The Impact of Project Managers' Competencies on Project's success.

أثر جدارات مديري المشاريع على نجاح المشروع

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Thesis Submitted in Partial Fulfillment of the Requirements for Master Degree in Business Administration.

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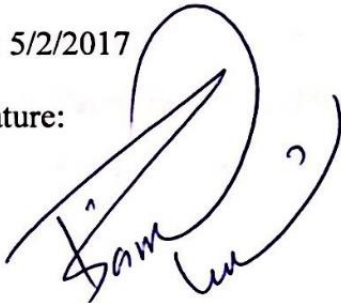
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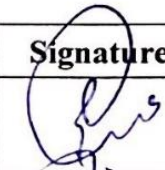
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This thesis of the student Suhaib Ahmad Al-Khawaldah, which studied **"The Impact of Project Managers' Competencies on Project's success",** has been defined, accepted and approved on 23/1/2017

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WHEN THERE IS A WILL, THERE IS A WAY

DEDICATION

To my Father and Mother,

Ahmad Lafi and Khawalah Essa, Al-Khawaldah;

For the endless support and encouragement, they have given all the

prayers they have made; and all the good things they have planted in me.

ACKNOWLEDGEMENT

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THE IMPACT OF PROJECT MANAGERS' COMPETENCIES ON PROJECT'S SUCCESS

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Abstract

The intent behind this study was to describe any effect that the project manager, who has responsibility for the Project Success and ultimate delivery of the project. This study is considered as descriptive cause/effect study. The data were collected from 160 project managers from 33 companies that use project based structure by questionnaire, which was built and developed for this purpose. Collected questionnaires were checked and coded against SPSS 20. After checking normality, validity, and reliability, the multiple regressions were used to test the hypothesis.

The results show that the importance and implementation of both variables were weak for the selected sample. Results show that the relationship between project managers' competencies are very strong, between project's success elements very strong, and between project managers' competencies and project's success is also very strong. The results also show that there is an impact for project managers' competencies on project's success, knowledge shows the highest impact followed by skills, while experience does not show a significant impact

The results could standardize the selection procedures and implement similar approaches in improving and managing human resources in Jordan project management industry. Additionally other suggestions related to project management improvements were introduced such as the use of software application that manages projects, programs and portfolios across the organization.

Key words: Competency, Project Management, experiences Competencies, Skills Competencies, knowledge Competencies.

أثر جدارات مديري المشاريع على نجاح المشروع

إعداد

صهيب أحمد الخوالدة

المشرف

الدكتور عبدالعزيز أحمد الشرباتي

الملخص

أجري هذا البحث بهدف وصف أي تأثير من مدير المشروع الذي يتحمل مسؤولية التسليم النهائي ونجاح المشروع ككل. وتعتبر هذه الدراسة وصفية (السبب / النتيجة). تم جمع البيانات من 160 من مديري المشاريع من 33 شركة تعتمد هيكلة ادارة المشاريع داخلياً من خلال استبيان الذي تم بناؤه لهذا الغرض. تم فحص الاستمارات التي تم جمعها وترميزها من خلال برنامج التحليل الاحصائي SPSS 20. وذلك بعد التحقق من التوزيع الطبيعي، والصدق، والموثوقية، واستخدم الانحدار المتعدد لاختبار الفرضية.

أظهرت النتائج أن أهمية وتنفيذ كل المتغيرات كانت ضعيفة ضمن العينة المختارة. وأظهرت النتائج أن العلاقة بين كفاءات مديري المشاريع قوية جدا، وبين عناصر نجاح المشروع كانت العلاقة قوية جدا هي الاخرى، واخيراً بين كفاءات مديري المشروع ونجاح المشروع هي أيضا قوية جدا. تظهر النتائج أيضا أن هناك تأثير للكفاءات مديري المشروع على نجاح المشروع، وتبيّن في هذه الدراسة ان جدارة المعرفة لها الأثر الأكبر تليها المهارات، في حين لا تظهر الخبرات لها تأثير كبير.

نتائج هذا البحث يمكن أن تستخدم لتدريب مديري المشاريع لتطوير الكفاءات الضرورية لتحسين الاداء واستثمار رأس المال البشري ضمن المشروع. بالإضافة الى ذلك تضمنت التوصيات مجموعة من البرامج الالكترونية التي من شأنها مساعدة مدراء المشاريع والبرامج لتسهيل عملية ادارة المصادر.

الكلمات المفتاحية: الجدارة، وإدارة المشاريع، وجدارات الكفاءات، وجدارات المهارات، وجدارات المعرفة.

Chapter One:
Introduction

1.1 Background:

Project management is an area of interest that is witnessing significant growth, many organizations are implementing project management methodologies, and there is marked demand for competent project managers who can face unexpected challenges. The project manager must be considered as invaluable asset to any project, which intends to be successful. As every project is different, and every project team is different, there needs to be more focused analysis on how the project manager can effectively interact with a team to produce successful outcomes as it pertains to project tasks. The success or failure of a project largely hinges on the project manager, and the skills they bring to the table.

Recently, heavy investments were made by project based structure companies to improve the way they do business due to the major demand in the project management industry in the Middle East that made it one of the most thriving industries in the whole world. This demand is expected to last as long as the international funds is coming in, and the organization is targeting different group of target for their social projects. The size and complexity of needed projects are increasing, with new technologies and practices. Thus, the project management fields became a fertile field for studies and especially for non-construction industries, as most of the researcher have focused on the construction area of study since then.

Andersen et. al. (2006) approved that in order for a project to be considered successful, it must be completed within the parameters of its performance goals, within its slated budget and on schedule. The more traditional "hard" technical skills of project managers have drawn much attention, little light has been shed on the "soft" skills, especially social competencies in the construction context (Zhang, et. al., 2013). Studies about PMs' competencies have found that there is a significant correlation between EI and a range of important behaviors, such as leadership, teamwork, workgroup effectiveness, and managing conflicts (e.g. Sunindijo, et. al. 2007).

Business competence refers to the set of business and interpersonal knowledge and skills possessed by professional that enables him or her to understand the business domain, speak the language of business, and interact with their business partners (Zainuddin, et. al., 2012). The overall success of project and reaching the set goals depend on cooperation of a whole project team and the leadership of its project manager (Cech and Chadt, 2015). Projects, crisis, uncertainty and suspense are continually recurring to test the quality of project managers (Aretoulis and Triantafyllidis, 2016). Some professionals have a personality type that might hinder them from developing some soft skills (Araujo and Pedron, 2016).

Therefore, it is the time to renew our understanding the impact of the three components of the project manager competencies, which are; skills competency, knowledge, and experience competencies on project success or failure based on the results of the iron triangle aspects (time, cost, and quality). Therefore this study is been made to study The Impact of Project Managers' Competencies on Project's success.

1.2 Problem Statement

Organizations play a role in the larger problem, by assigning a project manager to a project, giving little to no consideration the project manager's competencies; frequently leading to an unclear understanding of the project's direction and outcomes. Currently there are few literature have investigated the linked between the three mentioned components of the project manager competencies (Skills, Knowledge and Experience) and its impact on the project success. In addition to that there is no researchers have talked about any industry other than construction which clearly shows that professionals who is working on other industries are relying heavily on the materials that targeted engineering projects.

Based on research conducted by Oshinubi (2007), a common problem that effect group's performance was came from the project manager's leadership style itself. The project manager is one of the main parties in the role of the all industries. This research study problem is to investigate the impact of the project manager's competencies on the project success for other than construction project fields. Project based structure Organizations often encounter relatively complex projects that include a large number of interrelated activities.

However, based on the sample; the study showed that there are bigger problem which is that "they don't apply what they have to do, although they approved the significant of the variables. They also exclude experience at all". Organizations in order to develop their personnel and of course their project managers skills need to engage them in problem solving, decision making and allow them to come up with new ideas in working groups (Omidvar, et. al. 2011a). It is better for Project manager to expert problem solving skill when exposed to situations that makes to think differently, in opportunities with curiosity increase, or feedbacks that bring

challenges to learning and changes in behavior (Pereira and Rabechini, 2013). The efficient leadership and project management abilities help in developing the ability of the workforce to manage the diverse situations effectively (Annan, 2015).

However, since there are very huge increase in the number of projects; then the need for more research that investigate the role and impact of the project competencies on the project success is highly needed now a days, especially for non-construction industries. Thus, the purpose of this research is to investigate the relationship between project managers' competencies on project's success in the Jordanian project-based structure organizations to highlight the most important sub-competencies should be improved or focused.

Problem Questions:

The purpose of this study is to improve the understanding of why projects succeed by looking to the project manager contribution. The focus of the study was the Impact that project manager can make by studying the effect of the three mentioned his/her competencies toward project success as following:

1. Do project manager's competencies affect the project's success?

   Based on the components of project manager's competencies the main question will be divided into the following sub-question:

1.1. Does the project manager's skills competency affect the project's success?

1.2. Does the project manager's knowledge competency affect the project success?

1.3 Does project manager's experience competency affect the project success?

1.3 Study Purpose and Objectives:

The purpose of this study is to study the impact of the three components Skills competency (such as self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness), Knowledge (which consists critical analysis and judgment, vision and imagination, and strategic perspective), and experience competency (resource management, engaging communication, empowering, developing, and achieving) on project success or failure based on the iron triangle (time, cost, and quality).

The main objective of this research is to provide sound recommendations to project structure organizations in Jordan, as well as, to other industries and decision makers regarding the effect of project manager's competencies on project success. As well as the followings:

1. To identify the competency dimensions' importance of project managers in Jordan

2. To identify project managers' efficiency in executing projects.

3. Investigating the relationship between the competencies and the project success.

4. Identifying the competency dimensions that affect the project success the most.

5. Verify the aspects of competency that project managers think are more important.

6. Depicting the difference between how project managers see themselves performing and how their subordinates see their performance.

1.4 Study Significant and Importance:

This research focuses on investigating the relationship between the project manager competencies types in non-construction industries and project success, in an attempt to develop and use the competencies that are seen to be related the most to efficiency in project management practices. That can be used to enhance and improve the performance of both the project manager and his managerial ways in executing the project.

This research covers both project managers and projects coordinators who work with them, so that project managers can reflect how they see themselves managing their projects (self-evaluation) and at the same time see how project coordinators evaluate the project management's performance (subordinates' evaluation), and record the difference.

This study's significance is that the research conducted will enhance the existing body of knowledge on the Jordanian project management industry and the competencies of its project managers by providing insight into whether relationships exist between the project manager competencies and the success/failure of projects since there were no researches found investigating this topic. Therefore the importance of this study comes from the following scientific and practical considerations:

1- This research contributes to comprehending the significance that project managers and their work styles and personal characteristics play on the success or failure of projects.

2-   This study seeks to analyze the project manager competencies that have the most impact on the project success relationship between the project managers and the project management office into testable matrices.

3-   Highlight on the importance project manager competencies and its applications on the Jordanian project structure Organizations and its importance in achieving high performance levels that contributes to the achievement the project success.

4-   Contribute the development of the Jordanian project organization which lead to maintain projects work effectively that help on achieving the customer expectation aligning with the PMO requirement.

5-   Help other researches to analyze the project manager competencies, and its importance either on the same industry or for other industries.

6-   Help the decision makers and who are working for a project organization to gain the benefits of improving the project competencies, and give recommendation of using the most effective way of thinking toward it.

1.5 Study Hypotheses:

Based on the research model, the questions will be answered by testing the following hypotheses:

H_{01}: Project manager's competencies do not affect project success, at ($\alpha \leq 0.05$)

$H_{01.1}$: Project manager's skills competency does not affect the project success, at ($\alpha \leq 0.05$)

$H_{01.2}$: Project manager's knowledge competency don't affect the project success, at ($\alpha \leq 0.05$)

$H_{01.3}$: Project manager's experience competency don't affect the project success, at ($\alpha \leq 0.05$)

1.6 Study Model:

This study is designed to research the impact of the three components (Skills competency (such as self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness), Knowledge (which consists critical analysis and judgment, vision and imagination, and strategic perspective), and experience competency (resource management, engaging communication, empowering, developing, and achieving) on project success or failure based on the iron triangle aspects (time, cost, and quality).

