality.

2.3 Project Management in Construction Projects

Nowadays, construction projects have become more complicated and challenging due to technological evolution, high levels of uncertainties, and involvement of various stakeholders. Project management is considered one of the critical factors in achieving project goals. A study by Ashley et al. (1987) showed that the project manager's experience is one of the significant success factors for construction projects.

Many scholars have sought project management definitions to understand the role of project managers. In 1971, Olsen defined project management as regulating several resources to accomplish a sophisticated one-time purpose within time, cost, and quality by using a combination of mechanisms and techniques, such as the critical path method (CPM). Each assignment needs a unique correspondence of these tools and techniques to fit its environment, life cycle, and maximize the project's chances of success. Researchers have offered other definitions; for example, Reiss (1993) proposes that project management is a combination of three elements, which are administered or authority, planning, and change management.

Some researchers believe that project management is not just related to jurisdiction or control, but it has changed and developed to achieve the desired project. A study by Lock (1994) states that project management has developed and improved into planning, coordinating, and controlling the complex modern projects, while Burke (1993) considered project management as a combination of specific management skills and recalcitrant responsibility to plan and execute projects.

Accordingly, successful project management requires a competent project manager who can strongly influence project performance by coordinating complicated activities effectively, improving quality control, providing reliable communication, and fostering a collective approach. However, it is not guaranteed that successful project management achieves project success, but successful project management can heighten the chance of project success. Moreover, there is a vital correlation between project management practices and project success (Papke-Shields et al. 2010; Mir et al. 2014; Serrador et al. 2015). Thus, a qualified project manager with the proper technical experience and managerial qualifications is necessary to fulfill project aspirations (Anderson et al. 1987; CII 1991). In this study, to investigate the topic, researchers adopted the sector manager, senior manager, or project manager in construction projects to be the one who influences the project.

2.4 Management Actions

Many scholars have studied the project management impact on project success; one of the influential significant factors is managerial actions. As previously discussed in this chapter, competent project management with appropriate traits in a construction project might increase the chances of success. Research by Hubbard (1990) show that project management actions are the key to project success. Project managers can plan and execute construction projects, and escalate the project's success chances by using management tools (Jaselskis et al. 1991).

The primary motivations for each project's success are human-related factors and project-management actions (Chua et al. 1999). A paper by Anderson et al. (1994) stated that project success is commonly associated with the proper utilization of the right project management practices.

There is a broad acknowledgment that each project is unique and requires proper approaches to its management, planned administration processes for project needs, and competent project managers (Crawford et al. 2005; Turner et al. 2006; and Müller et al. 2007). According to several investigations, the project management actions that might influence the project include sufficient communication, feedback skills, troubleshooting, planning skills, adequate coordination, efficient decision-making, project organization structure, and control mechanisms (Belout 1998; Chua et al. 1999; and Walker et al. 2000). Support of top management is a fundamental stipulation for moving on with sequential project operations (Slevin et al. 1988, and Belout et al. 2004).

In 1995, Kreiner argued that management could overcome the difficulties and uncertainty by being flexible in the projects. A paper by Songer et al. (1997) indicated that project management practices, such as planning and scheduling, and awareness of the project's scope and complexity is essential for projects. Moreover, commitment and involvement are other project management practices that are significant to the quality and performance of engineering works of construction projects, and efficient coordination is a vital circumstance to the result (Kog et al. 2012; Cheng et al. 2014).

A paper by Costello (1989) stated that management should provide their motivations to the project concept and participants. Additionally, Fapohunda et al. (2010) concluded that the site manager's motivation to site participants could enhance performance efficiency. A study by Schmid (2007) stated that the project manager can use their experience of motivation processes and methods to influence team motivation, which could lead the project success. Wherever team motivation plays an active function in any project.

Another article published by Kirkpatrick et al. (1995) stated that initiative and motivation were two of the six characteristics that efficient managers should possess, where; competent managers show a high level of initiative, and make appropriate choices that lead to change rather than of just responding or waiting for events to happen. A study by Eriksson et al. (2011) suggested 12 core behavioral skills that support effective project management performance. Patience and initiative were mentioned among those twelve competencies. The manager should take challenges and difficult circumstances as an opportunity to enhance the outcomes and have a successful project.

After ten years of research and 500 interviews, John (2010) concluded eight common traits in successful leaders around the world. Two of the eight characteristics that could lead to success in businesses were passion and focus. Project managers should have concentrated on one goal which is to be successful in the project by being within budget, time, and meet client's satisfaction. In addition, Murugesan (2012) show that managers need to show their enthusiasm to foster a lively environment for action, and make the project team believe that they are part of the achievements and feel active.

