ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
DEPARTMENT OF BAIS
MASTER OF PROJECT MANAGEMENT

Impact of Leadership Attributes of Project Managers on Project Success: The Case of Ethiopian Road Authority (ERA)

A thesis submitted to Addis Ababa University School of Commerce in partial fulfillment of the requirement for the Degree of Masters in Project Management.

Prepared By: Kaleb Tadesse

Advisor: Wubshet Bekalu [PHD]

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Approved by Board of Examiners

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May 2017
Addis Ababa

Declaration

I, the under signed, declare that this thesis is my original work and has not been presented for a degree in any other University, and that all sources of materials used for the thesis have been duly acknowledged.

Declared by:

Name _____

Signature _____

Date: _____

Confirmed by:

Name _____

Signature _____

Date: _____

Date and place of submission _____

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List of Acronyms

PM(s): Project Manager(s)

ERA: Ethiopian Road Authority

Abstract

Very little focus has been placed on the need for leadership competencies as requirements from PMs. This research study was conducted with the objective of determining the influence of leadership attributes of PMs on project success. Furthermore, it attempted to identify the leadership attributes that must be possessed by PMs through meta-analysis of previous literature and tried to determine the relationship between those attributes and project success.

The meta-analysis revealed that four groups of leadership attribute namely personal trait, technical leadership skills, soft leadership skills and emotional intelligence. PMs selected for the study were first grouped into successful or unsuccessful PMs based on the performance level of the projects they were conducting. A structured questionnaire was distributed and data gathered were analyzed using SPSS version 20. It was found that all leadership attributes were positively correlated with project success. Personal traits were the most statistically significant determinants of project success followed by emotional intelligence, soft leadership skills and technical leadership skills, respectively. Other than those groups of leadership attributes, experience was also found to be a statistically significant determinant of project success.

In summary, project success was positively affected by experience and the leadership attributes of the PM. Recruitment, selection and assignment of PMs to projects should be designed to include the experience and leadership attributes and Personality test should be administered to ensure personality-project fit. Training and experience sharing platforms in areas of team work, communication, project management and sensitivity trainings can have vital contribution towards improving leadership attributes required of the PM. A lesson learned documents, best practice documents as well as templates and processes like risk register, pert chart and quality assurance should be available in an organized manner.

Key words: Leadership Attributes, Project Success, Project Leadership

CHAPTER 1

INTRODUCTION

1.1. Background of the Study

Project is defined as a temporary endeavor undertaken to create a unique product or service (PMBOK, 2008). Many definitions have been created to explain the concept of a project (e.g., Jugdev & Müller, 2005; Meridith & Mantel, 2006; Munns & Bjermi, 1996; Turner & Müller, 2003; Smith 1995), but these definitions have converged around three main ideas. First, projects are one-time, unique endeavors. Second, projects have a specific beginning and a clearly defined end. Project life-cycle descriptions typically begin with a conceptualization/initiation phase and end with either a handover phase to the client or the ultimate closedown of the project. Third, the entire project lifecycle is constrained within two requirements. Projects are constrained such that they consume only the resources available, such as money and time; and the end product must meet a pre-determined set of specifications and performance standards.

Project management is the application of knowledge, skills, tools, and techniques to plan activities to meet the project requirements (PMBOK, 2008). For an organization, projects are a means to respond to requests that cannot be adequately addressed within the organization‘s normal operational limits.

The PM is the individual responsible for managing the project (ibid). The PM is viewed as a direct representative of the firm’s senior managers and serves a dual role, as both manager and leader. The PM is the one who is ultimately responsible for the overall success of the project. In order for the project to succeed, PMs must be able to apply their own knowledge and skills as well as identify the skills and knowledge of team members. Furthermore, PMs have to motivate team members as well as solve conflicts and other problems that arise during the lifetime of the project. From the project team perspective, the PM is expected to possess some level of technical competence regarding the project work (Grant, Baumgardner, & Shane, 1997) and at the same time possess the leadership skills needed to guide his or her diverse team of people (Turner & Müller, 2005). The PM must also be able to forecast project needs, assess project risks,

communicate plans and priorities, assess progress and trends, and get quality and value for the money invested in a project (Smith, 1995).

The construct of leadership has been the topic of many studies in the general management literature. Leadership refers to the ability through which someone can influence others to enhance outcomes, so in different situations, different strategies are used to accomplish established goals. While the frameworks for describing the characteristics of a leader have evolved, the consensus is that effective leadership is a success factor in organizations, and that an appropriate leadership style can lead to better performance (Laohavichien, Fredendall & Cantrell, 2009; Turner & Müller, 2005; Podsakoff, MacKenzie, Moorman, & Fetter, 1990).

Over the years many definitions of project success have been discussed. While many research studies have been conducted about project success, project success is still complicated and multifaceted. The definitions of project success have evolved over the past 40 years from mechanistic definitions to a comprehensive, holistic view, linking the project's contribution to the fulfillment of the organization's overall strategy and success (Jugdev & Müller, 2005). Jugdev and Müller found that the simple metrics such as time, cost, and scope (the "iron triangle") were the sole determinants of project success from the 1960. As they progressed through their 40-year retrospective look, the "iron triangle" remains central to the definition of project success, and the definition of success has evolved to include factors such as: the level of senior management commitment to the project, the relationship of the project to the external environment (e.g. political, economical, social implications), the contribution of the project to strategic organizational goals and the quality of management and leadership oversight provided by the PM (PM).

1.2. Background of the Organization

Following the eviction of the Italian occupiers, the Imperial Ethiopian Government was convinced that a Road Agency solely responsible for rehabilitating/restoring and expanding the road network throughout the country had to be established. Accordingly, the Imperial Highway Authority (IHA) was established under proclamation No. 115/1951 as a semi-autonomous agency with specific duties to plan, design, construct, and maintain roads. Responsibilities for construction and maintenance of roads remained under a single autonomous authority (IHA) for 26 years (1951-1977). The Ministry of Transport and Communication turned out to be the supervising authority of ERA. The Ethiopian Roads Authority has been reestablished under proclamation 133/1978 incorporating, among others, the Rural Roads Department in addition to the Highway Department.