Figure 1 Study Model

Independent Variables   **Dependent Variable**
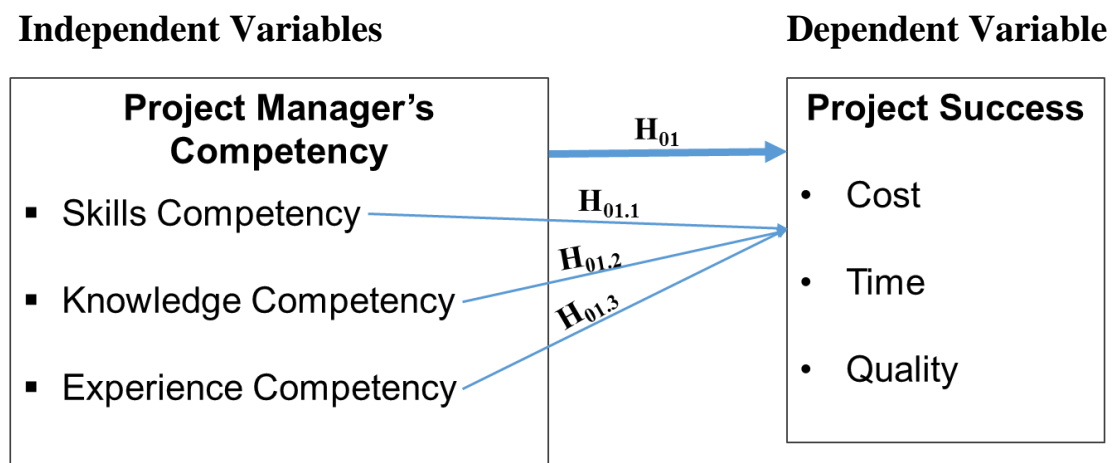
Source: **Yang, et. al. (2012) and Abdul Razak, et. al. (2015)**

Looking back to the most important literatures such as Kubes, et. al. (2004) who have begun to look for competence, which would not be tied to a specific position or task, but would guarantee a high standard of excellence and performance that would be able to distinguish managers above average from average ones. However, these competencies would be a guarantor of an excellent, above standard performance and they would distinguish the outstanding managers from

average ones (Mohamad, 2009). Pioneer organizations have a remarkable strive on increasing their personnel capabilities and competencies (Omidvar, et. al. 2011b). According to Koehler (2013) in United State of America (USA) project managers are responsible for collecting all risks from the functional teams and leading the team in a risk analysis exercise to determine which of the risks are project-level risks. In addition, if there are many mistakes made in the management, her/his credibility will be challenged and will influence an organization's name (Ihesiene, 2014)

In addition to what Zakaria, et. al. (2015) concluded in his study on leadership skills of project manager for a successful construction project; which showed that there are seven leadership skills that a good project manager possesses; communication skills, problem solving and decision making skills, team building skills, sense of responsibility and time management skills. All these skills been added to the first component of the project's manager competencies.

Nowadays, this research is one of the researches that use the previous researches results and link it with the latest role that the project managers play now days for non- construction project. Thus they would be focusing in two variables as shown in figure (1) with three dimensions for each as following: skills competency (such as self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness), knowledge (which consists critical analysis and judgment, vision and imagination, and strategic perspective), and experience competency (resource management, engaging communication, empowering, developing, and achieving) on project success or failure based on the iron triangle (time, cost, and quality).

1.7 Conceptual and Operational Definitions of Key Words:

Project: A temporary endeavor undertaken to create a unique product, service, or result.

Project manager (PM): is a person who has the overall responsibility for the successful initiation, planning, design, execution, and monitoring, controlling and successful conclusion of a project. PM must work well under pressure and be comfortable with change and complexity in dynamic environments. PM must resolve complex tasks and problems and see projects to success.

Project Manager Competencies: are a cluster of related knowledge, attitudes, skills, and other personal characteristics that affects a major part of one's job such as: Ability to control processes and activities in a result-oriented manner, Ensures project progress, and Stress tolerance.

Skills Competencies: are the skills that a person uses to properly interact with other people. These are skills such as effective communication, assertive communication, anger management, conflict resolution and/or teamwork.

Knowledge: the identified professional practice gap of the learner can be based on a range of needs. One such need includes knowledge that is the range of one's- "information or understanding, the sum of what is known.

Experience competency: This means that you use information from a variety of sources—including personal experience and your own observations—to identify options and solve problems. They refer to using specialized knowledge and experience related to project management.

Project team: The people, including those from the functional departments, subcontractors, and vendors, who make up the set of skills and services required to complete a project.

Project success effectively and efficiently achieving all project objectives in scope, on time and within budget.

Project failure not achieving all project objectives in scope, on time and within budget in an effective and efficient manner.

1.8 Study Limitations:

As defined by Creswell (2005), a limitation is weakness in the research that could potentially be caused by any element that may hinder data collection within the study. During the work on this thesis, many difficulties were faced by the researcher and were dealt with in different ways, the most difficult ones from the researcher's point of view are:

1. Difficulties in convincing companies to participate in this research since most of them have privacy concerns.

Project managers were very hard to reach as they were busy most of their times while some had problems with their team members evaluating their work. One the other hand, project coordinators sometimes seemed to be hesitant to honestly evaluate their managers.

2. Time Limitation: This study will be carried within the period of the first semester of academic year 2016/2017. Since the survey instrument will only be available for a specific period of time, not all project managers or project sponsors will be able to respond.

3. Study Delimitation: The use of few industries limits its generalizability to other industries. The study will be carried out in Jordan; therefore, generalizing results of one industry and/or Jordanian setting to other industries and/or countries may be questionable. Extending the analyses to other industries and countries represent future research opportunities, which can be done by further testing with larger samples within same industry, and including other industries will help mitigate the issue of generalizing conclusions on other organizations and industries.

4. Data access Limitations refer to the fact that data gathering through the questionnaires and annual reports is controlled to the period of these questionnaires, which may limit the quality and quantity of the data collected. In addition, lack of similar studies in Jordan and other Arab countries.

Chapter Two:

Conceptual and Theoretical Framework and Previous Studies

2. Conceptual and Theoretical Framework

2.1 Introduction

In this chapter, the theoretical background for the main variables studied in this research is presented, covering the areas of concern for this research; the impact of the focused three project manager's competencies: Skills competency (self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness); Knowledge (critical analysis and judgment, vision and imagination, and strategic perspective); and experience competency (resource management, engaging communication, empowering, developing, and achieving) on project success or failure based on the iron triangle (time, cost, and quality).

Definitions, historical roots, and previous studies on those areas are also to be displayed, along with a focus on the applications and measurements of the studied variables in industries other than construction.

2.2 Definition of Variables

Project Management: all different of project types are defined as a temporary human effort to create a certain desired result, product, or service (PMI, 2008). Many of the mega projects executed centuries ago had obviously some degree of management and control; otherwise they would not have been finished properly, meaning that the concept of project management was there, but the name and structure of the project management applied nowadays were formulated only a few decades ago (Carayannis, et. al. 2005).

The Project Management Institute (PMI) in 1996 published the first edition of the Guide to the Project Management Body of Knowledge (PMBOK). The guide documented the accepted project management practices, and became today the industry's global standard.

Project Management has been defined in the PMBOK as: "The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" (PMI, 2008, p.6). This implies that the project manager should have a certain amount of knowledge and skills, with the use of the right tools and techniques to be able to achieve the requirements of the project, and this is where the competency concept emerges.

As conclusion, the project management is the effort and the process to a temporary endeavor undertaken to create a unique product, service, or result.

2.3 Independent Variable (Project Manager Competencies):

2.3.1 Competency Definition

The work of Neuhauser (2007) commences with the assertion that there are two aspects to the responsibilities of the project manager, with these being (a) the technical aspects of the project including planning, scheduling, budgeting, statistically analyzing, monitoring and controlling and (b) the managing of the people related aspects of the project in such a manner as to motivate the project team to successfully complete the project.

Competency is defined in the PMBoK as capacities and attributes that project managers should possess in order to realize projects aims and objectives. Project management researchers have been discussing the causes of project

failures such as unqualified project managers, poor project performance (Andersen, et. al., 2006).

In each of the previous situation's elements, the meaning of competency emerges in a different form. Being competent enables individuals (project managers in our case) to first evaluate the situation wisely in order to decide whether an action needs to be taken anyway. If the situation then turns out to need action, use the knowledge and skills they have to respond appropriately. At the end, the feedback that the individual receives should be used as a guide for any future action (Roque and Marly, 2013).

The Project Management Competency Development (PMCD) Framework defines a project manager's competency as the process by which the project manager continuously applies his knowledge, skills and personal behaviors with the intention of delivering projects that will meet the requirements of the different stakeholders (PMI, 2007).

Competency: An underlying characteristic of an individual that is causally related to criterion referenced effective and/or superior performance in a job or situation (Bauer, 2005).

Competencies: Competencies of project management are of a common consensus that there are competencies that should be possessed by project managers to ensure success on projects. According to research, competence is a combination of skills, knowledge and individual characteristics (Crawford, 2003).

Competencies measurement: the above competencies are grouped under different umbrellas by different authors despite being generally similar such as Thomas (2008) concluded competencies are measurable.

Project Manager's Skills: Among the project team members, the PM is considered one of the key people who have a greater input in driving a project to successful completion, and may be the most important piece in the puzzle of successful project management (Cleland, et. al. 2006).

As conclusion, the skills competencies are important for effective communication with team members and conflict resolution. Secondly, the knowledge competencies identified professional practice gap of the learner can be based on a range of needs. Third, Experience competency: This means that the project manager use information from a variety of sources—including personal experience and his own observations—to identify options and solve problems.

2.4 Element of Variables

2.4.1 Component Project Manager's Competencies:

The purpose of this study is to study the impact of the three components which are; skills competency (such as self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness), knowledge (which consists critical analysis and judgment, vision and imagination, and strategic perspective), and experience competency (resource management, engaging communication, empowering, developing, and achieving) on project success or failure based on the iron triangle (time, cost, quality).

2. 4.1.1 Skills Competency Dimensions.

The first dimension of skills competency that concerned with the social and emotional competencies of managers in managing themselves and their relation with their subordinates, and can be measured by assessing 7 leadership constructs;

self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness (Geoghegan and Dulewiz, 2008).

- Self-awareness: The manager is aware of his own feelings and how to manage them, with a belief in the capability to control his emotions and the impact of such emotions on the work environment (Gibson and Nesbit, 2006).

- Emotional Resilience: To always perform well under pressure in a variety of situations and adapt his behavior accordingly, balance the task and situation's needs with the concerns of the individuals involved, and retain a focus on the needed results when personally challenged or criticized (Torpman, 2004).

- Intuitiveness: Ability to arrive to clear decisions and implement them properly even when presented with ambiguous information, utilizing both rational perception and emotional comprehension of key implications (Farooqui, et. al, 2008).

- Interpersonal Sensitivity: To be aware of the needs and perceptions of those who are involved when proposing solutions to problems, and take account of that in arriving at decisions. To also be open to new possible solutions, consider the inputs from others in solving problems, and get others to commit to the decisions taken based on the awareness of their needs (Mehta, 2011).

- Influence: Able to persuade others to change their minds about something based on understanding their positions, convince them to consider this perspective, and provide them with a rationale for this change (Neuhauser, 2007)

- Motivation: To have the energy and drive to achieve results, strive to make an impact, balances the short-term goals with the long-term ones, persistent in pursuing demanding goals even when faced with questioning or rejection of the course of action chosen (Neuhauser, 2007)

- Conscientiousness: the term is focusing on commitment to the chosen course of action when faced with challenges, match words and deeds when trying to win others' support to the direction chosen, and personally commit to the pursuit of an ethical solution whenever a difficult business dilemma is faced (Ofori, 2013).

2.4.1.2 **Knowledge competency Dimensions.**

Based on the review of Hussin and Hamid (2006), the role or responsibilities that every project manager should have during his career life are shown below:

- Critical Analysis and Judgment: To investigate facts, pinpoint the flaws of proposals, and identify the advantages and disadvantages of ideas. To also make decisions and judgments based on facts and rational assumptions while being aware of the influence of such assumptions. (Gibson and Nesbit, 2006).

- Vision and Imagination: To be innovative in all work aspects, have the proper priorities for the upcoming tasks and a clear vision for the organization's future direction along with the ability to foresee how changes might affect that vision (Raiden, et. al., 2004).

- Strategic Perspective: To be able to see the broader implications of events, explore a variety of relationships, balance considerations on the short and long run, sensitive to the impact of decisions taken across the organization, able to identify opportunities and threats around the organization, sensitive to the needs of stakeholders and the influence of external factors on the actions and decisions taken.

2.5.1.3 Experience competency Dimensions:

This part of competencies is concerned with the way the manager manages tasks and individuals, and can be measured by assessing five leadership constructs; resource management, engaging communication, empowering, developing, and achieving (Muller and Turner, 2010).

- Resource Management: To plan ahead of time, be effective and efficient in coordinating resources, set clear objectives, derive action plans from long-term goals. However, mentioning monitor staff's work with regular and effective evaluation of that work, and give sensitive but honest feedback accordingly (Farooqui, et. al., 2008).

- Engaging Communication: Enthusiastic in communicating with others, able to engage and win their support, able to communicate instructions to staff clearly with communications tailored to fit the interest of the audience. (Muller and Turner, 2010).