Punctuality is one of several team management characteristics that influence the client's perception of the success of the project (Rad 2003). The management team must have a sort of receptiveness to the suggestions and new concepts. They can use their experiences in negotiating and persuasion when necessary to ensure the success of the team and the project. A study by Malach-Pines et al. (2008) showed that managers are very successful in complex projects when they are willing to be open-minded to new ideas, innovations, and ambitions. There is a possibility that an unsuccessful project can be due to inadequate or inaccurate planning at the beginning of the project. In this case, the management actions or qualities can be the main reason of project failure.

3. Research Methodology

One of the research objectives is to determine the effect of management attributes on project success concerning budget, time, and work quality. This chapter illustrates how the research procedures were logically linked to the study objectives. This chapter provides a provide an extended justification of the selected research methods, the instrument distribution, data collection, and analysis approach.

3.1 Survey Design and Development

One of the objectives of this study is to collect information from a subordinate perspective and how these management actions are frequent. After conducting the literature review, an initial list of management attributes was generated to examine which ones are more effective and to collect data from construction companies (see Table 3.1).

Collecting empirical data about the importance of management actions on project success was not convenient due to the lack of research on the topic and sensitivity of the construction industry toward empirical data research purposes. The survey method was used as an alternative method to collect such data from overcoming this limitation (Hallowell et al. 2010). To enhance the perception and comprehension of the research methods and processes, an online survey was selected as the research method. The online questionnaire surveys were considered appropriate for data collection as it is an efficient and economical way to seek the opinions and experiences of professionals and practitioners involved in project management actions related to the construction industry projects.

Table 3.1 Definitions of Management Actions and Qualities

Management Actions or Qualities	Definition
Commitment	Dedication and willingness to participate in all specific and significant tasks or meetings in the project.
Communication	The effective methods of contacting with project participants.
Competency	Possession of sufficient experience to provide directions to the team in order to provide successful project outcomes.
Concentration	The direction of efforts and attention to meet project objectives.
Flexibility/Resilience	Remaining adaptable and flexible to overcome the obstacles.
Initiation	Proactive actions to prevent obstacles in order to provide better job results.
Involvement	Remaining approach to the project and informed of its needs.
Patience	Staying calm and persist the work performance under stressful conditions.
Monitoring/Auditing	The ability to supervise the project during all phases.
Motivation	The support and incentives that are provided to employees.
Passion	Show the enthusiasm during work.
Punctuality	Deliver tasks and project on time, or be on time.
Receptiveness/Open-mindedness	Ability to accept suggestions and ideas from subordinated participants in the project.
Supportiveness/Empowerment	Provide adequate information, opportunities, and resources to improve the employees' productivity and higher their satisfaction.

Two primary surveys were distributed using questions based on the Likert scale to evaluate the impact of these gathered management actions on project success. Likert-type scales are an excellent tool for collecting survey information that deals with potential constructs such as attitudes, opinions, and perceptions of people (Gliem et al. 2003). The questionnaires were carefully designed and structured to ensure that respondents can conveniently answer the research questions and precisely provide the needed information. Each survey is given in a pattern that enables participants to complete within ten minutes at maximum. Qualtrics was used to design, structure, generate links and administer the online survey. Qualtrics is a web-based survey instrument that is available and licensed for students or faculties at OSU to assist them to develop their study research tools.

The surveys start with an introductory page that briefly explained the research. The first survey was about project success, and the type was Yes/No answers. In this survey, the objective of the assessment was to determine if the project was successful or not. The survey was created on a Dichotomous question to see how successful the project is. The survey, answers are as: (2) yes, (1) no. The second survey was about covering managers' practices and used a Likert scale, where it includes twenty-nine specific questions about some of the actions. The main body of the survey was created on a four-point Likert scale to measure the frequency of occurrence for each project manager action. The frequency of occurrence was categorized on a four-point scale as follows: (4) always, (3) most of the time, (2) sometimes, and (1) rarely. The online survey questionnaires are included in Appendix B for more details.

3.2 Survey Distribution and Data Collection

In order to conduct research related to human subjects, all documents associated with the study were submitted to the Oregon State University Institutional Review Board (IRB). IRB approval is required for any conducted research relates to human subjects' participation. After receiving IRB approval, which is included in Appendix A for more details, an email contained a link to the Qualtrics online survey was distributed to the list of construction companies, which was provided by the School of Civil and Construction Engineering, predominately over the West Coast of the United States. The distribution of the survey took place between October and December of 2019. After the original distribution, the contacts were afterward reminded to complete the survey to collect the maximum amount of responses. Participators could not be matched with their responses because each survey was autonomous.