In 1980, the Military Government that took power in 1974 reformed the agency into the Ethiopian Transport Construction Authority (ETCA) by proclamation No. 189/1980 and became answerable to the newly formed Ministry of Construction. The proclamation enlarged responsibility of the Authority by expanding its task to incorporate the construction of Airports, Seaports, Railways, and Municipal Roads.

Following the shift from a command-based economy to a market oriented one in 1991, ERA was reestablished by proclamation No.63/1993 with a view to providing a strong administration under the leadership of a Board. As part of its reform, the government assigned administration of rural roads to the regional self-governments and main roads to ERA as part of the Federal Government's responsibility. ERA's role regarding rural roads was then limited to rendering support such as overall network planning, training and technical assistance as required by Regional Governments.

To cope up with existing situations, ERA was again re-established by proclamation No. 80/1997 with the objective to develop and administer highways, and to ensure the standard of road construction. With the establishment of the new cabinet of Ministers in October 2001, a Ministry of Infrastructure and later on Ministry of Works and Urban Development has been formed with the responsibility of developing the infrastructure of the nation. ERA, which is one of the organizations under the Ministry of Works and Urban Development and accountable to the

Board, is responsible for planning and formulating long and short term plans and programs for road construction, design, maintenance of trunk and major link roads, as well as for administration of contracts.

1.3. Statement of the Problem

The *PMBOK® Guide* is a central repository of project management good practices. One such set of good practices is project leadership. However, the PMBOK® Guide gives a brief focus to project leadership good practices when compared to the vast attention given to the good practices associated with the management role.

Project leadership knowledge is at least or even more so as important as project management good practices. Today PMs are more managers of people than they are managers of technology (Kerzner, 2010). Such activities like building trust, respect, motivation and effective communications lie within the realms of the leadership domain. However, very little focus has been placed on the need for leadership competencies as requirements from PMs. Therefore, understanding the leadership attributes that are closely tied with project success is imperative and can make a monumental contribution to the knowledge base about projects.

In spite of the reality that interest in project management has increased, projects have maintained their failure at large and also their complexity and uncertainty continue to grow (Dias *et al.*, 2014). Given the significant investment made in the project itself, project management training and other project management systems and processes, there are projects which continue to fail when it comes to meeting the preset success criteria. With this regard, a recent study conducted by the African Development Fund revealed that ERA had an overall success assessment of 73% when it comes to managing and culminating the projects to completion.

Given the importance of strategic projects which consume a large financial outlay, it's imperative that they are completed within preset success criteria. With this regard, leadership ability and attributes of the PM can contribute a pivotal role. Therefore, there is an apparent need to understand how leadership attribute of the PM is associated with the success of the project.

1.4. Research Question

The research addressed and forward acceptable solutions for the under listed questions;

- What are the most important attributes of PMs that make them successful?
- What is the relationship between the leadership attributes of the PM and the project success?

1.5. Research Objectives

The general research objective of this study focused on increasing the understanding about leadership attributes that the PM must possess in order to navigate projects to success. However the specific research objectives include

- To determine the most important attributes that make up a successful PMs and;
- To identify the relationship between project leadership attributes that makeup the PM and project success.

1.6. Scope and Limitation of the Study

Leadership and project management can be a broad topic to research and its theories can expand to unlimited pages of analysis. In this thesis an attempt was made to narrow down the focus and analyze only those critical leadership attributes of PMs that contribute value to project success. Therefore, this paper tried to focus on project leadership rather than the broad construct of leadership.

This study was limited when it cames to understanding of the perception of leadership style and its influence in project success under the ERA. Furthermore, the study was based on the experience and perception of PMs that have undertaken various infrastructure projects. Therefore, the focus of this study was on infrastructure projects which are largely considered as traditional projects. Other types of projects such as agile, emertexe and extreme projects were not included under this research study.

One observable limitation of this study pertains to its cross-sectional nature. The research tried to capture perspective of PMs in a onetime recap rather than following a longitudinal approach. Further research with longitudinal nature should be conducted in this area.

1.7. Limitation

Due to paucity of resources and need to gain timely response, this study was conducted wherein an easy access for data collection was available. Hence, the size and complexity of the project hadn't been taken into account during the conduct of this study.

1.8. Significance of the Study

Many researchers and academia practitioners of project management consent and support that there is a need for effective leadership in managing resources and people in high complexity projects. Even though projects continue to fail due to ineffective leadership, previous literature in the subject matter fails to establish the emphasis required for the topic in sufficient details and under a project management context. The need to integrate effective measures to decrease project failure has become increasingly important among project practitioners.

This research tried to conduct a profound analysis of ideal leadership attributes of the PMs and evaluate how these attributes contribute to the successful completion of the project. This research attempted to explore how successful PMs exercised a wide-range of critical leadership attributes by extracting important attribute based on contribution towards project success. In addition, the study did not only attempt to identify important leadership attributes but also further tried to prioritize those attributes on the basis of their contribution to the project success. Overall the output of the thesis is believed to pin point leadership attributes required from the PM for the successful completion of projects.

1.9. Organization of the Study

The following study is organized in such a way that chapter 2 presents a review of literature and relevant research associated with the problem addressed in this study. Chapter 3 presents the methodology and procedures used for data collection and analysis. Chapter 4 contains an

analysis of the data and presentation of the results. Chapter 5 offers a summary and discussion of the researcher's findings, implications for practice, and recommendations for future research.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1. Introduction

Nowadays, the implementation of principles and techniques of Project Management (PM) has expanded rapidly in many enterprises worldwide, implying the necessity for effective project leadership. Given the monumental financial outlay and human capital spent on projects, it's of paramount importance that organizations harvest the benefits of their investment through the successful accomplishment of the projects they undertake. Research on the success of projects has proceeded along two streams. The first focuses on the leadership characteristics of the individual PMs and the relationship to success. The second focuses on the definition of project success by attempting to identify its various dimensions. These research streams are interrelated but not yet interconnected.