- Empowering: To encourage staff to take on demanding tasks that are personally challenging for them and produce their own innovative and individual ideas, encourage challenging existing practices and policies. To also believe in others' potentials and abilities to take on more complex and demanding tasks (Raiden, et. al., 2004).

- Developing: To invest time and effort in developing the direct reports' competencies, coaching them, make sure that adequate support is given to them so that they can work on developing themselves (Jiang, 2014).

- Achieving: is willing to take risks to achieve a business advantage, choose the activities that benefit the overall performance, have a great determination to implement decisions and achieve objectives (Raiden, et. al., 2004).

2.4.2 Dependent Variable (Project Success):

Theoretical definition. Project success is the set of principles or standards by which favorable outcomes can be completed within a set specification (Chan and Chan, 2004).

Project Management Success. Meeting customer/client expectations while getting the job done within time, cost, and quality constraints (Bauer, 2005).

Project Success. Measure of success or a favorable/desired outcome. Success is the outcomes, the achievement of project objectives, relative to cost, schedule, and performance (Bauer, 2005).

Project success effectively and efficiently achieving all project objectives in scope, on time and within budget. Project failure not achieving all project objectives in scope, on time and within budget in an effective and efficient manner.

2.4.2.1 Components of Project Success:

Many authors have defined the successful completion of a project as achieving the project objectives within time, within cost, and at the desired scope, while utilizing resources effectively and at the desired level of quality. Despite the relative agreement of such a base definition, there can be many perspectives of whether a specific project is successful. When they talked about success it is usually stated that it refers to doing things right, which means that regardless of what is being performed, it is being performed in the best way possible, taking into consideration the resources available (Sundqvist, el. al., 2014).

Cost: To develop an approximation of a project cost depends on several variables including resources; work packages such as labor rates; and mitigating or controlling influencing factors that create cost variances. Tools used in cost are,

risk management, cost contingency, cost escalation, and indirect costs. (Yang, et. al., 2012)

Time: Based on the study Ramo (2009), time is an important aspect of the construction process. For analytical purposes, the time required to produce a deliverable is estimated using several techniques. One method is to identify tasks needed to produce the deliverables documented in a work breakdown structure or WBS. The work effort for each task is estimated and those estimates are rolled up into the final deliverable estimate (Stevenson, and Starkweather 2010).

Scope/ Quality: Requirements specified to achieve the end result. The overall definition of what the project is supposed to accomplish, and a specific description of what the end result should be or accomplish. The amount of time put into individual tasks determines the overall quality of the project. Some tasks may require a given amount of time to complete adequately, but given more time could be completed exceptionally. Over the course of a large project, quality can have a significant impact on time and cost (or vice versa). (Joslin and Muller, 2016)

2.5 The Relationship between Project Manager Competencies and Project Success:

Ionata (2006) have studied the relationship between personality, leadership style, and social power bases on the career success of project managers. While Alfi, (2002) studied the relationship between project managers' tenure, education, training, experience, and project managers' success. Moreover of related studies; Coleman (2014) studied the relationship between project managers' competence, professional experience, and education on career success, and Brown, et. al. (2007) investigated the relationship between human capital and time performance

in project management and finally of the sample historical related studies, there is Dvir, et. al. (2006) studied the relationship between project managers' personality, project types, and project success.

Based on that, this study is proposed to study The Impact of Project Managers' Competencies (Skills, Knowledge and Experience) on Project's success (Time, cost and scope/Quality).

2.6 Previous Studies

The 'History of Understanding critical competencies in project-based organizations followed by sections on 'Project Failure and Success' and 'Project Manager competencies' and an attempt to help the reader gain a basic understanding of the background of the project success factor for project-based organization. The following Thirty previous studies have been chosen among the others, because they focus on the most factors that this research needs to analysis in order to link and explain the effect of the project manager's selected competencies on the project overall success dimensions.

Lei and Skitmore (2004) study titles**: "project management competencies: a survey of perspectives from project managers in south east queens land**" found was designed to capture the 'real world' experiences and skills of current practicing project managers, and investigate the most important project management skills that a project manager must possess, and obtain any additional skills and/or issues that a project manager should possess and be aware of in the twenty-first century.

In terms of project management skills, it was found that the ability to communicate, ability to meet project objectives and make decisions are the most

important skills needed. The biggest gap between skills needed and skills possessed is in communication. The issues and skills that a project manager should be aware of and possess in the foreseeable future were found to comprise industrial relations, workplace health and safety, environmental issues, adaptability/ innovative/ flexibility, stakeholders management skill, coaching/transfer of knowledge skill, client related skill, networking skill and business skill.

Petter and Vaishnavi (2008) study titled: **"Facilitating experience reuse among software project managers."** concluded that although project managers are trained in project management methodologies and project management tools, too many projects across many industries continue to fail. This used a worldwide online survey methodology for about 340 project based organization was used. The result of this study concluded that management must ensure that the human factor in project management is understood, and realized, and this can only be done when focus is given to how the team is being developed, from the start of the project, and not just based on the technical outcomes that are expected.

Nesbit (2009) have prepared a research that titled: **"Project Manager Skills: for Employability in Information Technology"** was to explore and analyze the additional skills that project managers require that go beyond technical project management skills to enable them to be successful. The above mentioned additional skills are made up of people skills, leadership skills, the understanding of the functioning of teams, and the understanding of the political environment of the project and are identified from the literature. These additional skills are compared with the characteristics that were included in advertisements for 107 project management positions in the New Zealand information technology sector that were advertised across January and February 2009.

It was concluded that the additional characteristics are represented in the advertisements for project managers in the New Zealand information technology sector. Further to this it was also concluded that the level of importance of the different aspects of these characteristics could be more conclusively determined by researching the selection criteria that is used to select new project managers, as opposed to the characteristics that are found in advertisements for project management roles. The results of this study point to the importance of these additional people and managements skills being covered in tertiary education qualifications that are in subjects related to information technology.

Langer, et. al. (2008) had discussed what skills do project managers (PMs) need, and how do these skills impact project success in IT outsourcing? In a study titled with **"Project managers' skills and project success in IT outsourcing"** that was prepared to identify what factors impact IT project outcomes, such as costs and client satisfaction, given the project characteristics and PM's hard and soft skills. They examined data collected from a field study conducted at a major IT service provider in India. Their results suggest that while hard skills such as technical or domain expertise may be essential in a PM, soft skills, such as tacit knowledge of organizational culture and clients, are more important for project success. The results are robust to different specifications.

Geoghegan and Dulewicz (2008) study titled: **"Do project managers' leadership competencies contribute to project success?"** they explored the following hypothesis: There is a statistically significant relationship between a project manager's leadership competencies and project success. Two proven questionnaires, the leadership dimensions questionnaire (LDQ) and the project success questionnaire (PSQ), were used to gather data from 52 project managers

and project sponsors from a financial services company in the United Kingdom. The results from the LDQ and PSQ are presented in this article. A factor analysis of PSQ revealed three independent factors: usability, project delivery, and value of output to clients. The last factor is not related to project leadership or management, so the article concentrates on correlations between the other two factors and project leadership.

Eight separate leadership dimensions were found to be statistically significantly related to performance, so the hypothesis was largely supported. Identifying such relationships provides managers with guidance on possible selection and project improvement models, whereby increased capability in leadership dimensions can lead to increased success in project management.

Aretoulis, et. al. (2010) study titled: **"Project managers and designers: Required or enabling cognitive skills and personality characteristics"** discussed the personality characteristics, cognitive abilities and body of knowledge that synthesize the profile of successful project managers and Designers which determined the principal characteristics and skills which enable engineers in the construction industry to excel either as project managers or as designers. Our hypothesis suggests that personality characteristics and cognitive abilities could potentially function as prerequisites or enablers in a career path.

Behavioral characteristics and skills are identified through a series of focus groups' questionnaire surveys. Statistical analysis of the answers highlight personality characteristics and cognitive abilities. The results are then compared to findings from literature. Finally, appropriate psychometric tests are proposed in order to quantify these characteristics and skills. This methodology could

standardize the selection procedures and implement similar approaches in improving and managing human resources in Greek construction industry.

Al Shaiba (2011) study titled: **"Competency and Role Path from Being Project Manager, to Program Manager, to Portfolio Manager"** which aimed at exploring the list of required competencies and main responsibilities of project, program and portfolio managers' roles and identifying the relationships between the roles in regards to career path progression. To fulfill this aim, extensive literature review in the fields of project, program and portfolio management was undertaken from which the conceptual framework was derived and verification was done through the empirical research.

The research was based on qualitative research method that followed case study approach using semi-structured interview as data collection tool with selected respondents from one of the government organizations responsible for transportation infrastructure in Dubai in the United Arab Emirates. For confidentiality reasons the organization will be called AB throughout the research. The research was conducted according to an opportunity found in AB, which was the organization the researcher worked in.

Patanakul (2011) study titled: **"Project manager assignment and its impact on multiple project management effectiveness"** investigated that Project managers should not be assigned solely on experience and past successes. Furthers that although the decision to assign a project is inherently strategic in nature, yet very important, there is still a lack of research pertaining to important factors on how to assign project managers. The methodology that was used is a analyzing a case study from historical data based for project based organization.

It concluded the assigning the proper project manager could present the organization with a challenge, regardless of the perceived impact assigning the project manager places on the organization as a whole.

Dillon, et. al. (2011) study titled: **"The Identification of IT Project Manager Competencies: A Grounded Theory Approach".** Explained that the eventual success of a project may be at risk if certain competences are either not present or not applied appropriately. Utilizing the grounded theory methodology and behavioral event interviews this research seeks to identify the key competencies of a project manager when dealing with critical project situations. Interviews with 10 IT project managers with varying levels of experience uncovered a number of competencies, some of which have not be reported elsewhere or are potentially more complex than might have been previously considered. Being able to manage multiple modes of communication emerged as an important part of the project managers' role and those that communicated the most, appeared to manage their projects in a more positive manner overall. Knowing when to involve higher authorities in order to get cooperation from others also emerged as an important issue. Finally, it was observed that inexperienced project managers were just as likely to demonstrate competencies as those with extensive experience.

Baidoo, et. al. (2011) study titled with **"Key competencies for global project managers: a cross cultural study of the UK and India"** used Hofstede's national culture dimensions to investigate differences in project management skills across nations. Specifically, they reviewed job postings to identify the key soft skill competencies of project managers from global perspectives using data from UK and India. The results indicate that national culture influences the project

managers' soft skills required by organizations when implementing information systems. Further, the results show that there is no difference in terms of requirements for project management certification and personal characteristics across the two nations. However, India requires a more advanced level education than the UK and the UK requires more team skills than India.

Nesbit and Martin (2011) a study titled**: "The interdisciplinary nature of the skills needed by project managers"**. This study was to explore and analyze the additional skills that are transferrable across different sectors, which project managers require and that go beyond technical project management skills to enable them to be successful in what is becoming an increasingly interdisciplinary role.

The conclusions highlight that the project management role requires a range of non- technical project management skills and characteristics to enable project management to be carried out successfully. These non- technical project management skills and characteristics include the ability to build relationships with stakeholders; possessing formal project management certification; understanding the creation and functioning of project teams; understanding the political environment that the project exists in; the ability to work in a team; possessing leadership and management skills; possessing interpersonal and communication skills and possessing a strategic orientation.

This research provides a basis for a further study involving in-depth interviews with project managers from the information technology sector with the aim of highlighting specific projects where these additional skills have been vital to the success of these projects. Issues surrounding the political environment of the project from the perspective of different genders; the importance interpersonal

and communication skills along with team work for lesser experienced project managers; and the importance of project manager certification are also identified as areas for further study.

Sunindijo and Zou (2011) study titled: **"CHPT construct: essential skills for construction project managers"** examined 16 previous studies on project manager skills to propose a set of skills that is applicable in the construction industry. It is argued that four skills, namely conceptual, human, political, and technical skill (CHPT construct) are essential for construction project managers to perform their job. This research discusses components that form each skill construct and why they are essential for construction project managers. The key contribution of this research is the inclusion of political skill as one of essential skills for construction project managers.

Furthermore, this research should help construction project managers to be aware of essential skills that they need to possess to improve their performance. Finally, a theoretical framework is developed to demonstrate the complexity of project manager's tasks and the CHPT construct. The framework provides a sound foundation for future studies that focus on project manager skills.

Dillon, et. al. (2011) study titled: **"The Identification of IT Project Manager Competencies: A Grounded Theory Approach"** stated that a good project manager needs to demonstrate a range of competencies during the course of an IT project. This study used the Interviews methodology with 10 IT project managers with varying levels of experience uncovered a number of competencies, some of which have not be reported elsewhere or are potentially more complex than might have been previously considered. This study concluded that

inexperienced project managers were just as likely to demonstrate competencies as those with extensive experience.