Data were gathered through two surveys taking in view the project engineer's subordinate perspective. The first survey was about project success, and the second survey was about covering managers' practices. The survey was not limited to any type of construction companies, and they completed the survey voluntarily and were not compensated for their participation. The response rate is 7.5%, where just 62 Out of 827 companies completed the surveys. All of the responses were stored on University servers and downloaded for analysis.

4. Data Analysis

Identifying which project management actions and qualities are associated with project success is one of the primary tasks in this study. Non-parametric tests, also introduced to as distribution-free tests, have a distinct advantage which is not requiring the normality assumption or the variance homogeneity assumption. Moreover, the non-parametric tests compare between variables' medians and neglect the occurrence of one or two aberrations in the data (Assaf et al. 2005).

Therefore, Spearman's Correlation non-parametric statistical test was applied to analyze the data in this research. Spearman's Correlation test is used to examine the association between two variables (Schober et al. 2018). In this study, the Spearman's rank correlation coefficient r_s is applied to measure the association among the rankings of management actions and qualities with project success. The following formula is used for calculating the correlation coefficient is shown below:

$$r_s = 1 - \frac{6 \sum d_i^2}{n(n^2-1)} \quad \text{Eq.1}$$

where r_s is the Spearman's rank correlation coefficient, d is the difference in paired ranks, and n is the number of pairs of rank. The coefficient ranges between from -1 to $+1$. The association between variables becomes stronger as the value of r increases and approximates a straight line, where $+1$ indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates that there is no linear correlation between the variables.

The strength of the correlation can be verbally described by “weak,” “moderate,” or “strong” relationships based on the absolute value of the coefficient. Values near zero indicate weak correlation, and values close to ± 1 indicate a strong correlation (Mukaka 2012). In this study, the null hypothesis states that there is no monotonic correlation between variables (i.e., the two variables have no association). In contrast, the alternative hypothesis states that there are a statistical significance and a monotonic correlation between variables (i.e., the two variables have association).

To evaluate the impact of the identified management actions and qualities on project success, each participant supposed to answer both surveys. The participants were asked to rate the success of the construction project, and rate the frequency of occurrence for each project manager's actions or qualities during construction projects. Table 4.1 shows the questions that were used to rate project success, and Table 4.2 illustrates the questions that were used to identify each management action and quality. After that, the Spearman correlation test was applied to determine the association between project success and the developed list of management actions and qualities. Statistical Package for Social Sciences (SPSS) and Microsoft Excel[®] were used to conduct the data analysis in order to accomplish the research objective.

Table 4.1 Questions Were Used to Identify Project Success.

Success Metrics	Question Number	Questions
Cost	Q8	Is the project on budget? (\pm 5% acceptable)
Time	Q7	Is the project proceeding according to schedule? (\pm 5% acceptable)
Quality	Q1	Is the client satisfied with the work that has been done?

Table 4.2 Questions Were Used to Identify Each Management Action and Quality.

Actions or Qualities	Question #	Questions
Involvement	Q1	Are the top managers typically involved in the early stages of the project?
	Q4	Do the top managers attend monthly meetings?
Communication	Q2	Do your managers have effective connections (agencies, organizations, subcontractors) that help to mitigate struggles in the project?
	Q17	Do managers approve work quickly?
	Q10	Do you have a healthy working relationship with the project?
Flexibility/Resilience	Q9	Is the manager flexible in order to change or enhance tasks in the project?
Passion	Q19	Is the manager passionate about what he/she is doing?
Initiation	Q20	Does the manager show initiative regarding the budget and project schedule?
Concentration	Q23	The manager is focused on the project needs.
Punctuality	Q24	Is your manager punctual?
Patience	Q27	Does the manager show patience before taking any critical actions?
Receptiveness/ Open-mindedness	Q3	Are you allowed to help with maintaining the budget?
	Q18	Are managers approachable?
	Q6	Do you have the opportunity to participate during pre-construction activities?

Table 4.2 Questions Were Used to Identify Each Management Action and Quality (Continued).

Monitoring/ Auditing	Q7	Is the manager consistently aware of the project status (budget, schedule)?
	Q29	Does the manager monitor the work quality on site?
Commitment	Q8	Is the manager committed to staying within budget, schedule, and meeting quality requirements?
	Q11	Do you have high manager turnover in the project?
Competency	Q12	Is the manager competent?
	Q14	Do you think your manager is aware of the project delivery method?
	Q15	Do you think your top managers know how to implement the delivery method?
Motivation	Q16	Do the financial incentives meet your expectations?
	Q22	Does top management provide appropriate motivation?
	Q25	Do you have an environment of respect on the project?
	Q5	Do the managers acknowledge your contribution to project success?
Supportiveness/ Empowerment	Q13	Does the manager support your decisions regarding the project?
	Q21	Does your manager take ownership of (responsibility for) problems in the project?
	Q26	Do top managers share their success with you?
	Q28	Does the manager empower you in the project?