Leadership is as old a phenomenon as human civilization; and perhaps that is why there are so many definitions of leadership. Almost 2300 years ago, Aristotle had realized the crucial role of both 'strategos' (leader of the army) and a political leader in their domains, and described leadership based on three elements: relationships (pathos), values (ethos), process (logos) (Collinson, 1998). Project management scholars have been focused more on efficiency rather than leadership attributes (Munns & Bjeirmi, 1996). However, while reaming cognizant of the focus of this study; that is impact of leadership attributes of the PM for successful execution and completion of the project, only relevant definitions will be discussed.

Hemphill and Coons (1957) define leadership as the conduct of an individual which aims at guiding the activities of a group for achievement of a shared goal. Jago (1982) defined leadership as the use of non-coercive influences to direct the activities of members of an organized group towards the accomplishment of group objective. Leadership is the ability to persuade others to accomplish pre-defined goals with zeal, enthusiasm and willingness (Shi & Chen, 2006).

It’s important to differentiate between the concepts of leadership and management. Verma & Wideman (2000) argue that PMs are often called to be both *managers* and *leaders*. That is, they are responsible for not only directing and coordinating human and material resources (managing) but also providing vision and motivation to the team members (leadership). Davis (1967) distinguished between project leadership and management by acclaiming that leadership is part of management, but is not all of it. Management comprised of the activities such as planning, organizing and decision making etc, which are dormant cocoons until catalyzed by the leader through his power of motivation (Shi & Chen, 2006).

PM plays the most critical role towards success of any project (Kendra & Taplin, 2004; Yang, Huang & Wu, 2010). Kirsch (2000) , not undermining the traditional project management methodologies, tools and techniques, has drawn world’s attention towards PM’s leadership attributes, which he refers to as human side or soft skills of any manager. Contemporary writers have also recognized these soft skills as cardinal aspects of success in any project (Shi & Chen, 2006).

The mainstay of effective project management has been predicated on people and leadership as critical drivers. Zimmerer & Yasin (1998) found that positive leadership contributed about 76% to the success of projects. Negative or poor leadership contributed 67% to the failure of projects (Kahn & Nauman, 2008).

Infrastructure projects, generally treated as construction projects, are social systems that include numerous areas such as organizational behavior; leadership competence; and human resource management (Huemann,Keegan & Turner2007). An infrastructure project consists of a diversity of individuals and organizations which are all gathered to achieve a specific task in a specific time. Therefore, leadership is an important characteristic for construction manager in managing construction projects. Leadership skills can improve construction productivity, where its outcomes include effectiveness, satisfaction, and extra effort. Despite this awareness, the conventional model of construction management’s research tends to emphasis on technology and management to the marginalization of leadership (Skipper & Bell, 2006).

2.2. Theoretical Review

2.2.1. Leadership Theory

Throughout the past century, scholars sought to analyze and describe the characteristics of leadership and by extension leadership style. Leadership style is a relatively stable pattern of behavior exhibited by a leader when dealing with employees (Amirul, et al, 2012). There is no one typology of leadership styles (Sohmen, 2013).

Barnard (1938) proposed that executives had both managerial and emotional functions, which he called cognitive and cathectic. Cognitive functions include guiding, directing, and correcting. Cathectic functions include motivating and developing commitment to the organization‘s goals. Since his seminal work, six main schools of leadership can be identified, as summarized in Table 1.

Table 2.1. Summary of Leadership Frameworks (condensed from Turner and Müller 2005).

Theory	Time	Main Idea	Leader's Characterstics	Leadership Style	Relationship with Project Type	Representative Studies
Trait	1930-1940	Outstanding leaders are born with the same traits	Drive/ambition, Desire to lead, Integrity, Self-confidence and Technical knowledge	Not defined	Not defined	Kirkpatrick & Locke, 1991 Turner, 1999
Behavioral or Styles	1940-1960	Leadership skills can be learned	Concern for people, Use of authority, Concern for production, Team involvement and Flexibility toward rules	Laissez fair, Democratic and Autocratic	Not defined	Slevin, 1989 Hershey & Blanchard,1988
Contingency or Situational	1960's	The effectiveness of certain leadership depends on the situation	Directive leaders, Supportive leaders, Participative leaders, Achievement-oriented	Bureaucratic, Directive, Participative and Achievement Oriented	The leadership should be selected according to the environment and subordinate factor	House, 1971

Visionary or Charismatic	1980-1990	The leadership styles are defined according to concern of process and relationships	Focus on organization structure and focus on people relationship	Transactional, Transformational and Laissez Fair	Different leadership styles have different impact on followers responsibility, momentum and stress	Bass 1990
Emotional Intelligence	Late 1990s	Leader's emotional intelligence can influence performance than intellect	Self-awareness, Self-management, Social awareness and Relationship management	Visionary, Coaching, Affiliative, Democratic, Commanding and Pacesetting	The first four types are suitable for certain project types while the last two are toxic	Goleman, Boyatzis, & McKee, 2002
Competency	2000s	This is a combination of all theories including traits, personal characteristics and essential skills	Intellectual, Managerial skill and Emotional competence	Commanding, Engaging, Involving and Goal Oriented	Different leadership can improve the performance of project if the appropriate style has been selected	Dulewicz & Higgs, 2004

I. Trait Theory

Traits refer to external behaviors that emerge from things going on within the leader's mind. It is these internal belief and processes that are important for effective leadership (Turner & Müller, 2005). According to research Nanus (1989), most of the leadership research began in the 1920s, trait theory of leadership emerged from the perception that leaders are different from others and this theory has also became the basis for the notion of most research. In addition, leadership can also be seen through the qualities or attributes of the leader.