Omidvar, et. al. (2011b) study titled: "**E-Portfolio Role to Enhance Project Managers' Competencies**" aimed to introduce a new online educational method to support project managers to improve their competencies. Based on authors' experiences and survey, e-portfolio has been chosen as a newest online learning method to support project managers' competencies. E-portfolio as a tool can be used in both online and offline mode. The questionnaire distributed among professionals in senior

Executive level, manager level, and senior manager level, and also five industry sectors: Accounting/Finance, Building/Construction, Engineering, Admin/Human Resource and Information Technology. The result of this paper is a proposed framework that can be used for designing new portfolios for project managers learning purposes. In the proposed framework for enhancing project managers' person-related competencies, job related competencies, and also contextual competencies, e-portfolio supports such as knowledge sharing, stimulated virtual software, educational multimedia software, online standard accessibility, educational software, online updated.

Porarinsdottir, (2012) study titled:" **The importance of interpersonal skills training for future project managers**". Showed the importance of interpersonal skills is of growing emphasis in the field of project management as supported by the view of authors and scholars in this paper. The focus has been on technical skills but a balance is now needed as the project manager has to facilitate his team members in a complex, dynamic project environment. The project

manager needs knowledge regarding interpersonal skills, and to train his skills according to the growing emphasis in the project management area.

In this context different views are discussed, for example the vitality of the proper knowledge of oneself and the lacking of training opportunities. This study concerns the usefulness of 32 hours interpersonal-competence-training, at the Project teams and group dynamics course at the MPM-program at Reykjavík University. The results show behavioral changes four months after the course. There seems to be a trend in others (360° evaluation) noticing behavioral changes rather than the student himself. This needs to be studied further.

Narh (2013) study titled: **"Competencies of An Effective Project Manager"** This paper proposed a possible relation amongst the elements of these leadership competencies. Technical competencies, in conjunction with the Project Management Book of Knowledge (PMBoK), include scope, scheduling, risk, health and safety, communication, information, procurement management, value addition, and the management of the iron triangle of cost time and quality. This study used the interviewing methodology with hundreds of project managers. From these analyses, the paper summed up the key competencies of an effective project manager and briefly explains the relevance of each competence in project management.

Todorovic, et. al. (2015) study titled: **"Project success analysis framework: A knowledge-based approach in project management".** Defined the contribution of project success analysis framework to knowledge management in project environment. The data was gathered from 103 project managers in different industries in Serbia during 2013. Research results have confirmed that project success analysis, presented through the definition of critical success

factors, key performance indicators and performance-measuring process has a very positive influence on knowledge acquisition and transfer in project environment.

Zhang, et. al. (2013) study titled**:" Identification and evaluation of the key social competencies for Chinese construction project managers"** has adopted a well-established competency model from human resource management theories as a basis for the theoretical framework to examine the social competencies of construction project managers. This led to the development of a model via the use of a structural equation modelling approach. Four dimensions of social competencies for construction project managers were identified, i.e. working with others, stakeholder management, leading others, and social awareness.

Attention to these attributes will help construction project managers to develop their social competencies, and could contribute towards a better performance in their workplace, which will in turn improve the performance of the whole organization. Implications of adopting this approach were also discussed.

Cserhati and Szabo (2013) study titled: **"The relationship between success criteria and success factors in organizational event projects".** Presented the development and investigation of the attributes of the success criteria and factors of organizational event projects, as well as an analysis of the relationship between the criteria and factor areas. The study was based on a questionnaire survey of world and European championships.

The findings of the study were of interest because they distinguish the success factors that represent relationship orientation and task focus. An analysis

of the correlations suggested that relationship-oriented success factors, such as communication, co-operation and project leadership, play a crucial role in carrying out successful organizational event projects.

Wiangnak and Lekcharoen (2014) a study titled: **"The Causal Relationship Model of Project Managers'** Competencies Influences: Efficiency of ICT Project Management". It was to develop and validate a causal relationship between project managers' competencies and efficiency of project management. They found that many papers have discussed the competency of project managers, but they could not found any papers said about the causal relationship model between project managers' competencies and efficiency of project management in Thailand. The model consisted of four latent variables: knowledge areas, technical and managerial skill, personal attributes, and efficiency of project management. The survey sample consisted of 218 project managers in companies under the ICT (Thailand) industry.

Thus, they found that: (1) variables with a statistically significant direct influence on the efficiency of project management were knowledge areas, technical and managerial skill and personal attributes, and (2) project managers' competencies were positively correlated and affected efficiency of project management. Implications of the findings are discussed and further studies are suggested.

Saade, et. al. (2015) study titled: "**Factors of Project Manager Success**" Seeked to analyze the project success factors related to project managers' traits. The context of the research entails a 'United Nations' type of organization. Critical success factors from previous recent studies were adopted for this research. Nineteen factors were adopted and a survey methodology approach was followed.

The findings of this study indicated that the capacity for a project manager to communicate and lobby for the project to create and sustain positive perceptions,

Cech and Chadt (2015) study titled: "**Project Manager and his/hers Competencies**" discussed that competencies of a project manager are formed by a set of knowledge, skills, related experience, and ways of behavior and attitudes. It is a way by which a project manager asserts his/her own professional knowledge to terminate a project successfully. The methodology was by using a survey that distributed to around 200 project managers. The result showed that high performance competencies enable the project managers to manage effectively in contemporary turbulent environment.

Fedida and Missonier (2015) study titled: **"The project manager cannot be a hero anymore! Understanding critical competencies in project-based organizations from a multilevel approach",** focused on improving the understanding of critical competencies in project-based organizations (PBOs) from a multilevel approach. The study were performed case studies of four PBOs (IBM, Hewlett-Packard, Arkopharma, and Temex) operating in different sectors and reveal the relations that unite the three levels of critical competencies. The study recommended that both practitioners and current academic researchers stop looking for the perfect, "ideal" project manager who would possess all of the necessary critical competencies for projects.

Besteiro, et. al. (2015) study titled: **"Success Factors in Project Management",** indicated the variables that are responsible for the success of project management. The Correspondence Analysis selected the most important variables to manage projects, and the set of variables was evaluated by 28 project

managers, who, through a questionnaire (survey) validated the most important and those that apply to most medium and large companies. The result showed that several factors influence the performance of a design; however, some factors may be related to the possibility of success.

Al Kazaz (2016) study title: **"The Impact of Managers' Leadership Skills on Construction Project Performance in Dubai"** aimed to investigate the impact of project managers' leadership skills on the construction project's performance in Dubai. A descriptive and an explorative mixed approach were used in this research to investigate practical experiences of professionals working within the industry. A questionnaire was conducted amongst employees of two reputed construction organizations to demonstrate their views in regards to leadership skills. A semi-structured open-ended interview was also conducted with four senior project managers working for the Dubai construction field to identify the key elements of effective leaders and clarify the impact of leadership.

The results revealed that leadership skills are a major factor that differentiates between effective leaders and managers. Cultural awareness of any member working within the Dubai construction industry proposed to be a key factor in facilitating success. Also, effective leadership is highly attached to peoples' life and the quality of relations developed by the leader. In summary, there are different opinions about effective leadership and the convergence point among these opinions is people oriented and accommodated with the surrounding environment as a key factor for success.

Joslin and Muller (2016) study titled: **"The relationship between project governance and project success"** looked at the relationship between project governance and project success from an agency theory and stewardship theory

perspective. A cross-sectional, worldwide online survey yielded 254 usable responses. Factor and regression analyses indicated that project success correlates with increasing stakeholder orientation of the parent organization, while the types of control mechanisms do not correlate with project success. Results support the importance of stewardship approaches in the context of successful projects.

2.7 Expected Contributions of the Current Study as Compared with Previous Studies:

1- **Project manager's competencies concept:** this study will increase awareness about the role of project manager's competencies on the project success.

2- **Purpose**: Most of the previous research works were conducted to measure and manage the relationship of one or two competencies of the project manager with the project success in industrial or production fields. Few studies were carried out to study the effect of the project manager's competencies elements on the project success factor.

3- **Environment**: Most previous studies have been carried out in different countries outside the Arab region. The current study will be carried out in Jordan, as one of the Arab region countries.

4- **Industry**: Very few researches about project manager's competencies carried out about construction industry. The current research is dedicated to educational and training industry only.

5- **Population**: Most all previous researches considered public shareholders organizations that were listed in the stock markets, while the current study covered both public, private shareholders and international organizations (NGOs Project).

6- **Comparison**: The research results of this work with the results of previous studies mentioned earlier to highlight similarities and differences that might be there.

Chapter Three

Study Methodology (Methods and Procedures)

3.1. Study approach and Design

This chapter clarifies the methodology used in surveying project managers and project coordinators from the companies chosen as the sample for this research. It starts with literature review and experts' interviews to improve the currently used measurement model and explore the competencies profile of the Jordanian project Organizations. Then, a panel of judges will be conducted to confirm the items to be included in the questionnaire will be carried out. A questionnaire comprising three parts (demographics, scale for evaluating the project managers' competencies, and scale for project success evaluation) was constructed to collect the needed data, while Statistical Package for Social Sciences (SPSS) software was used to investigate the effect between Project Manager Competencies and Jordanian Project success.

3.2 Study Population, Sample and Unit of Analysis:

The research surveyed the project managers working for 39 Jordanian organizations for project management registered in Amman Chamber of Commerce. Two of those companies were currently out of business and did not have the personnel needed to fill out the questionnaire, four of them refused to participate in the research due to either privacy issues, or the fact that their personnel have a great work load currently. This leaves 33 companies that listed in Appendix B with 161 pervious and current managers for project in different sizes to which the questionnaires administered.

This research will survey entire population (Heidemann, et. al., 2008; Sutherland, et. al., 2004), which negate the need for sampling. The study targeted

the 33 Jordanian companies for project management. The sampling unit includes both project managers and project coordinators in the selected companies.

Data Sources:

To actualize the current study, two types of data has been used: primary and secondary. Secondary data has been collected from previous literature such as: books, journals, magazines, thesis, dissertations, annual reports and internet. While, primary data is collected via questionnaire, which tailored for this study.

3.3 Study Tool:

To achieve the purpose of this study, a questionnaire was used as the main tool to collect the data. The questionnaire was built based on literature review and developed through panel of judge committee.

3.3.1 The Questionnaire:

Initial items to measure various constructs was developed depending on prior researches. The questionnaire was designed and developed in contrast with hypotheses and research model. Then the questionnaire was validated through expert interviews and a panel of judges.

Questionnaire Variables:

The questionnaire is composed from three parts as follows:

First, the demographic part, which includes the following dimensions: age, gender, education, position, and project size. Second, independent variables (Project manager's competencies) which includes three sub-variables (skills, knowledge and experience) each was measured by 7 paragraphs. Third, dependent variable **(Project Success) includes three dimensions** (Cost, Time and Quality), each measured by 4 paragraphs.

All variables is measured by five-point Likert-type scale to tap into the managers' perceptions, ranging from value 1 (strongly disagree) to value 5 (strongly agree) used throughout the questionnaire.

3.4 Data Collection and Statistical Analysis

To fulfill the purpose of the current research 200 questionnaires were distributed, and only 160 were returned, leading to 80% response rate. Out of that 33 questionnaires were filled by project coordinators, and 127 were filled by project managers. After checking the filled questionnaires, all of them found suitable and coded against SPSS 20 for further analysis. Before carrying out further analysis normality, validity and reliability of the data have been checked as follows:

3.4.1 Normality:

Kolmogorov-Smirnov Test has been used to test data normal distribution. If the significance of Kolmogorov-Smirnov is more than 5%, then normality is assumed. Table (3.1) shows that the data are normally distributed, since the value of significance for all variables are more than 5%. NB: cost, time and quality are dimensions not sub-variables.

Table (3.1) One-Sample Kolmogorov-Smirnov Test

No	Variable	Kolmogorov-Smirnov Z	Sig.
1	Skills	1.003	0.267
2	Knowledge	1.238	0.093
3	Experience	1.023	0.246
4	**Competencies**	0.894	0.401
5	Cost	1.366	0.048
6	Time	1.607	0.011
7	Quality	1.646	0.009
8	**Project Success**	1.210	0.107

3.4.2 Validity

Zikmund (2003, p.302) has defined validity as "The ability of scale or measuring instrument to measure what it is intended to measure". Different procedures have been taken to guarantee the validity of this research.

First, literature review was used to assure content validity. Second, panel of judge was used to confirm face validity. Finally, Pearson Principal Component Factor analysis was used to confirm the construct validity of the variables. Table (3.2) shows that the loading of variables within their groups are more than 95%.

Table (3.2) Pearson Principal Component Factor Analysis for Variables.