5. Data Results

First survey asked questions that were aimed at determining whether the project is successful or not. The second survey asked questions that were focused on the frequent of the management actions and qualities. Both surveys supposed to be answered from project engineers to collect information from their perspective. The total responses of the project success survey, were 83 replies. The responses of the management actions and qualities survey, were 132 replies. After removing incomplete responses, which amounted to 70, the analysis was implemented on 62 responses. From the completed surveys 51 out of 62 projects are successful, which represents 82.26% of respondents, and 11 are not successful, which equals 17.74%.

5.1 Analysis Results

As previously mentioned, data from 62 respondents were analyzed to determine the impact of management actions and qualities on project success. The research utilized Spearman's Correlation test by using SPSS and Excel[®] to evaluate data in order to accomplish research objectives. The correlation test was run to determine the association between project success and management actions or qualities.

Results show that there is a low monotonic correlation ($r_s=0.268$) between management actions and project success, as shown in Table 5.1. Moreover, there is statistical evidence that shows there is an association between management actions and project success. Based on probability value ($p = 0.035 < 0.05$), the researchers rejected the null hypothesis that states there is no monotonic correlation between variables (i.e., the two variables have no association).

Table 5.1 Correlation Coefficient of Management Actions or Qualities and Project Success

		Correlations		
			MA	PS
Spearman's rho	Management Actions	Correlation Coefficient	1.00	.268*
		Sig. (2-tailed)	.	.035
		N	62	62
	Project Success	Correlation Coefficient	.268*	1.00
		Sig. (2-tailed)	.035	.
		N	62	62

*. Correlation is significant at the 0.05 level (2-tailed).

5.2 Results of Each Management Action

In this section, detailed results about the relationship between management actions and project success are presented. Spearman's Coefficient correlation test was used to study the association of each attribute with project success to determine their more influence on project success. The calculations will show the degree of monotonic correlation between variables, and provide if there is statistical evidence of an association between each action and project success based on the p-value. Table 5.2 listed the correlation coefficients and the probability value between each action and project success.

The null hypothesis states that there is no monotonic correlation between variables (i.e., the two variables have no association), and the alternative hypothesis is the opposite. Actions were ranked based on the absolute value of the coefficient. (see Appendix B for all test results).

The results of Spearman's Correlation test show that there is a relative agreement between each action and project success. Results show that there is a positive monotonic association in all actions, except initiation, which has a negative monotonic association. The highest correlation coefficient 0.334 between communication and project success, while the lowest correlation coefficient is between initiation and project success of -0.038.

The actions are classified into four groups based on absolute correlation and probability values. The first group includes the actions, which are communication, motivation, and commitment, that have a monotonic correlation with project success, and they are statistically significant. The second group includes monitoring, concentration, and competency, that have a monotonic correlation with project success, but they show suggestive statistical evidence with probability values higher than 0.05 and less than 0.1. The third group includes involvement, supportiveness, punctuality, patience, and receptiveness, that have a monotonic correlation with project success, but they show no statistical evidence with probability values higher than 0.1. The fourth group includes the actions, which are passion, flexibility, and initiation, that do not have a monotonic correlation with project success and show no statistical significance.

Table 5.2 Correlation Coefficient of Each Action and Project Success

Group #	Rank	Actions	Spearman's coefficient (r_s)	p-value
First Group	1	Communication	0.331	0.009
	2	Motivation	0.295	0.020
	3	Commitment	0.275	0.031
Second Group	4	Monitoring/Auditing	0.234	0.067
	5	Concentration	0.225	0.078
	6	Competency	0.218	0.089
Third Group	7	Involvement	0.197	0.126
	8	Supportiveness/Empowerment	0.194	0.130
	9	Punctuality	0.169	0.190
	10	Patience	0.167	0.195
	11	Receptiveness/Open-mindedness	0.134	0.298
Fourth Group	12	Passion	0.084	0.516
	13	Flexibility/Resilience	0.083	0.521
	14	Initiation	-0.038	0.769

A paper by Schober et al. (2018) demonstrated that the meaning of the correlation coefficient, and stated that there is a broad agreement among scholars to neglect those correlation coefficients with absolute values less than 0.1; see Table 5.3 for an illustration.