II. Behavior Theory

Behavioral theories of leadership are classified as such because they focus on the study of specific behaviors of a leader. For behavioral theorists, a leader behavior is the best predictor of his leadership influences and as a result, is the best determinant of his or her leadership success. This behavior-focused approach provides real marketing potential, as behaviors can be conditioned in a manner that one can have a specific response to specific stimuli. This theory

describes the behavior of the leadership on projects that have been successfully accomplished (Torpman, 2004). According by Bass (1990), in a research study about leadership, ensures that there is a positive relationship between leadership behavior and effective leader.

This theory identified six parameters to assess the leadership including (Turner and Muller 2005): concern on people, production, authority, participation of the decision-making for the team, decision-taking and the flexibility against rules. There are two important Behavioral studies; the Ohio State University (1940s) and studies made by University of Michigan (1950s). As leadership studies that were aimed at identifying the appropriate traits didn't yield any conclusive results, a group of people from Ohio State University developed a list of 150 statements from their generated responses that included 1,800 hundred statements. The list was designed to measure nine different behavioral leadership dimensions. The resulting questionnaire is now well-known as the LBDQ or the Leaders Behavior Description Questionnaire. As part of the study, the LBDQ was administered to various groups of individuals with the primary purpose of identifying common leadership behaviors. After compiling and analyzing the results, the study led to the conclusion that there were two groups of behaviors that were strongly correlated. These were defined as Consideration (People Oriented behavioral Leaders) and Initiating Structure (Task Oriented Leaders).

The task concerned leaders focus their behaviors on the organizational structure, the operating procedures and they like to keep control. Task-oriented leaders are still concerned with their staff motivation; however it's not their main concern. They will favor behaviors that are in line with initiating, organizing, clarifying and information Gathering. The people oriented leaders focus their behaviors on ensuring that the inner needs of the people are satisfied. Thus they will seek to motivate their staff through emphasizing the human relation. Leaders with a people focus will have behaviors that are in line with encouraging, observing, listening as well as coaching and mentoring.

Lead by the famous organizational psychologist, Dr. Rensis Likert, the leadership studies at the University of Michigan identified three characteristics of effective leadership; two of which were previously observed in studies that had been conducted at Ohio State University. The study showed that task and relationship-oriented behaviors weren't of major significance within the

world of organizational psychology. However it was the third observation that introduced a new concept, one of participative leadership.

III. Situational-contingency Theory

Theory of situational leadership gained popularity in 1948. Furthermore, according to a study Butler and Reese (1991), the theoretical model describes various approaches to leadership contingency. Its most significant contribution is the inception of concern for different circumstances, indicating the correlation of project type and leadership skill had been under consideration. One theory of contingency school, the path-goal theory (House, 1971) even had introduced the environmental and subordinate factors to help select appropriate leadership styles. The visionary or charismatic school was concluded by studying leaders who successfully managed their companies through change.

The study also had to explain that there are four leadership styles in situational theory, namely that called as S1, S2, S3 and S4. In other words, the four styles that means: S1 (high service, low relationship), S2 (high task, high relationship), S3 (low task, high relationship), and S4 (low task, low relationship).

If a an employee was not performing a certain task and showed through his or her behavior every indication of not wanting to (R1), the leadership style that has the highest probability of successfully and effectively getting that person to perform is one that involves high amounts of structured task behavior that could be generally described as directive in nature (S1).

If an employee was beginning to perform the task in question but wasn't yet doing so at a sustained and acceptable level even though he or she really seemed to want to do a good job (R2), then the leadership style with the highest probability of successfully and effectively influencing the desired behavior from this employee rests in quadrant S2.

If an employee would begin performing the task in question at a sustained and acceptable level (R3), then that employee is no longer in need of being told who, what, when, where and how to do the task but rather seeks autonomy and freedom as a reward for his/her good performance.