No	Variable	Factor 1
1	Skills	0.985
2	Knowledge	0.931
3	Experience	0.984
4	**Competencies**	
5	Cost	0.947
6	Time	0.920
7	Quality	0.965
8	**Project Success**	

3.4.3 Reliability

According to Zikmund (2003, p.300) the definition of reliability is "The degree to which measures are free from errors and therefore yield consistent results".

Cronbach's alpha is a coefficient that is used to measure reliability or internal consistency of items; it indicates how closely the items are related to each other, and how free they are from bias (Sekaran and Bougie, 2009). If Cronbach's alpha value is more than 60% for all variables then reliability is assumed. Table

(3.3) shows that Cronbach's Alpha coefficients for all variables are more than 60%, therefore reliability is assumed. (Tavakol and Dennick, 2011).

Table 0(3.3) Cronbach's Alpha coefficient

No	Variable	N of Items	Cronbach's Alpha
1	Skills	7	0.844
2	Knowledge	7	0.787
3	Experience	7	0.845
4	**Competencies**	**3**	**0.706**
5	Cost	4	0.965
6	Time	4	0.661
7	Quality	4	0.635
8	**Project Success**	**3**	**0.706**

3.5 Respondents' Demographic Description:

Demographic analysis shows that the most frequent age group in the sample was the (30 – less than 39) age group with 55% frequency. The second most frequent age group was the (40 – less than 49) age group with 22% frequency, followed by the age group (50 years and older) with 2.5% frequency, leaving the least frequent age group (25 - 29) with a frequency of 20.5% as shown in table (3.4).

The previous findings make sense, since 79.5% of the sample was project managers, who are older than project coordinators, while only 20.5% of the sample was project coordinators, and project managers are usually older in order to have the experience needed for this position gained through the years.

Table 0(3.4) Data Analysis (Age)

Age	Frequency	Percent
25 – 29	33	20.6
30 – 39	88	55.0
40 – 49	35	21.9
50 years and older	4	2.5
Total	160	100.0

Gender: Most of the respondents are males with 109 (68%) while female rated 51 (32%). This indicates that most of the Project managers in Jordan are males; due the traditions and culture such as the ability of stay overnight at camps and project field which is normally located outside Amman if it targeted Syrian people or locals who affected by the neighborhood crises.

Table (3.5) Data Analysis Gender

Gender	Frequency	Percent
Male	109	68.1
Female	51	31.9
Total	160	100.0

Position: This questionnaire of this research was filled out by 160 respondents in total; 127 of them were project managers (79.5%% of the sample), while project Coordinators were 33 (20.5% of the sample).

Table 0(3.6) Data Analysis - Position

Position	Frequency	Percent
Project Manager	127	79.4
Project Coordinator	33	20.6
Total	160	100.0

Education: Most of the respondents were holding the BSc degree 91 (57%), the master degree 49 (30.5%), then diploma 12 (7.5%) and finally the PhD 8 (5%).

Table (3.7) Data Analysis - Education

Education	Frequency	Percent
Bachelor	91	56.9
Postgraduate diploma	12	7.5
Master Degree	49	30.6
PHD	8	5.0
Total	160	100.0

The questionnaire of this research inquired about the approximate size of the project on which the evaluation is to be based, in terms of its relative cost and complexity. The evaluation of the approximate size of the project has been left to

the project manager's judgment on how big the project is compared to the other construction projects in Jordan, since evaluating projects on either their budgets or complexity only can be considered unfair as some projects might have a huge budget but a low complexity, and vice versa. It was found that most of the projects evaluated are of the medium constituting a percentage of 51.9% of the total sample, followed by the large projects category with a 23.1% as presented in table (3.8).

Finally, with the category of very large projects 5.6%. This means that a large portion of the projects evaluated are either Medium or large, which indicates that the results of this research were based mainly on projects where the practices of project management are usually more sophisticated.

Table (3.8) Data Analysis - Project Size

Size	Frequency	Percent
Small	31	19.4
Intermediate	83	51.9
Large	37	23.1
Very Large	9	5.6
Total	160	100.0

The last part of the demographics section asked project managers about their overall experience as project managers to understand the level of their experience and how that might influence their practices. Project coordinators were asked about the duration of the project on which they have worked with the project manager to be evaluated to understand whether their evaluations were based on short experiences with the project manager, or long periods of work and more reliable experience with the project manager.

Results showed that The majority of the respondents' experiences were having above 5 – 10 years of experience 88 (55%) then those with above 10 –15

years of experience 35 (21.9%), followed by less or equal than 5 years of experience 33 (20.6%) and more than 15 years of experience 4 (2.5%) as shown in table (3.9).

Table (3.9) Data Analysis - Experience

Experience	Frequency	Percent
Less than 5 year	33	20.6
5 year – 9 years	88	55.0
10 years – 15 years	35	21.9
More than 15 years	4	2.5
Total	160	100.0

Chapter 4

Data Analysis

4.1 Introduction

In this chapter contains three sections. Descriptive analysis of the data, correlation between independent and dependent variables, and hypothesis testing.

4.2 Study Variables Analysis (Descriptive Analysis):

Descriptive analysis includes mean, standard deviation, t-value, importance and rank. The importance is divided into three levels as follows:

The importance is calculated based on the following criteria: 5-1/3 = 1.33 (interval) as follows:

1- Low degree: between 1 and 2.33 (1 + 1.33= 2.33).

2- Medium degree: lies between 2.34 and 3.66 (2.33+ 1.33 =2.34-3.66).

3- High degree: lies between: 3.67 up to 5.

While t-value is used to confirm the level of implementation.

Independent Variables (Project Managers' Competencies):

Table (4.1) shows that the means of the Project Managers' Competencies variables are ranged between 2.550 to 2.804 with standard deviation ranges between "0.728 to 0.816". It means that there is a semi agreement among respondent about medium importance of the Project Managers' Competencies variables. The average mean of Project Managers' Competencies variables is 2.717 with standard deviation 0.761, which also mean there is a medium importance for Project Managers' Competencies. However, according to t-value the companies are not implemented anyone of the Project Managers'

Competencies, where t-value is less than tabulated t-value (-4.707<1.96). Table shows that experience has rated the highest importance, followed by skills and finally knowledge.

Table (4. 1) Mean, Standard Deviation, Importance and Ranking of Project Manager's competencies Variables

Variable	Mean	St. D.	t-Value	Sig.	Importance	Rank
Skills	2.797	0.813	-3.155-	0.002	Medium	2
Knowledge	2.550	0.728	-7.814-	0.000	Medium	3
Experience	2.804	0.816	-3.044-	0.003	Medium	1
Project Manager Competencies	**2.717**	**0.761**	**-4.707-**	**0.000**	Medium	

t-value Tabulated=1.96.

Skills:

Table (4.2) shows that the means of the respondents' perception about the degree of the implementation of skills items are ranging from 2.22 to 3.26 with standard deviation that ranges from 1.079 to 1.207 such results indicate that there is semi-agreement on low to medium importance of skills items.

Table (4. 2) Mean, Standard Deviation, Importance and Ranking of the Skills Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
The project manager communicates with their teams frequently.	3.14	1.207	1.506	0.134	Medium	1
Encourages creative ideas.	2.20	1.103	-9.171-	0.000	Low	7
Provides direction to inspire others.	3.14	1.202	1.513	0.132	Medium	6
Uses creative thinking process to solve problems.	3.26	1.079	3.078	0.002	Medium	**4**
Tracks his weaknesses and strengths	2.36	1.118	-7.284-	0.000	Medium	5
Preforms consistently in a range of situations under pressure and adapts behavior appropriately.	3.26	1.077	3.009	0.003	Medium	3
Shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.	2.22	1.120	-8.826-	0.000	Low	2
Skills	**2.80**	**0.812**	**-3.155-**	**0.002**	**Medium**	

t-Tabulated=1.96.

The average mean of the total skills variable items is 2.79 with standard deviation 0.81, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the skills variable, where (t=-3.155<1.96).

Knowledge:

Table (4.3) shows that the means of the respondents' perception about the degree of the implementation of knowledge items are ranging from 2.19 to 3.14 with standard deviation that ranges from .995 to 1.131 such results indicate that there is semi-agreement on low to medium importance of knowledge items. The average mean of the total knowledge variable items is 2.55 with standard deviation 0.758, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the knowledge variable, where (t=-7.814<1.96).

Table (4. 3) Mean, Standard Deviation, Importance and Ranking of the Knowledge Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
The project manager Investigates facts	2.44	0.995	-7.152-	0.000	Medium	4
Makes judgments based on reasonable assumptions, and is aware of the impact of such assumptions	3.14	1.104	1.647	0.101	Medium	1
The project manager sets objectives based on the overall strategic plan.	2.19	1.102	-9.257-	0.000	Low	7
Identifies the positives and negatives of ideas	2.63	1.068	-4.440-	0.000	Medium	3
Identifies opportunities and threats, and is sensitive to stakeholder's needs	2.38	1.131	-6.988-	0.000	Medium	**5**
Has sound priorities for future work while being able to expect the impact of external and internal changes on the vision	2.74	1.113	-2.983-	0.003	Medium	2
Has a clear vision and imagination for the future direction of the organization	2.34	1.176	-7.128-	0.000	Medium	6
Knowledge	**2.55**	**0.728**	**-7.814-**	**0.000**	**Medium**	

t-Tabulated=1.96.

Table (4.4) shows that the means of the respondents' perception about the degree of the implementation of experience items are ranging from 2.21 to 3.27 with standard deviation that ranges from 1.067 to 1.232 such results indicate that there is semi-agreement on low to medium importance of experience items. The average mean of the total experience variable items is 2.80 with standard deviation 0.816, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the experience variable, where (t=-3.044<1.96).

Table (4. 4) Mean, Standard Deviation, Importance and Ranking of the experience Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
Enthusiastic in communication, engages others and wins support	3.13	1.232	1.283	0.201	Medium	4
The project manager use mind mapping to map objectives and milestones.	2.21	1.101	-9.047-	0.000	Low	7
Organizes all resources and coordinates them efficiently and effectively.	3.14	1.191	1.526	0.129	Medium	3
Communicates instructions clearly to staff with communications tailored to the audience's interests.	3.26	1.067	3.112	0.002	Medium	2
Willing to make decisions involving significant risk to gain advantage.	2.38	1.131	-6.988-	0.000	Medium	5
Knows his team members' strengths and weaknesses and encourages them to take on challenging tasks	3.27	1.080	3.148	0.002	Medium	1
Invests time in developing others' competencies, and invests time and effort in coaching them	2.24	1.130	-8.536-	0.000	Medium	6
Experience	**2.80**	**0.816**	**-3.044-**	**0.003**	**High**	

t-Tabulated=1.96.

Dependent Variable (Project's Success):

Table (4.5) shows that the means of the Project Success variables are ranged between 2.609 to 2.750 with standard deviation ranges between "0.755 to 0.816". It means that there is a semi agreement among respondent about medium importance of the Project success variables. The average mean of Project success

variables is 2.750 with standard deviation 0.861, which also mean there is a medium importance for Project success. However, according to t-value the companies are not implemented anyone of the Project Managers' Competencies, where t-value is less than tabulated t-value (-4.611<1.96).

Table (4. 5) Mean, Standard Deviation, Importance and Ranking of Project Success Variables

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
Cost	2.609	0.755	-6.546-	0.000	Medium	3
Quality	2.647	.0803	-5.565-	0.000	Medium	2
Time	2.750	0.816	-3.878-	0.000	Medium	1
Project Success Practices	**2.669**	**0.747**	**-5.611-**	**0.000**	**Medium**	

t-Tabulated=1.96.

Cost:

Table (4.6) shows that the means of the respondents' perception about the degree of the implementation of cost items are ranging from 2.21 to 3.16 with standard deviation that ranges from 0.995 to 1.118 such results indicate that there is semi-agreement on low to medium importance of cost items.

Table (4. 6) Mean, Standard Deviation, Importance and Ranking of the Cost Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
There were no major with- cost change requests during the project	2.44	0.995	-7.070-	0.003	Medium	3
Project manager's experience helped to eliminate unnecessary resources.	3.16	1.096	1.803	0.000	Medium	1
The project was finished on or under budget	2.21	1.118	-8.909-	0.073	Low	4
The Project decreased the cost of some activities with no effect on quality.	2.63	1.074	-4.415-	0.000	Medium	2
Cost	**2.60**	**0.754**	**-6.546-**	**0.000**	**Medium**	

t-Tabulated=1.96.

The average mean of the total cost variable items is 2.60 with standard deviation 0.754, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the cost variable, where (t=-6.546<1.96).

Quality:

Table (4.7) shows that the means of the respondents' perception about the degree of the implementation of quality items are ranging from 2.34 to 3.13 with standard deviation that ranges from 1.112 to 1.224 such results indicate that there is semi-agreement on low to medium importance of quality items. The average mean of the total quality variable items is 2.64 with standard deviation 0.802, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the quality variable, where (t=-5.565<1.96).