Table 5.3 Meaning of the Correlations Coefficient

Interpretation	Absolute value of Correlation Coefficient
Very strong correlation	± 0.90 or higher
Strong correlation	$\pm 0.70 - \pm 0.89$
Moderate correlation	$\pm 0.40 - \pm 0.69$
low correlation	$\pm 0.10 - \pm 0.39$
No or negligible correlation	$0.00 - \pm 0.10$

According to the interpretation in Table 5.3, and the probability values in Table 5.2, the top six attributes, which are communication, motivation, commitment, monitoring, concertation, and competency, are the actions that associate more with project success than the other attributes. The rest eight actions, which are involvement, supportiveness, punctuality, patience, receptiveness passion, flexibility, and initiation, have some sort of a monotonic correlation with project success, but they show insufficient statistical evidence with probability values higher than 0.1.

After identifying which management actions that are associated more with project success, again Spearman's Correlation test was utilized to determine how those the top six actions are strongly correlated with project success and whether or not they are statistically significant.

Table 5.4 Correlation Coefficient of Management Actions or Qualities and Project Success

Correlations				
			MA	PS
Spearman's rho	Management actions	Correlation Coefficient	1.000	.360**
		Sig. (2-tailed)	.	.004
		N	62	62
	Project Success	Correlation Coefficient	.360**	1.000
		Sig. (2-tailed)	.004	.
		N	62	62
** . Correlation is significant at the 0.01 level (2-tailed).				

Table 5.4 highlights the correlation coefficient and the probability value for the new association. Results show that there is a low monotonic correlation ($r_s=0.360$) between the top six management actions or qualities and project success; furthermore, results show a very strong statistical evidence, the probability value equals $0.004 < 0.01$, to reject the null hypothesis that states there is no monotonic correlation between variables (i.e., the two variables have no association).

The result of this analysis shows that out of the listed fourteen actions and qualities, the top six factors have a more significant influence on project success than others. The correlation coefficient between the top six practices and project success is higher than the whole fourteen actions by 34.33%, and more substantial analytical significance. Thus, managers should concentrate on implementing those six attributes and seek to improve the other eight actions and qualities to maximize the chances of success.

The first action that influences project success is effective communication. Managers can effectively communicate by approving work quicker, possessing active connections with agencies, organizations, and subcontractors, and provide a healthy working relationship among the project participants. Secondly, motivation is considered the second effective action that a manager can perform. Managers should motivate their subordinates by providing an environment of respect in the project, financial incentives, and acknowledge the employees' contribution to the project.

Commitment is the third effective action among the top six actions and qualities. Managers should be committed to the project and submit project tasks on time and not just trying to keep their positions or jobs. Fourthly, monitoring the tasks is essential in order to achieve project success. Managers should be consistently aware of the project status concerning budget, schedule, and monitor the work quality on site.

The fifth attribute is that managers should concentrate their efforts in accomplishing tasks perfectly to achieve primary project objectives. Lastly, management competency is vital to project success, where managers should be conscious of the delivery method and how to execute it. Therefore, managers should concentrate on implementing those six attributes and endeavor to improve the other eight actions and qualities to maximize the chances of success.

6. Research Summary

This chapter covers a description of the conclusion, limitations, and recommendations. The information summarizes the significance of results in accomplishing research objectives, illustrates limitations on the research design, and recommendations to improve construction project management.

6.1 Conclusions

The first objective was to investigate the influence of management actions and qualities on project success concerning cost, schedule, and quality; furthermore, create a list of management actions and qualities. An extensive literature review was conducted by the research team to achieve this objective. The findings of the literature review that management can strongly affect project success; moreover, a list of fourteen management actions and qualities that can influence project success concerning cost, schedule, and quality was developed. The second objective of this study is to collect data from construction companies in order to examine the developed actions list. To address this objective, the data was collected through online questionnaire surveys. Two surveys were carefully designed and distributed to construction companies.

The third objective of this paper is to use the first and second objectives to examine the association of the developed actions and qualities list with project success and determine which are the most effective management actions or qualities correlated more with project success.

The degree of association of the developed actions and qualities list with project success was quantified and assessed by using the responses received from the surveys. The analysis showed a low monotonic relationship between the fourteen management actions and project success.

In addition, the top six management actions and qualities, which are communication, motivation, commitment, monitoring, concertation, and competency, were the most effective action in the list. Consequently, managers can concentrate on implementing those six actions or qualities and seek to improve the other eight in order to increase the success chances.

6.2 Limitations

The research had limitations that restrict its precision and ability to apply the outcomes to a broader population.