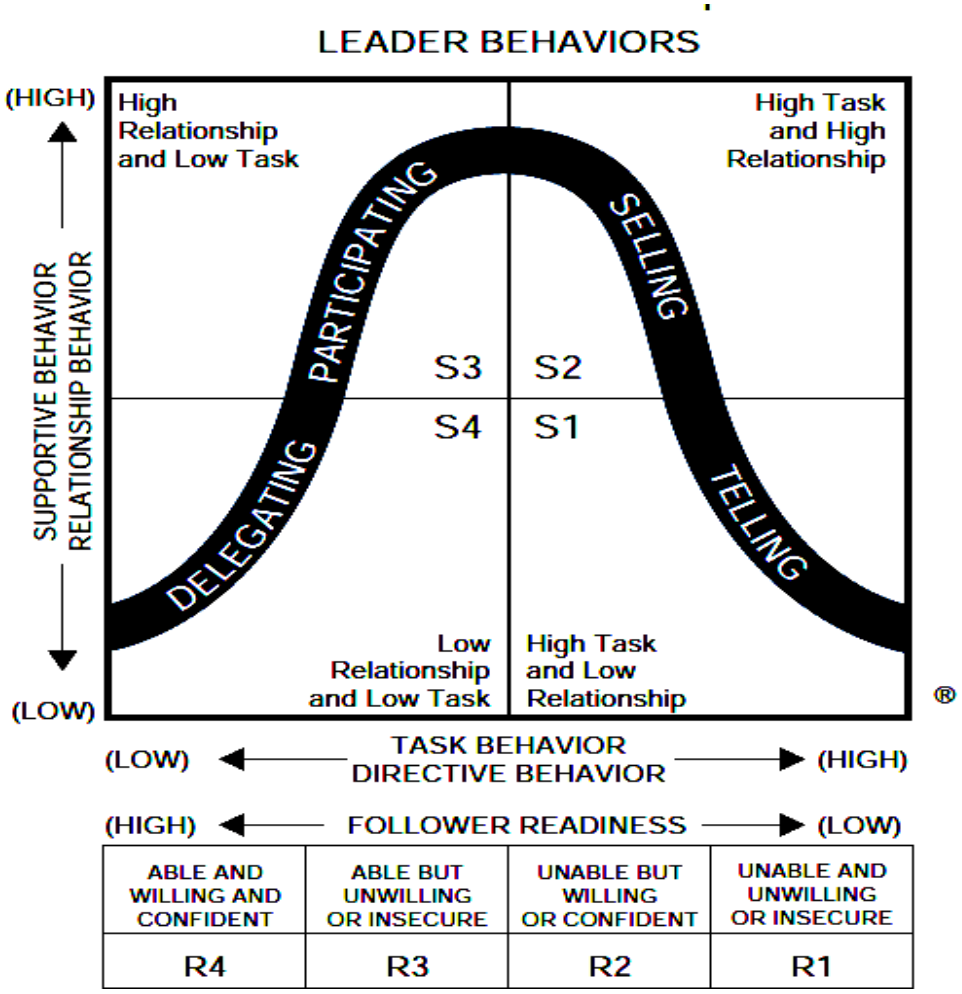

Figure 2.1: Situational Leadership Theory

Various scholars of project management have concluded that the selection of leadership influences the performance of project (Crawford et al., 2005; Dulewicz and Higgs, 2003).What is more, in Table 2, some research work examining the relationship has been summarized, which obviously implies that there are some certain relationships between leadership and project success. Especially the third study providing that some of the success factors are related to leaderships.

Table 2.2: Studies on the relationship between leadership style and project success

Research work	Leadership style	Results	Methodology
Yang et al (2011)	Transactional Transformational	Transformational leadership is suitable for project manager	Online questionnaire and quantitative analysis
Muller and Turner (2007)	Goal-oriented Involving Engaging	Appropriate leadership can improve project performance	Interview, questionnaire and data analysis
Geoghegan and Dulewicz (2008)	Goal-oriented Involving Engaging	Identification competencies related in the context of project manager	Leadership dimensions Questionnaire

IV. Visionary: Transactional and Transformational Leadership style

In 1978, Burns published a seminal work introducing the concepts of transactional and transformational leadership. Transactional leadership refers to a relationship between leader and follower in which each attempt to meet their own self-interests. Transactional leaders view leadership as an exchange of one thing for another (Burns, 1978). Transactional leaders use contingent rewards or corrective action to influence the follower to perform in the manner required by the leader. For example, a reward is given to the follower if the follower performs the tasks required by the leader to the leader‘s satisfaction.

Transactional leadership is an exchange process based on the fulfillment of contractual obligations and is typically represented as setting objectives and monitoring and controlling outcomes. It has the following three first order factors:

(a) Contingent reward leadership that focuses on clarifying role and task requirements and providing followers with material or psychological rewards in exchange for the fulfillment of contractual obligations;

(b) Active management by exception (i.e., active corrective transactions) refers to the active vigilance of a leader whose goal is to ensure that standards are met and;

(c) Passive management by exception (i.e., passive corrective transactions) is a situation in which leaders take action after a behavior has created serious problems (Antonakis , Judge et al, 2004).

Transformational leadership involves moving the followers beyond their self-interests and towards the accomplishment of team goals. Transformational leadership elevates the follower‘s ideals from self-satisfaction to the well-being of others and the organization (Bass & Avolio, 1990). Rungtusanatham et al (1998) determined that visionary (i.e. transformational) leadership has an impact on both cooperation (internal and external) and learning

Transformational leadership has been proposed as the more successful style of leadership (Dean & Bowen, 1994). Laohavichien et al (2009) investigated transformational and transactional leadership and determined that they are conceptually and measurably different than top management support, and that these different leadership styles impact infrastructure quality practices. Anderson et al (1995) found that transformational leadership is more highly correlated with performance and motivation of subordinates. However, other researchers have found relationships between transactional components of the MLQ and leadership effectiveness (Tejeda et al 2001; Avolio & Howell, 1992; Yammarino & Bass, 1990). The next sections define and describe constructs that are posited as antecedents to the PM‘s leadership style.

V. Emotional intelligence

According to Turner & Müller (2005), the emotional intelligence school has become more popular since the 1990‘s. Over the past twenty years, researchers have found that these cognitive abilities regarding emotions can be associated with work-related behaviors, particularly leadership (Clarke, 2010; Rosette & Ciarrochi, 2005; Barling, Slater, & Kelloway, 2000).

Clarke (2010) defines emotional intelligence as the ability to reason about a particular type of information, namely emotional information. Mayer & Salovey (1997, p. 10) define emotional intelligence as ―the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth.

Proponents of this school believe that a leader‘s emotional intelligence has a greater impact on success than the leader‘s intellectual capability (Goleman and Boyatzis, 2002). Within project management, Druskat & Druskat (2006) suggest that the nature and characteristics of projects

place a premium on the emotional intelligence of PMs. Within the time limitations of a project, the PM must quickly create trust and commitment among the team members, facilitate knowledge transfer, deal with ambiguity and change, and manage conflict. These roles are facilitated by emotional intelligence competences.

Studies of emotional intelligence within project management have shown significant positive correlations with effective leadership, particularly transformational leadership. Clarke (2010) takes these findings one step further and finds significant positive correlations between emotional intelligence and project management competences (conflict management and teamwork), and between emotional intelligence and two dimensions of transformational leadership, even after controlling for both cognitive ability and personality. This finding suggests that emotional intelligence may be an antecedent of transformational leadership. It is difficult to envision a leader who can successfully inspire his or her followers beyond self-interest unless the leader can accurately gauge their emotions and understands how to appeal to their better selves.