Table (4. 7) Mean, Standard Deviation, Importance and Ranking of the Quality Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
The Project was handed upon the company's overall standards.	2.38	1.131	-6.988-	0.000	Medium	3
The project deliverables always fulfil the customer requirements	2.74	1.112	-2.916-	0.000	Medium	2
The project meets its business objectives	2.34	1.176	-7.128-	0.004	Medium	4
Setting alternative plans has reduced the unexpected risks possibility.	3.13	1.224	1.356	0.000	Medium	1
Quality	2.64	0.802	-5.565-	0.177	Medium	

t-Tabulated=1.96.

Time:

Table (4.8) shows that the means of the respondents' perception about the degree of the implementation of time items are ranging from 2.22 to 3.26 with standard deviation that ranges from 1.071 to 1.199 such results indicate that there is semi-agreement on low to medium importance of time items. The average mean of the total time variable items is 2.75 with standard deviation 0.815, which indicates that there is semi agreement on medium importance of this variable. Finally, the overall result indicates that the tested projects do not implement the time variable, where (t=-3.878<1.96).

Table (4. 8) Mean, Standard Deviation, Importance and Ranking of the time Items:

Items	Mean	St. D.	t-Value	Sig.	Importance	Rank
The project met most of the scheduled milestones	2.22	1.091	-9.056-	0.000	Low	4
The project was finished on time	3.15	1.199	1.583	0.000	Medium	2
The Project boosts the employees' abilities by helping to save time.	3.26	1.071	3.026	0.115	Medium	1
The critical tasks and delivery dates were not slipping.	2.38	1.109	-7.130-	0.003	Medium	3
Time	2.75	.815	-3.878-	0.000	Medium	

t-Tabulated=1.96.

4.3 Correlation between Variables

Bivariate Pearson correlation coefficient was used to test the relationships between independent variables, and between dependent dimensions and finally between independent variables and dependent variable. Table (4.9) shows that the relationships between independent variables are very strong, where r ranges between 0.852 and 0.999. The relationships between dependent dimensions are also strong to very strong, where r ranges between 0.781 and 0.898.

Table (4. 9) Bivariate Pearson's Correlation (r) Among Independent Variables, Dependent variables, and between Independent and Dependent Variables.

No.		1	2	3	4	5	6	7	8
1	Skills								
2	Knowledge	.854**							
3	Experience	.999**	.852**						
4	**PM Competencies**	.986**	.928**	.985**					
5	Cost	.888**	.936**	.886**	.932**				
6	Quality	.835**	.922**	.834**	.890**	.781**			
7	Time	.990**	.862**	.989**	.981**	.898**	.830**		
8	**Project Success**	.959**	.959**	.957**	.990**	.944**	.924**	.964**	

**. Correlation is significant at the 0.01 level (2-tailed).

Finally, the relationships between independent variables and dependent variable is very strong, where r ranges between 0.957 and 0.959, and the relationships between the total independent variables and dependent variable is very strong, where r equals 0.990.

4.4. Testing Study Hypothesis:

Before using multiple regressions the following assumptions should be fulfilled: Normality, validity, reliability, and correlation, then multi-colleanearity, independence of errors. Normality, validity, reliability, and correlation are already checked and assumed.

3.4.1 Normal Distribution (Histogram):

The histogram in the figure (2) shows that the data were normality distributed, since the residuals do not affect the normal distribution and errors are independent.

Figure (2) Normal Distribution (Histogram)
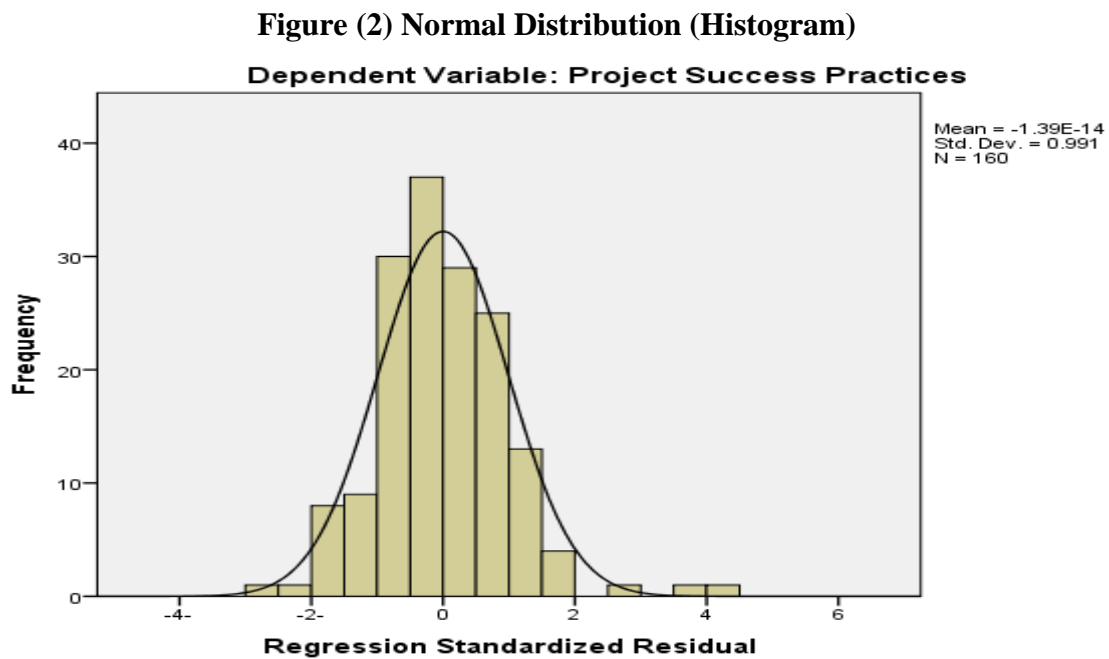
Linearity Test:

Figure (3) shows that the relationship between independent and dependent variables is linear relationship.

Figure (3) Linearity Test chart
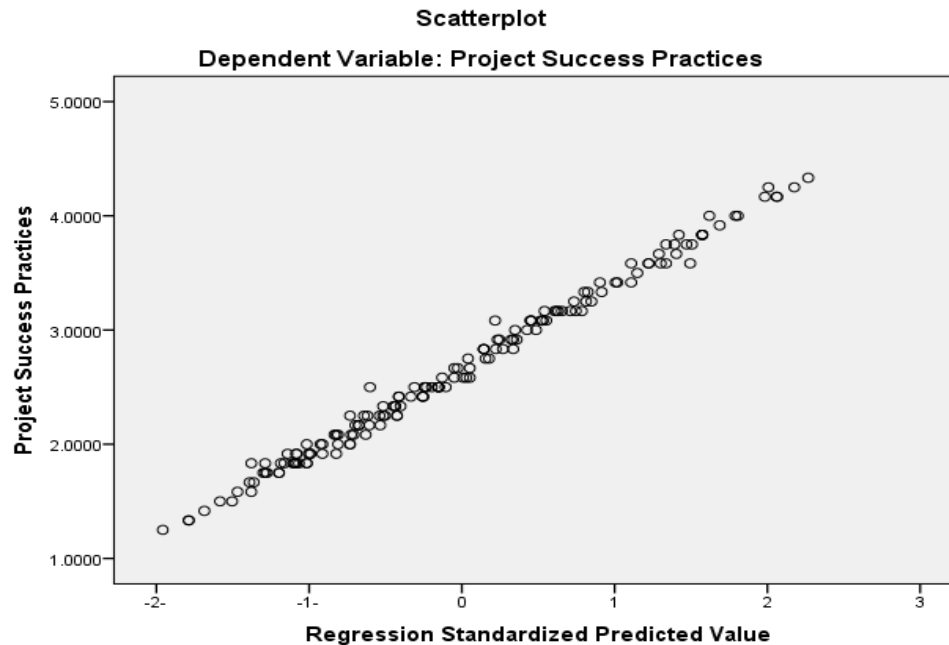
Durbin-Watson test used to ensure independence of errors. If Durbin-Watson test value is about 2 the model does not violate this assumption. While, VIF (Variance Inflation Factor) and tolerance are used to test multicollinearity. If VIF is less than 10 and tolerance is more than 0.05, the multicollinearity model does not violate this assumption.

Table (4.10) shows that Durbin Watson value is (d=1.609), which is around two which means that the residuals are not correlated with each other; therefore, the independence of errors is not violated. Table (4.10) result also shows that the VIF values are less than 10 and the tolerance values are more than 0.05 for knowledge only, while for other two variables the multicollinearity has been violated.

Table (4. 10) Multi-Collinearity Test for Main Hypothesis – Coefficients

Model		Collinearity Statistics		Durbin-Watson
		Tolerance	VIF	
1	(Constant)			
	Skills	0.002	495.918	
	Knowledge	0.269	3.712	1.609
	Experience	0.002	489.266	

3.4.2 The Main Hypothesis:

Multiple Regressions:

H$_{01}$: Project manager's competencies do not affect project success, at (α≤0.05)

R2 also indicates the fitness of the model (Sekaran 2003). Table (4.11) shows that when regressing the three independent variables of project competencies together against dependent variable Project's success. R^2 shows the fitness of the model for multiple regressions and explains the variance of independent variable on dependent variable. Since R^2 is 0.992% then the independent variable can explain 99.2% of variance on dependent variable, where (R^2=0.992, F=6507.896, Sig.=0.000). Therefore, the null hypothesis is rejected and the alternative is accepted which states "project manager's competencies affect project success, at (α≤0.05)"

Table (4. 11) Results of Multiple Regressions Analysis (ANOVAa): Project manager's competencies against project success.

Model	r	R^2	Adjusted R^2	F	Sig.
1	0.996[a]	0.992	0.992	6507.896	0.000[b]

Dependent Variable: Project Success.

3.4.3 Sub-Hypothesis:

H$_{01.1}$: Project manager's knowledge competency does not affect the project success, at (α≤0.05)

Table (4.12) shows that there is a positive direct effect of skills competencies on project success, since (Beta=0.355, t=2.236, Sig.=0.027<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the "project manager's knowledge competency affects the project success at ($\alpha \leq 0.05$)".

$H_{01.2}$: Project manager's skills competency does not affect the project success, at ($\alpha \leq 0.05$)

Table (4.12) shows that there is a positive direct effect of knowledge competency on project success, since (Beta=.520, t=37.875, sig.0.000, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the Project manager's skills competency don't affect the project success, at ($\alpha \leq 0.05$)

$H_{01.3}$: Project manager's experience competency don't affect the project success, at ($\alpha \leq 0.05$)

Table (4.12) shows that there is a non-significant effect of experience on project' success, since (Beta=0.160, t=1.012, Sig.0.313, p>0.05). Therefore, the null hypothesis is accepted which states "project manager's experience competency does not affect the project success, at ($\alpha \leq 0.05$)".

Table (4. 12) Results of Multiple Regressions Analysis (ANOVAa): Project managers' competencies against project success.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.012-	0.020		-.627-	0.531
	Skills	0.326	0.146	0.355	2.236	0.027
	Knowledge	0.533	0.014	0.520	37.875	0.000
	Experience	0.146	0.144	0.160	1.012	0.313

In summary

Result shows that the importance of Project Managers' Competencies is medium; Knowledge has rated the highest importance, followed by skills and finally experiences. Result also shows that the importance of Project Success is medium, time is most important followed by quality then cost.

Results shows that there is a strong relationship between Project Managers' Competencies variables, and strong relationships between Project Success variables, finally it shows that there is strong relationship between Project Managers' Competencies and Project Success.

Result shows that R^2 is 0.992% then the independent variable can explain 99.2% of variance on dependent variable. Therefore, the null hypothesis is rejected and the alternative is accepted which states "project manager's competencies affect project success, at ($\alpha \leq 0.05$)".

Chapter 5

Discussion and Recommendations

5.1 Results Discussion

In this section, the objectives of this research are discussed through the presentation of the results that are obtained and explored in the previous sections, in order to derive the recommendations and implications based on the findings of this research.

This research aimed to assess the impact of project managers' competencies on project's success, and to identify the main competencies of a project manager that are associated with successful projects in order to keep project managers alert to what competencies to develop, consequently, this may reflect on the performance of the teams working with them.

5.1.1 The project managers' competencies in Jordan

The overall means of each of the competency dimensions show that skills and experience competencies are higher than knowledge in the sample. The lowest mean was for the question about the project manager communicates with their teams frequently, which was justified by project managers in that they usually have so many responsibilities all at once, which leaves no guarantee of that commitment.

The second lowest mean was for the question asking about the project manager Encourages creative ideas. The third lowest mean was for the resource management question about the project manager provides direction to inspire others. However, that was justified by project managers by the lack of time to do so, and the transfer of this task to the operational manager or Human resources department at the company.