The population sample in this research study was collected predominately over the West Coast of the United States. The response rate of returned surveys was 7.5%, which is relatively low. Thus, the result of this study must be used with caution and cannot reliably generalized throughout the entire construction industry. Also, the sampling has not been identified based on the different sections of the construction industry. This categorization of construction industry sections will assist the scholars to know where the management actions and qualities can be implemented.

The second limitation of this research was the lack of demographic diversity of the survey participants, however; to overcome this limitation Both surveys supposed to be answered from project engineers to collect information from their subordinate perspective.

Thus, the result of this study must be used with caution and cannot be hypothesized across the entire construction industry professionals.

The third limitation is the lack of researches conducted about the topic; the literature review developed just a certain number of actions and qualities. So, there might be numerous essential actions and qualities that have not been identified and examined in this research.

The fourth limitation is about the sampling process and the limitations. Some of the limitations presented during collecting surveys that some respondents might show some degree of bias when selecting the value for the scale. Also, it could be that there are multiple surveys were answered about the same management. Due to this limitation, the results of this study can be affected.

6.3 Future Studies

This study is mainly focused on how actions and qualities of project management can influence project success in general. Future research should focus on the rank of management and identified actions or qualities that enhance project success chances. Future research should also be precise about the size and type of construction companies, and expand the study across the rest of the United States, so more reliable generalizations can be performed. Along with conducting an extensive literature review, researchers can develop the methodology and acquire more information from the industry to assist in identifying more management practices or attributes.

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Appendices

Appendix A - IRB Approval

A. IRB Approval



Oregon State University
Research Office

Human Research Protection Program
& Institutional Review Board
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Date of Notification	October 07, 2019		
Notification Type	Approval Notice		
Submission Type	Initial Application	Study Number	IRB-2019-0290
Principal Investigator	Ingrid Arocho		
Study Team Members	Alabdulmunem, Mohammed K		
Study Title	How top management actions influence the project success.		
Review Level	FLEX		
Waiver(s)	Documentation of Informed Consent		
Risk Level for Adults	Minimal Risk		
Risk Level for Children	Study does not involve children		
Funding Source	None	Cayuse Number	N/A

APPROVAL DATE: 10/04/2019

EXPIRATION DATE: 10/03/2024

A new application will be required in order to extend the study beyond this expiration date.

Comments: Waiver of documentation of Informed Consent under Institutional Policy.

The above referenced study was approved by the OSU Institutional Review Board (IRB). The IRB has determined that the protocol meets the minimum criteria for approval under the applicable regulations pertaining to human research protections. The Principal Investigator is responsible for ensuring compliance with any additional applicable laws, University or site-specific policies, and sponsor requirements.

Study design and scientific merit have been evaluated to the extent required to determine that the regulatory criteria for approval have been met [[45CFR46.111\(a\)\(1\)\(j\)](#), [45CFR46.111\(a\)\(2\)](#)].

Adding any of the following elements will invalidate the FLEX determination and require the submission of a project revision:

- Increase in risk
- Federal funding or a plan for future federal sponsorship (e.g., proof of concept studies for federal RFPs, pilot studies intended to support a federal grant application, training and program project grants, no-cost extensions)
- Research funded or otherwise regulated by a [federal agency that has signed on to the Common Rule](#), including all agencies within the Department of Health and Human Services
- FDA-regulated research
- NIH-issued or pending Certificate of Confidentiality
- Prisoners or parolees as subjects
- Contractual obligations or restrictions that require the application of the Common Rule or which require annual review by an IRB
- Classified research
- Clinical interventions



Oregon State University
Research Office

Human Research Protection Program
& Institutional Review Board
B308 Kerr Administration Bldg, Corvallis OR 97331
(541) 737-8008
IRB@oregonstate.edu
<http://research.oregonstate.edu/irb>

Principal Investigator responsibilities:

- Keep study team members informed of the status of the research.
- Obtain IRB approval for project revisions prior to implementing changes as required by section 8.6 of the Policy Manual.
- Report all unanticipated problems involving risks to participants or others within three calendar days.
- Use only approved consent document(s).

Appendix B - Survey Questions

B.1 Project Success Survey

Welcome to the research study!

We are interested in understanding "How the actions of management influence the success of a project: cost, time, and quality." You will be presented with a survey relevant to this topic. Please consider answering it based on your experiences from a previous or a current project. Please be assured that your responses will be kept completely confidential. The data collected from this survey will be used to complete a master's thesis, and the data will not be shared or used for future studies.

The survey should take you five minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Ingrid.Arocho@oregonstate.edu or MS student Mohammed Alabdulmunem at alabdumo@oregonstate.edu.