VI. Competency school of leadership and management

Over the last century several schools of leadership have been formulated, most of which have supported the notion that different leadership styles are appropriate in different circumstances (Muller & Turner, 2007). This context is also present in a number of studies which have recommended that different PM styles and thus different leadership styles of PMs would be appropriate for different types of projects and situations (Young et al, 2009).

The International Project Management Association (IPMA) has stressed that 'competency models have become a dramatic resource in refocusing people on what it takes to succeed in today's workplace environment' (Brophy& Kiely, 2002). The competency school of leadership considers traits, behaviors and emotional intelligence as competencies that makeup leadership attributes of PMs. Trait is an important component of the competence thought in leadership that does a better job at predicting that a construction PM may be an effective leader than actually distinguishing between an effective or ineffective leader (Shead, 2011).

Dulewicz and Higgs clustered fifteen leadership dimensions into three groups, namely intellectual (IQ), managerial (MQ) and emotional (EQ) competencies. They concluded that PMs can follow three different leadership styles.

The Competing Values Framework (CVF) has also been utilized as a device for mapping organizations' leadership profiles and conducting comparative analysis (Trivellas & Dargenidou, 2009). Cameron and Quinn developed an instrument to assess individual effectiveness based on the four CVF models and consolidated a list of successful leadership attributes into a set of 12 managerial competency categories. It is constituted from two dimensions (flexibility versus control, and internal focus versus external focus), defining four quadrants, namely: Open Systems, Rational Goal, Internal Processes and Human Relations. These four quadrants also define four leadership styles (adaptive, task, stability and people leadership) and eight leadership roles (Hooijberg & Choi, 2000).

In particular, Open Systems Model involves managing the future, promoting continuous improvement, and fostering innovation, Rational Goal Model is comprised of managing competitiveness, energizing employees and focusing on customer service, Internal Processes Model is consisted of managing acculturation, controlling the system and coordination, and Human Relations Model considers the management of interpersonal relationships, teamwork and personal development.

It should be stressed out that the diagonal quadrants produce conflicting or competing values. For example, the values in the Open Systems Model (upper right quadrant) emphasize an external focus concerned with flexibility and growth, while the values in the Internal Processes Model (lower left quadrant) accentuate an internal focus with control and stability.

2.2.2. Leadership Attributes of Project Manager

PM's personal leadership attributes, which are considered as intangible factors and its impact on project success is generally lacking (Shi & Chen, 2006). Research into leadership has demonstrated that strong leadership is crucial to the success of projects (Mascia, 2012). During last few years, an ever increasing awareness has been observed with the requirement to identify

the intangible factors, which are considered as important from the perspective of the role of an individual's success at the workplace (Deepa & Seth 2013).

Proponents of trait theory have undertaken extensive research to identify the traits that make a leader. Some of the leader's abilities derived from the theory include farsightedness or the ability to operate in the future tense, initiative or the ability to make things happen, effective communication, problem solving ability, accessibility, honesty and integrity, self- confidence, effective time management, result oriented, ability to delegate tasks, competence, enthusiasm, persuasiveness and social adaptability. Petterson's (1991) identified 21 traits and suggested that they could be grouped into five distinct categories, namely, problem solving, administration, supervision and team management, interpersonal relationships, and other personal qualities.

On the other end, those who claim emotional intelligence of leaders as having a more pivotal impact on project success than intellect argue that four dimensions of emotional intelligence i.e. Personal (self-awareness, self management) and social (social awareness, relationship management) competencies are what make up a successful project leader (Goleman and Boyatzis, 2002).

Apart from the contributions made by the earlier research, there are limited numbers of studies which lay emphasis on the human factors influencing project success (Belout & Gauvreau, 2004; Leybourne, 2007). This result is not surprising, because the idea of project success has historically been understood from the technical aspects of projects (Belout & Gauvreau, 2004; Soderlund, 2004a). Consequently, hard factors (time, cost, and quality) have been considered as the major drivers of project success (Leybourne, 2007; Pollack, 2007; Soderlund 2004a).

People are considered core elements in the successful delivery of projects. "Managing people effectively influences many results of a project" (Belout, 1998, p. 23 as cited in Jetu & Riedl, 2012), "the communication theme to project success or failure is the people involved with the project" (Henrie & Sousa– Poza, 2005, p. 5 as cited in Jetu & Riedl, 2012), or it is fast becoming an accepted wisdom that processes and systems do not drive the project, instead it the people who makes the project a success (Cooke–Davies, 2002, p.189 as cited in Jetu & Riedl, 2012); are three exemplary statements that express the importance of the human element in the PM literature. Apart from traditional project management methodologies, tools and techniques, PM's

leadership skills, which can also be called as human side or soft skills, have been widely accepted as a pivotal factor in the success of the project (Shi & Chen, 2006).

PM leadership is major dimension of project team success as it brings purpose, clarity, direction, motivation, and the necessary integration to teams (McDonough, 2000; Thamhain, 2004a). Low and Christopher (2000), in their research into cross cultural project management in China, highlighted the relative importance of following attributes for PMs:-

- Effective communication skills;
- Effective leadership skills;
- Good interpersonal skills;
- Adaptability and flexibility and
- Functional strengths

Accordingly, Shi and Chen (2006) in their study, "*Human Side of Project Management – Leadership Skills"* grouped soft leadership skills into six sets given below. Details of these skills as enunciated by Shi and Chen (2006) are given in succeeding paras:-

I. Communication skills
II. Interpersonal skills
III. Coordination skills
IV. Team building and delegation skills
V. Problem finding, analyzing & solving skills
VI. Temporal Skills

I. Communication

Communication is the ability of a PM or leader to listen, persuade, and to understand what others mean by their behavior. A generalized definition of communication is offered by Samovar and Mills (1995) as the process of conveying any thought, idea, concept, feeling or opinion between two or more people. Communication is a basic attribute a leader must possess. A communication skill is necessary to PM as it makes it easier to interact between project leader or PM with the workers, in the case of any problems occurring on construction projects that can be completed quickly and easily (Mehta, 2012).