5.1.2 The Project Success

Project success seems to be of average performance in the cost and quality areas, while the time scored a high value. This was justified by project managers by deficiencies in the design or planning of the project before the commencement of work, which leads to exceeding the cost and time estimates determined before the project begins, even if the PM was very competent.

5.1.3 The impact of project managers' competencies on project's success.

The relationship was tested in the main hypothesis of this research via the application of the stepwise multiple regression test, and the results showed that the relationship between the competency level and the efficiency of the project manager is significant since the null hypothesis was rejected according to the test, and that 99.2% of the project success can be explained the project manager competency dimensions. This is in agreement with the results of research done in the field of project management (Muller and Turner, 2007)

The remaining might be explained by the organizational culture (Golec and Kahya, 2007), project planning, organizing and controlling the surrounding environment and the unanticipated changes that the project manager has to face (Thomas et al., 2008) and the acts of God which are outside the project manager's control (Serrador and Turner, 2014).

5.1.4 The competency dimensions that affect the project success the most

According to the simple regression test results conducted to test the sub-hypotheses, two of the dimensions have relationships with the project success in different levels as the first two null sub-hypotheses were rejected, confirming that

there is a statistically significant relationship between those dimensions and the project success.

The strongest dimension affecting efficiency as seen through the results of the stepwise multiple regression was the experience Competency dimension, followed by the skills Competency, while the Knowledge Competency dimension was found to have no effect, as shown earlier.

5.1.5 Project managers' perspective on what dimensions are more important.

Project managers expressed that experience competency are the most important, while knowledge are the least important as shown in previous chapter. This can be justified by the fact that most project managers managing the medium projects were trained the traditional way, and they were somewhat holding on to the traditional techniques of project management. The traditional techniques entail considering the emotional aspect in dealing with situations and problems as the least important in the face of immediate advantage for the project, while dedicating most of the efforts to develop strong experience competency rather than applying more than knowledge.

5.1.6 The difference between the perspectives of project managers and coordinators.

It is expected that project managers evaluating themselves will score more than the project coordinators working with them since humans tend to not see the flaws in their performance the way others can see them. The highest difference between the means of the two groups was in the skills competency part, where project coordinators did not consider their managers excelling at. Both groups however showed high consent on the knowledge and experience competencies.

5.2 Conclusions:

Result shows that the importance of Project Managers' Competencies is medium; experience has rated the highest importance, followed by skills and finally knowledge. Result also shows that the importance of Project Success is medium, time is most important followed by quality then cost.

Results shows that there is a strong relationship between Project Managers' Competencies variables, and strong relationships between Project Success variables, finally it shows that there is strong relationship between Project Managers' Competencies and Project Success.

5.3 Recommendations

As presented earlier, the relationship between the Project managers' competencies and the project success was found to be positive, emphasizing the importance of the competencies studied to the success of projects.

- The results show that the importance and implementation of both variables were weak. Results show that the relationship between project managers' competencies are very strong, between project's success elements very strong, and between project managers' competencies and project's success is also very strong.

- The relationship between the Project managers' competencies and the project success was found to be positive.

- The results also show that there is an impact for project managers' competencies on project's success; knowledge shows the highest impact followed by skills, while experience does not show a significant impact.

- It was noticed that skills competency from project managers' perspective were the weakest.

- There was a very low score in the empowering and developing aspects of the managerial competency part.

- Most of the projects which scored low on the time and budget constraints of efficiency justified the delays and the costly change requests

- Project managers were hesitant to give their subordinates the power to be innovative and to come up with new solutions to solve problems by themselves.

Further research is also recommended to investigate the relationship between the competency and project success in each industry other than construction, to understand if the effect of competency is evident in all industries or in some.

5.4 Practical Implications

Project managers' job is complicated and demanding, as it requires the project manager to constantly keep an eye on the different tasks being performed simultaneously in the non-construction project while dealing with a rather complicated combination of individuals working on the accomplishment of those tasks.

- The higher management department should evaluate their project managers' competencies to figure out what they are lacking off "I recommend Belbin team roles test for training requirements. This helps project managers to elevate their performance which reflects on projects' outcome.

- Organizations should also put a training agenda for both new and senior project managers that include developing the skills competency dimensions (Self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, and conscientiousness).

- The Organizations recruiting for a new generation of project managers should put the skill competency in the criteria for selecting candidates.

- Project managers should also pick their team members carefully and coach them properly, to make sure that those members are able to solve their problems independently and can be counted on.

- Proper design and planning for projects should be done as accurately as possible and involving.

- Project managers should give their subordinates the power to be innovative and to come up with new solutions to solve problems by themselves.

- I recommend to use the following project management IT systems:

  o ManageEngine ServiceDesk Plus is a completely web-based Help Desk and Asset Management Software. It offers an integrated package with Incident management(Trouble Ticketing).

  o Zoho Projects is the project management software from Zoho, a brand that enables 15 million users to work online. Businesses large and small, from every industry use the app to deliver great work on time.

The results of this research might be used to train project managers to develop the competencies they are lacking. This helps project managers to elevate their performance, and elevate the performance of their subordinates as well, which reflects on projects' outcome.

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Appendix (A) : The Questionnaire

بسم الله الرحمن الرحيم

Subject: the questionnaire for Project's success factors study in non-construction industry

Study titled:
"The Impact of Project Managers' Competencies on Project's success"

Dear Respondent,

This questionnaire aims to collect data for the purpose of scientific research as part of the requirements for completing the Master's thesis.

Please complete this questionnaire as accurately as possible. Your answers will be used as a baseline data for the intended research. Your answers will be treated with complete confidentiality. The questionnaire should only take 5-7 minutes to complete - you are only required to mark the box with your answer.

For further details or inquiries; please contact me at **Email:**Suhaib@ilgholding.com or **Phone**: +962797708080

Your assistance will be highly appreciated,

The aim of this research is to investigate how projects succeed or fail, but with no true understanding of the role the project manager plays with their interaction in this success of failure. The intent behind this study was to describe any effect that the project manager, who has responsibility for the Project Success and ultimate delivery of the project. The research surveyed the project managers and project coordinators in the 62 non- construction projects that been launched by 33 Jordanian organizations for project management registered in Amman Chamber of Commerce.

The questionnaire consists of three sections:

1. **Section One:** records general information
2. **Section Two:** includes three parts that are supposed to evaluate the competencies of the project manager.
3. **Section Three**: measures the efficiency aspects of the project success.

Best Regards

The First Section A
General Questions (To be answered by Project Managers)

Please check in the box which you believe describe you well.

1	**Respondent's Age**	□ 25 – 29 □ 30 – 39 □ 40 – 49 □ 50 years and older
2	**Respondent's Gender**	□ Male □ Female
3	**Respondent's position**	□ Project Manager □ Project coordinator
4	**Respondent's education level**	□ Bachelor □ Postgraduate diploma □ Master Degree □ PHD
5	**Size of the project on which you have worked with the PM** *(based on the project's budget)* **-** Small = less than 50k$ - Intermediate = 50k$ - 150k$ - Large = 150k$ - 300k$ - Very Large = more than 300k$	□ Small □ Intermediate □ Large □ Very Large
6	**Overall experience as a project manager**	□ Less than 5 year □ 5 year – 9 years □ 10 years – 15 years □ more than 15 years

The Second Section (Project Managers competencies)

Please check in the box which you believe describes to which degree the following statements are reflective of your project management practices (*reflecting the performance in the last or current project*):

No.	Skills	Strongly disagree	Disagree	Neither	Agree	Strongly agree
1.	The project manager communicates with their teams frequently.	1	2	3	4	5
2.	Encourages creative ideas.	1	2	3	4	5
3.	Provides direction to inspire others.	1	2	3	4	5
4.	Uses creative thinking process to solve problems.	1	2	3	4	5
5.	Tracks his weaknesses and strengths	1	2	3	4	5
6.	Preforms consistently in a range of situations under pressure and adapts behavior appropriately.	1	2	3	4	5
7.	Shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.	1	2	3	4	5
	Knowledge					
8.	The project manager Investigates facts	1	2	3	4	5
9.	Makes judgments based on reasonable assumptions, and is aware of the impact of such assumptions	1	2	3	4	5
10.	The project manager sets objectives based on the overall strategic plan.	1	2	3	4	5
11.	Identifies the positives and negatives of ideas	1	2	3	4	5
12.	Identifies opportunities and threats, and is sensitive to stakeholder's needs	1	2	3	4	5
13.	Has sound priorities for future work while being able to expect the impact of external and internal changes on the vision	1	2	3	4	5
14.	Has a clear vision and imagination for the future direction of the organization	1	2	3	4	5
	Experience					
15.	Enthusiastic in communication, engages others and wins support	1	2	3	4	5
16.	The project manager use mind mapping to map objectives and milestones.	1	2	3	4	5
17.	Organizes all resources and coordinates them efficiently and effectively.	1	2	3	4	5
18.	Communicates instructions clearly to staff with communications tailored to the audience's interests.	1	2	3	4	5
19.	Willing to make decisions involving significant risk to gain a business advantage.	1	2	3	4	5
20.	Knows his team members' strengths and weaknesses and encourages them to take on challenging tasks	1	2	3	4	5
21.	Invests time in developing others' competencies, and invests time and effort in coaching them	1	2	3	4	5

Third Section
Project Success Practice

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
	Cost					
22.	There were no major with- cost change requests during the project	1	2	3	4	5
23.	Project manager's experience helped to eliminate unnecessary resources.	1	2	3	4	5
24.	The project was finished on or under budget	1	2	3	4	5
25.	The Project decreased the cost of some activities with no effect on quality.	1	2	3	4	5
	Quality					
26.	The Project was handed upon the company's overall standards.	1	2	3	4	5
27.	The project deliverables always fulfil the customer requirements	1	2	3	4	5
28.	The project meets its business objectives	1	2	3	4	5
29.	Setting alternative plans has reduced the unexpected risks possibility.	1	2	3	4	5
	Time					
30.	The project met most of the scheduled milestones	1	2	3	4	5
31.	The project was finished on time	1	2	3	4	5
32.	The Project boosts the employees' abilities by helping to save time.	1	2	3	4	5
33.	The critical tasks and delivery dates were not slipping.	1	2	3	4	5

Please write your contact information if you want to receive the result of the research

Thank you for taking the time to complete this questionnaire.

Appendix (B): Research Population

اسم المنظمة	#
منظمة الشباب العالمية	1
منظمة لوياك – درب فرع الاردن	2
شركة القيادة المتكاملة للمشاريع	3
منظمة درستي	4
الصندوق الاردني الهاشمي	5
اكتد- شباب الكترون	6
يونيسف	7
صندوق الملك عبدالله	8
رين جوردن – الماراثون	9
قاده الغد– فرع الاردن	10
قاده الحياه– فرع عمان	11
برنامج ايبكي للاعمال الاردنية	12
منظمة الامم المتحدة / مشاريع عجلون	13
مؤسسة شارك	14
شركة اليد لادارة المشاريع	15
مؤسسه انهر	16
مؤسسة أجيال السلام	17
مؤسسة اساس النجاح الدائم	18
شبكة عين للابتكار	19
مؤسسة مينت لفرعها في الاردن	20
رؤيا أمل الدولية	21
شركة ريماس الدولية – عمان	22
شركة المنبر العالي للمشاريع التعليمية	23
مجموعة الحسيني اخوان	24
شركة زين للاتصالات	25
مؤسسة نهر الادرن	26
مدارس السنبلة الدولية	27
شركة التعليم النوعي للتدريب والتعليم	28
مجموعة الخالدي القابضة	29
مؤسسة طباشير لادارة المشاريع الصغيرة	30
بنك لبنان والمهجر – عمان	31
مجموعة أحمد لافي لادارة المشاريع	32
شركة الهدف الاسترالية – عمان	33

Appendix (C): Panel of Referees Committee.