By clicking the next button at below, you acknowledge that your participation in the study is voluntary, you are 18 years of age or older, and you are aware that you may choose to terminate your participation in the study at any time and for any reason.

If you have questions about your rights or welfare as a participant, please contact the Oregon State University Human Research Protection Program (HRPP) office, at (541) 737-8008 or by email at IRB@oregonstate.edu.

Note: Top manager and managers in the questions below could be the sector manager, senior manager, or project manager.

Q1 Is the client satisfied with the work that has been done?

Yes (2)

No (1)

Q2 Does the client pay on time?

Yes (2)

No (1)

Q3 Does your company have a good relationship with subcontractors?

Yes (2)

No (1)

Q4 Do the managers exert pressure on the workers?

Yes (2)

No (1)

Q5 Do the subcontractors have a clear timeline or schedule?

Yes (2)

No (1)

Q6 Did your company change the subcontractors after the work started?

Yes (2)

No (1)

Q7 Is the project proceeding according to schedule? ($\pm 5\%$ acceptable)

Yes (2)

No (1)

Q8 Is the project on budget? ($\pm 5\%$ acceptable)

Yes (2)

No (1)

Q9 Does the project have any legal issues? If yes, answer the next question.

Yes (2)

No (1)

Q10 Are the legal issues being resolved?

Yes (2)

No (1)

Q11 Did your company hire any local subcontractor?

Yes (2)

No (1)

Q12 Does your company use BIM technologies?

Yes (2)

No (1)

Q13 Does the project have any change orders?

Yes (2)

No (1)

Q14 Does the project have any work that needs to be redone?

Yes (2)

No (1)

Q15 Have there been any accidents on the project?

Yes (2)

No (1)

Q16 Are you satisfied with services provided (offices, bathrooms, etc.)?

Yes (2)

No (1)

B.2 Management Actions Survey

Welcome to the research study!

We are interested in understanding "How the actions of management influence the success of a project: cost, time, and quality." You will be presented with a survey relevant to this topic. Please consider answering it based on your experiences from a previous or a current project. Please be assured that your responses will be kept completely confidential. The data collected from this survey will be used to complete a master's thesis, and the data will not be shared or used for future studies.

The survey should take you five minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Ingrid.Arocho@oregonstate.edu or MS student Mohammed Alabdulmunem at alabdumo@oregonstate.edu.

By clicking the next button at below, you acknowledge that your participation in the study is voluntary, you are 18 years of age or older, and you are aware that you may choose to terminate your participation in the study at any time and for any reason.

If you have questions about your rights or welfare as a participant, please contact the Oregon State University Human Research Protection Program (HRPP) office, at (541) 737-8008 or by email at IRB@oregonstate.edu.

Note: Top manager and managers in the questions below could be the sector manager, senior manager, or project manager.

Q1 Are the top managers typically involved in the early stages of the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q2 Do your managers have effective connections (agencies, organizations, subcontractors) that help to mitigate struggles in the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q3 Are you allowed to help with maintaining the budget?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q4 Do the top managers attend monthly meetings?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q5 Do the managers acknowledge your contribution to project success?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q6 Do you have the opportunity to participate during pre-construction activities?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q7 Is the manager consistently aware of the project status (budget, schedule)?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q8 Is the manager committed to staying within budget, schedule, and meeting quality requirements?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q9 Is the manager flexible in order to change or enhance tasks in the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q10 Do you have a healthy working relationship with the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q11 Do you have high manager turnover in the project?

- Always (1)
- Most of the time (2)
- Sometimes (3)
- Rarely (4)

Q12 Is the manager competent?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q13 Does the manager support your decisions regarding the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q14 Do you think your manager is aware of the project delivery method?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q15 Do you think your top managers know how to implement the delivery method?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q16 Do the financial incentives meet your expectations?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q17 Do managers approve work quickly?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q18 Are managers approachable?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q19 Is the manager passionate about what he/she is doing?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q20 Does the manager show initiative regarding the budget and project schedule?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q21 Does your manager take ownership of (responsibility for) problems in the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q22 Does top management provide appropriate motivation?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q23 The manager is focused on the project needs.

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q24 Is your manager punctual?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q25 Do you have an environment of respect on the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q26 Do top managers share their success with you?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q27 Does the manager show patience before taking any critical actions?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q28 Does the manager empower you in the project?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Q29 Does the manager monitor the work quality on site?

- Always (4)
- Most of the time (3)
- Sometimes (2)
- Rarely (1)

Appendix C – All Test Results

1- Correlation Coefficient of Communication and Project Success

Correlations				
			Communication	PS
Spearman's rho	Communication	Correlation Coefficient	1.000	.331**
		Sig. (2-tailed)	.	.009
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.331**	1.000
		Sig. (2-tailed)	.009	.
		Sample (N)	62	62
**. Correlation is significant at the 0.01 level (2-tailed).				