With regards to project management, communication skill is used in the conveying of project information to others and must be done so with efficiency given the highly technical, detailed nature of the work (Pettersen, 1991). Bowenkamp and Kleiner (1987) and Einsiedel (1987) suggest that PMs deal with complex ideas and vast amounts of information. In addition, PMs must engage in constant coordination among multiple organizations and stakeholders, and all while working within the restrictions created by the conflicting relationship of complete project responsibility and little formal authority.

Communication includes oral communication, written communication, and comprehensive skills. Oral communication skills are the ability to communicate efficiently with others orally, and the ability to make effective presentation (Shi & Chen, 2006). Written communication skills mean the ability to communicate efficiently by writing documents, letters and reports. Comprehensive skills are the ability to understand both the stated and implied meaning of others (Shi & Chen, 2006).

Past leadership studies have noted that leader communication information of task to the team results in high team work effectiveness (Jetu & Riedl, 2012). Several case reports indicate that developer's misunderstandings, team conflicts, and poor team relationships are major causes for project failure (Belout & Gauvreau, 2004; Henrie & Sousa-Poza, 2005). Hauschildt et al. (2000) offers that effective communication is one of 24 factors related to PM success and Posner (1987) found that communication skill was the most frequently cited skill in a survey of 287 PMs. Similar to the studies on leadership ability, Odusami (2002) ranks communication skills as one of the top four skills perceived as necessary and Crawford (2000) reveals that communication is a frequently referenced skill in her review of 16 project management studies. Katz and Tushman (1979) report that communication patterns varied distinctly between high performing project teams and low performing project teams. Given the importance placed on communication skill and the results of studies investigating this attribute, it can be expected that a positive correlation exists between a PM's communication ability and the level of success he or she achieves.

As a PM, it is important to understand the involved members' values and attitudes, communicate clearly, and consider their opinions. Similarly, communicational congruence can be used to determine effectiveness of communication structures to ensure that all of the team members are

aptly informed regarding decisions or changes. PMs need to remember that communication is a human behavior and is therefore affected by our: cognitions, emotions and perceptions. There are various intrapersonal processes that PMs should be aware of e.g. perceptual distortions (generalizing, 'horns and halo' effect, selective perception etc) which all have an effect on the way in which individuals process information. More importantly perhaps, PMs need to have knowledge of interpersonal processes e.g. non-verbal communication. When we communicate with others, around 65% of the information that people pay attention to is non-verbal (Kreger, 2011).

II. Interpersonal Skills

The second set is interpersonal skills. These skills include being able to deal with people of different backgrounds, which means the skill of developing relationships with different kinds of people when needed. (Brenton & Levin, 2012) Interpersonal skills also involve persuading motivating and incentive skills. Persuading skills refer to persuading and influencing others to support you in realizing the objectives of the project (Cornelius, 2012). Motivating and incentive skills refer to carrying out special strategies to motivate team members to work hard by identifying their feelings, needs and expectations (Cornelius, 2012; Brenton & Levin, 2012).

III. Coordination Skills

The third set, coordination skills, includes being able to build harmonious relationship in order to achieve project goals and dealing with conflicts from both inside and outside (Brenton & Levin, 2012). In addition, controlling project skills are also very important in the coordination process. The project leader must know how to control the problem and move it in an objective-oriented direction.

In a construction project undertaken, usually the conflict is a major problem that must be faced by the PM or project leader. It can be a difficult task for the PM to solve conflicts as it can have a massive impact on the smooth execution of the (Yui and Cheung, 2006). For instance, PMs can use perceptual congruence as an instrument to obtain feedback about their project management practices. Doing so will help foster a climate in which disagreements can be discussed constructively and in turn boost team motivation.

IV. Team Building and Delegation Skills

Leadership is responsible to establish and provide an appropriate team climate that fosters a system to integrate and coordinate the individual and collective contributions of team members (Salas et al., 2005). Effective leadership processes are perceived as means to an end, thereby helping teams to achieve the desired objectives and goals. Leadership clarifies team roles and capabilities, identifies resources available, and creates the environment that makes it possible for team members to work together effectively (Salas et al., 2005).

It is in this domain, that the PM gets the best out of his team, which delicately lies between the PM and success of project. No project can be executed to perfection, if manager fails to unite the efforts of his team towards the final outcome. Being at the execution and implementing end, managers are dependent on their teams for successful implementation of their orders, directives and instructions (Yang, Huang & Wu, 2010). Successful project leaders develop and grow their team. They build strong relationships with and between team members, leading to positive social exchanges (Walker & Walker, 2011). Authentic leadership capabilities are exhibited by these project leaders and thus viewed as possessing personal integrity and to be living values that lead to followers behaving in a manner consistent with the leader's values (Avolio & Gardner, 2005).

Meta-analysis of literature reveals that the exercise of soft skills of leadership contributes effectively for enhancement of teamwork. Leadership therefore, indicates that leader’s behavior and his interpersonal skills are key factors towards building an effective tea including its primary facets of team communication, integration, collaboration and cohesiveness (Wang et al., 2005; Zaccaro et al., 2001). Hence, Leadership can serve to strengthen team bonding and enhance team work by exercise of soft leadership skills (Prati et al. 2003). Team building can be expressed in terms of collaboration, cohesiveness and integration of the project team.

Collaboration as per literal meaning is working together in a group, for a joint cause. It is more pertinent once targets are big and diverse, which can’t be undertaken by a single individual. Collaboration indirectly can affect changes on personal and group level, where it improve relationships between team members and gives them a communication feeling towards the cause (Shamir et al, 2000).