No.	Name	Qualification	Organization
1	Dr. Ahmad Ali Saleh	Ph D business	Middle East University
2	Dr. Ghaleb Sweis	Professor of Civil Engineering	University of Jordan
3	Dr. Ghadir Siyam	Ph.D. Engineering Design	University of Cambridge
4	Dr. Omar Sakr	*Ph. D - Business*	University of Geneva
5	Dr. Mohammad Al-Ma'ita	Ph. D. management	Middle East University
6	Dr. Abdallah Abdallah	*Ph. D - Business*	The German Jordanian University
7	Dr. Morwan Elgasim	*Ph. D project management*	Manager at MTN Sudan
8	Dimah Barakat	PMP – PMI	Arab bank / Projects
9	Aia Abu ALHAJ	PMP S	Consolidated Energy and Economic Engineering
10	Hamzah Mohamed	PMP	AUE Education project central office

Appendix (D): SPSS Results

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	33	20.6	20.6	20.6
	2	88	55.0	55.0	75.6
Valid	3	35	21.9	21.9	97.5
	4	4	2.5	2.5	100.0
	Total	160	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	109	68.1	68.1	68.1
Valid	2	51	31.9	31.9	100.0
	Total	160	100.0	100.0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	127	79.4	79.4	79.4
Valid	2	33	20.6	20.6	100.0
	Total	160	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	91	56.9	56.9	56.9
	2	12	7.5	7.5	64.4
Valid	3	49	30.6	30.6	95.0
	4	8	5.0	5.0	100.0
	Total	160	100.0	100.0	

Company Size

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	31	19.4	19.4	19.4
	2	83	51.9	51.9	71.3
Valid	3	37	23.1	23.1	94.4
	4	9	5.6	5.6	100.0
	Total	160	100.0	100.0	

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	33	20.6	20.6	20.6
	2	88	55.0	55.0	75.6
Valid	3	35	21.9	21.9	97.5
	4	4	2.5	2.5	100.0
	Total	160	100.0	100.0	

Validity Factor Analysis:

Component Matrixᵃ

	Component
	1
Skills	.985
Knowledge	.931
Experience	.984

Component Matrixᵃ

	Component
	1
Cost	.947
Quality	.920
Time	.965

Reliability:

Reliability Statistics

Cronbach's Alpha	N of Items
.844	7

Reliability Statistics

Cronbach's Alpha	N of Items
.787	7

Reliability Statistics

Cronbach's Alpha	N of Items
.845	7

Independent Variables:

Reliability Statistics

Cronbach's Alpha	N of Items
.965	3

Reliability Statistics

Cronbach's Alpha	N of Items
.661	4

Reliability Statistics

Cronbach's Alpha	N of Items
.635	4

Reliability Statistics

Cronbach's Alpha	N of Items
.706	4

Dependent Variables:

Reliability Statistics

Cronbach's Alpha	N of Items
.938	3

Normality:

One-Sample Kolmogorov-Smirnov Test

	Skills	Knowledge	Experience	Project Manager Competencies	Cost	Quality	Time	Project Success Practices
Kolmogorov-Smirnov Z	1.003	1.238	1.023	.894	1.366	1.607	1.646	1.210
Asymp. Sig. (2-tailed)	.267	.093	.246	.401	.048	.011	.009	.107

a. Test distribution is Normal.

b. Calculated from data.

Mean, Standard Deviation, t-Value, Importance and Ranking.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Skills	160	2.797 321	.8126316	.0642442
Knowledge	160	2.550 000	.7284666	.0575903
Experience	160	2.803 571	.8161428	.0645218
Project Manager Competencies	**160**	**2.716 964**	**.7606167**	**.0601320**
Cost	160	2.609 4	.75480	.05967
Quality	160	2.646 9	.80260	.06345
Time	160	2.750 0	.81553	.06447
Project Success Practices	**160**	**2.668 750**	**.7466996**	**.0590318**

One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Skills	-3.155-	159	.002	-.2026786-	-.329561-	-.075797-
Knowledge	-7.814-	159	.000	-.4500000-	-.563741-	-.336259-
Experience	-3.044-	159	.003	-.1964286-	-.323859-	-.068998-
Project Manager Competencies	**-4.707-**	**159**	**.000**	**-.2830357-**	**-.401796-**	**-.164275-**
Cost	-6.546-	159	.000	-.39063-	-.5085-	-.2728-
Quality	-5.565-	159	.000	-.35312-	-.4784-	-.2278-
Time	-3.878-	159	.000	-.25000-	-.3773-	-.1227-
Project Success Practices	**-5.611-**	**159**	**.000**	**-.3312500-**	**-.447838-**	**-.214662-**

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
The project manager communicates with their teams frequently.	160	3.14	1.207	.095
Encourages creative ideas.	160	2.20	1.103	.087
Provides direction to inspire others.	160	3.14	1.202	.095
Uses creative thinking process to solve problems.	160	3.26	1.079	.085
Tracks his weaknesses and strengths	160	2.36	1.118	.088
Preforms consistently in a range of situations under pressure and adapts behavior appropriately.	160	3.26	1.077	.085
Shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.	160	2.22	1.120	.089
Skills	160	2.797321	.8126316	.0642442
The project manager Investigates facts	160	2.44	.995	.079
Makes judgments based on reasonable assumptions, and is aware of the impact of such assumptions	160	3.14	1.104	.087
The project manager sets objectives based on the overall strategic plan.	160	2.19	1.102	.087
Identifies the positives and negatives of ideas	160	2.63	1.068	.084
Identifies opportunities and threats, and is sensitive to stakeholder's needs	160	2.38	1.131	.089
Has sound priorities for future work while being able to expect the impact of external and internal changes on the vision	160	2.74	1.113	.088
Has a clear vision and imagination for the future direction of the organization	160	2.34	1.176	.093
Knowledge	160	2.550000	.7284666	.0575903
Enthusiastic in communication, engages others and wins support	160	3.13	1.232	.097
The project manager use mind mapping to map objectives and milestones.	160	2.21	1.101	.087
Organizes all resources and coordinates them efficiently and effectively.	160	3.14	1.191	.094
Communicates instructions clearly to staff with communications tailored to the audience's interests.	160	3.26	1.067	.084
Willing to make decisions involving significant risk to gain a business advantage.	160	2.38	1.131	.089

Knows his team members' strengths and weaknesses and encourages them to take on challenging tasks	160	3.27	1.080	.085
Invests time in developing others' competencies, and invests time and effort in coaching them	160	2.24	1.130	.089
Experience	160	2.803571	.8161428	.0645218
There were no major with- cost change requests during the project	160	2.44	.995	.079
Project manager's experience helped to eliminate unnecessary resources.	160	3.16	1.096	.087
The project was finished on or under budget	160	2.21	1.118	.088
The Project decreased the cost of some activities with no effect on quality.	160	2.63	1.074	.085
Cost	160	2.6094	.75480	.05967
The Project was handed upon the company's overall standards.	160	2.38	1.131	.089
The project deliverables always fulfil the customer requirements	160	2.74	1.112	.088
The project meets its business objectives	160	2.34	1.176	.093
Setting alternative plans has reduced the unexpected risks possibility.	160	3.13	1.224	.097
Quality	160	2.6469	.80260	.06345
The project met most of the scheduled milestones	160	2.22	1.091	.086
The project was finished on time	160	3.15	1.199	.095
The Project boosts the employees' abilities by helping to save time.	160	3.26	1.071	.085
The critical tasks and delivery dates were not slipping.	160	2.38	1.109	.088
Time	160	2.7500	.81553	.06447

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The project manager communicates with their teams frequently.	1.506	159	.134	.144	-.04-	.33
Encourages creative ideas.	-9.171-	159	.000	-.800-	-.97-	-.63-
Provides direction to inspire others.	1.513	159	.132	.144	-.04-	.33
Uses creative thinking process to solve problems.	3.078	159	.002	.263	.09	.43
Tracks his weaknesses and strengths	-7.284-	159	.000	-.644-	-.82-	-.47-
Preforms consistently in a range of situations under pressure and adapts behavior appropriately.	3.009	159	.003	.256	.09	.42
Shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.	-8.826-	159	.000	-.781-	-.96-	-.61-
Skills	-3.155-	159	.002	-.2026786-	-.329561-	-.075797-
The project manager Investigates facts	-7.152-	159	.000	-.563-	-.72-	-.41-
Makes judgments based on reasonable assumptions, and is aware of the impact of such assumptions	1.647	159	.101	.144	-.03-	.32
The project manager sets objectives based on the overall strategic plan.	-9.257-	159	.000	-.806-	-.98-	-.63-
Identifies the positives and negatives of ideas	-4.440-	159	.000	-.375-	-.54-	-.21-

Identifies opportunities and threats, and is sensitive to stakeholder's needs	-6.988-	159	.000	-.625-	-.80-	-.45-
Has sound priorities for future work while being able to expect the impact of external and internal changes on the vision	-2.983-	159	.003	-.263-	-.44-	-.09-
Has a clear vision and imagination for the future direction of the organization	-7.128-	159	.000	-.663-	-.85-	-.48-
Knowledge	-7.814-	159	.000	-.4500000-	-.563741-	-.336259-
Enthusiastic in communication, engages others and wins support	1.283	159	.201	.125	-.07-	.32
The project manager use mind mapping to map objectives and milestones.	-9.047-	159	.000	-.788-	-.96-	-.62-
Organizes all resources and coordinates them efficiently and effectively.	1.526	159	.129	.144	-.04-	.33
Communicates instructions clearly to staff with communications tailored to the audience's interests.	3.112	159	.002	.263	.10	.43
Willing to make decisions involving significant risk to gain a business advantage.	-6.988-	159	.000	-.625-	-.80-	-.45-
Knows his team members' strengths and weaknesses and encourages them to take on challenging tasks	3.148	159	.002	.269	.10	.44
Invests time in developing others' competencies, and invests time and effort in coaching them	-8.536-	159	.000	-.763-	-.94-	-.59-

Experience	-3.044-	159	.003	-.1964286-	-.323859-	-.068998-
There were no major with-cost change requests during the project	-7.070-	159	.000	-.556-	-.71-	-.40-
Project manager's experience helped to eliminate unnecessary resources.	1.803	159	.073	.156	-.01-	.33
The project was finished on or under budget	-8.909-	159	.000	-.788-	-.96-	-.61-
The Project decreased the cost of some activities with no effect on quality.	-4.415-	159	.000	-.375-	-.54-	-.21-
Cost	-6.546-	159	.000	-.39063-	-.5085-	-.2728-
The Project was handed upon the company's overall standards.	-6.988-	159	.000	-.625-	-.80-	-.45-
The project deliverables always fulfil the customer requirements	-2.916-	159	.004	-.256-	-.43-	-.08-
The project meets its business objectives	-7.128-	159	.000	-.663-	-.85-	-.48-
Setting alternative plans has reduced the unexpected risks possibility.	1.356	159	.177	.131	-.06-	.32
Quality	-5.565-	159	.000	-.35312-	-.4784-	-.2278-
The project met most of the scheduled milestones	-9.056-	159	.000	-.781-	-.95-	-.61-
The project was finished on time	1.583	159	.115	.150	-.04-	.34
The Project boosts the employees' abilities by helping to save time.	3.026	159	.003	.256	.09	.42
The critical tasks and delivery dates were not slipping.	-7.130-	159	.000	-.625-	-.80-	-.45-
Time	-3.878-	159	.000	-.25000-	-.3773-	-.1227-

Bivariate Pearson Correlations

		Skills	Knowledge	Experience	Project Manager Competen	Cost	Quality	Time	Project Success
Skills	Pearson Correlation	1	.854**	.999**	.986**	.888**	.835**	.990**	.959**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	160	160	160	160	160	160	160	160
Knowledge	Pearson Correlation	.854**	1	.852**	.928**	.936**	.922**	.862**	.959**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000
	N	160	160	160	160	160	160	160	160
Experience	Pearson Correlation	.999**	.852**	1	.985**	.886**	.834**	.989**	.957**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	160	160	160	160	160	160	160	160
Project Manager Competencies	Pearson Correlation	.986**	.928**	.985**	1	.932**	.890**	.981**	.990**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000
	N	160	160	160	160	160	160	160	160
Cost	Pearson Correlation	.888**	.936**	.886**	.932**	1	.781**	.898**	.944**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	160	160	160	160	160	160	160	160
Quality	Pearson Correlation	.835**	.922**	.834**	.890**	.781**	1	.830**	.924**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	160	160	160	160	160	160	160	160
Time	Pearson Correlation	.990**	.862**	.989**	.981**	.898**	.830**	1	.964**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	160	160	160	160	160	160	160	160
Project Success Practices	Pearson Correlation	.959**	.959**	.957**	.990**	.944**	.924**	.964**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	160	160	160	160	160	160	160	160

Coefficients[a]								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.012-	.020		-.627-	.531		
	Skills	.326	.146	.355	2.236	.027	.002	495.918
	Knowledge	.533	.014	.520	37.875	.000	.269	3.712
	Experience	.146	.144	.160	1.012	.313	.002	489.266
a. Dependent Variable: Project Success Practices								

**. Correlation is significant at the 0.01 level (2-tailed).

Multiple Regressions:

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.996[a]	.992	.992	.0671174	1.609

a. Predictors: (Constant), Experience, Knowledge, Skills

b. Dependent Variable: Project Success Practices

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	87.949	3	29.316	6507.896	.000[b]
	Residual	.703	156	.005		
	Total	88.652	159			

a. Dependent Variable: Project Success Practices

b. Predictors: (Constant), Experience, Knowledge, Skills

Charts

Histogram
Dependent Variable: Project Success Practices

Scatterplot
Dependent Variable: Project Success Practices