2- Correlation Coefficient of Motivation and Project Success

Correlations				
			Motivation	PS
Spearman's rho	Motivation	Correlation Coefficient	1.000	.295*
		Sig. (2-tailed)	.	.020
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.295*	1.000
		Sig. (2-tailed)	.020	.
		Sample (N)	62	62
*. Correlation is significant at the 0.05 level (2-tailed).				

3- Correlation Coefficient of Commitment and Project Success

Correlations				
			Commitment	PS
Spearman's rho	Commitment	Correlation Coefficient	1.000	.275*
		Sig. (2-tailed)	.	.031
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.275*	1.000
		Sig. (2-tailed)	.031	.
		Sample (N)	62	62

*. Correlation is significant at the 0.05 level (2-tailed).

4- Correlation Coefficient of Monitoring and Project Success

Correlations				
			Monitoring	PS
Spearman's rho	Monitoring	Correlation Coefficient	1.000	.234
		Sig. (2-tailed)	.	.067
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.234	1.000
		Sig. (2-tailed)	.067	.
		Sample (N)	62	62

5- Correlation Coefficient of Concentration and Project Success

Correlations				
			Concentration	PS
Spearman's rho	Concentration	Correlation Coefficient	1.000	.225
		Sig. (2-tailed)	.	.078
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.225	1.000
		Sig. (2-tailed)	.078	.
		Sample (N)	62	62

6- Correlation Coefficient of Competency and Project Success

Correlations				
			Competency	PS
Spearman's rho	Competency	Correlation Coefficient	1.000	.218
		Sig. (2-tailed)	.	.089
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.218	1.000
		Sig. (2-tailed)	.089	.
		Sample (N)	62	62

7- Correlation Coefficient of Involvement and Project Success

Correlations				
			Involvement	PS
Spearman's rho	Involvement	Correlation Coefficient	1.000	.197
		Sig. (2-tailed)	.	.126
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.197	1.000
		Sig. (2-tailed)	.126	.
		Sample (N)	62	62

8- Correlation Coefficient of Supportiveness and Project Success

Correlations				
			Supportiveness	PS
Spearman's rho	Supportiveness	Correlation Coefficient	1.000	.194
		Sig. (2-tailed)	.	.130
		N	62	62
	Project Success	Correlation Coefficient	.194	1.000
		Sig. (2-tailed)	.130	.
		N	62	62

9- Correlation Coefficient of Punctuality and Project Success

Correlations				
			Punctuality	PS
Spearman's rho	Punctuality	Correlation Coefficient	1.000	.169
		Sig. (2-tailed)	.	.190
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.169	1.000
		Sig. (2-tailed)	.190	.
		Sample (N)	62	62

10- Correlation Coefficient of Patience and Project Success

Correlations				
			Patience	PS
Spearman's rho	Patience	Correlation Coefficient	1.000	.167
		Sig. (2-tailed)	.	.195
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.167	1.000
		Sig. (2-tailed)	.195	.
		Sample (N)	62	62

11- Correlation Coefficient of Receptiveness and Project Success

Correlations				
			Receptiveness	PS
Spearman's rho	Receptiveness	Correlation Coefficient	1.000	.134
		Sig. (2-tailed)	.	.298
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.134	1.000
		Sig. (2-tailed)	.298	.
		Sample (N)	62	62

12- Correlation Coefficient of Passion and Project Success

Correlations				
			Passion	PS
Spearman's rho	Passion	Correlation Coefficient	1.000	.084
		Sig. (2-tailed)	.	.516
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.084	1.000
		Sig. (2-tailed)	.516	.
		Sample (N)	62	62

13- Correlation Coefficient of Flexibility and Project Success

Correlations				
			Flexibility	PS
Spearman's rho	Flexibility	Correlation Coefficient	1.000	.083
		Sig. (2-tailed)	.	.521
		Sample (N)	62	62
	Project Success	Correlation Coefficient	.083	1.000
		Sig. (2-tailed)	.521	.
		Sample (N)	62	62

14- Correlation Coefficient of Initiation and Project Success

Correlations				
			Initiation	PS
Spearman's rho	Initiation	Correlation Coefficient	1.000	-.038
		Sig. (2-tailed)	.	.769
		Sample (N)	62	62
	Project Success	Correlation Coefficient	-.038	1.000
		Sig. (2-tailed)	.769	.
		Sample (N)	62	62