Ream cohesiveness and integration bind the team towards assigned goals, not merely on job grounds, but on a personal scale. Through cohesiveness, team members associate their interest in the project and team and feel pride in being a member of team (Wang et al., 2005). Strength of any team/group is measured by degree of cohesiveness they enjoy with each other as a unit. This aspect has been validated by Dionne et al. (2004) by suggesting that leadership can achieve greater degree of team cohesiveness.

V. Problem finding, analyzing & solving skills

For a leader it is necessary to know how to distinguish the source of the problem, identify practical solutions and how to solve a problem (Odusami, 2002). Posner (1987), in discussing the role of the PM as problem solver, states that the PM must understand the critical problems he or she faces, such as inadequate resources, insufficient time, and unclear goals and direction, and be prepared to manage them. Because the PM operates in a constrained resource environment, the management of these problems will always require decisions to be made among alternatives.

Radecki and Jaccard (1996) define decision making as "how individuals use and combine information about a set of alternatives in order to make a decision" (p. 76). Gushgari et al. (1997), applying decision making to project management, defines it as the "ability to take appropriate action under the constraints of limited time, information, and resources" (p. 56). Some work has been done in identifying decision making skill as an important attribute to possess (Gushgari, Francis, & Saklou, 1997; Pettersen, 1991; Odusami, 2002; Crawford, 2000; Bownekamp & Kleiner, 1987), but no studies have been found that directly link this skill to performance, warranting further investigation.

Kirton (1976) contends that decision making is a skill that everyone possesses and exercises in different ways. With this in mind, the measurement of decision making style (as opposed to decision making frequency or decision making quality) was deemed appropriate. Working in the field of applied psychology, Kirton establishes that everyone can be placed on a continuum of decision making style which ranges from adaptive to innovative.

Kirton (1976) postulates that those who view problems as having to be solved within existing paradigms and structures, the more adaptive a proposed solution will be. Those that view

existing paradigms and structures as part of the problem itself, and that changing the structure surrounding the problem is possible, will be more likely to propose innovative solutions. Kirton terms adaptive decision makers as “doing things better” whereas innovative decision makers “do things differently” (p. 622). He describes the adaptor as in the following way: an organizational man who works in “reducing conflict, minimizing risks, and managing to solve problems by proceeding at a disciplined pace in a predictable direction” (p.624). As if he were describing a PM, it can be expected that a positive correlation exists between the extent to which a PM possess an adaptive decision making style and his/her project management success.

VI. *Time Management (*Temporal Skills)

Timely completion is one of the key performance measures for projects (Cooke-Davies, 2002; Morris & Hough, 1987). While many sources of delays are beyond the control of the PM, an individual PM‘s orientation towards the concept of time, or *time alignment*, can affect his or her abilities to complete a project by a specified deadline (Thomas & Pinto, 1999; Thomas & Greenberger, 1995). Based on the study Ramo (2002), time is an important aspect of the construction process as delays in the completion of a project can result in additional costs to the provision in an infrastructure projects. In addition, the PM should be smart enough to determine and control strategies in time to track progress of activities laid out in the Critical Path Method.

Project management requires that the individual in charge of a project focus on several timelines simultaneously. In the longer-term, the PM must create and communicate a vision for the project team. Future-oriented PM‘s excel at creating compelling visions and contingency plans for a wide variety of potential pitfalls. On the other hand, future-facing PM‘s can have trouble dealing with the day-to-day implementation of the project plan, resulting in frustration and project failure.

According to Thoms & Pinto (1999), the nature of project management requires that individuals in PM roles have well-developed temporal skills, including time warping (the ability to bring past or future events to bear on the present), creating a future vision (creating a cognitive image of the future), chunking time (the ability to break down time into manageable sections that are then assigned to tasks), polychronicity (temporal multitasking, or, simultaneously managing

multiple non-synchronized timelines), predicting (formulating estimates of the future events), and recapturing the past (reflecting on past events and using them to inform future decisions).

2.2.3. Project Success

There is very little agreement on project success criteria in-spite of its frequency of discussion. Although many studies on project success have been published during the past decades, a universally accepted definition has not yet been established (Cook & Davies, 2002; Jugdev & Muller, 2005). Part of the problem stems from the variety of perspectives that can come into play when assessing the outcome of a project. Each stakeholder group applies its own standards when judging; therefore the same project can be both a resounding success and an abysmal failure, depending on which stakeholder is evaluating the project‘s outcome (Fincham, 2002; Lim & Mohamed, 1999).

Hazebroucq (1993) also pointed out that there is a percussion effect when it comes to project success. Projects perceived as failures at launch can later be considered successes, whereas those considered successful at launch can turn out to be catastrophic failures. The PM‘s are often caught in the middle, because the success of their careers and of their organizations depends in large part on the perceived success of the projects that these individuals have managed (Ika, 2009). In particular, it is difficult to identify and quantify how an individual PM can affect the outcome of the projects that he or she manages.

The understanding of project success has developed in accordance with the understanding of projects. Four distinctive phases, four eras can be identified (Judgev & Muller, 2005). The first phase was mainly throughout of the ‘50s, ‘60s and early 70’s, when the environment was static and based on that the demands of the clients have not changed. In this phase project success meant the realization of the so-called project triangle: time, cost and quality constraints (Olsen, 1971).

The second phase was mainly characterized the ‘70s and 80’s due to the fall of the long-term planning (Atkinson, 2003). The environment lost its stability mainly due to the oil crises and the demand of the client also could change during the implementation period. Due to this, the era was focusing on the importance of the client satisfaction. Thus the two criteria at that time were

1997 project triangle (time, cost and quality) and stakeholder (client and end-user) satisfaction (Wateridge, 1997).

The third era of the understanding of project success was in the ‘90s. At that time the understanding of projects should have been looking upon from strategic point of view, there was a need for a stronger integration with the organizational strategy (Kwon, 2011). Besides, there was a need not to consider the critical success factors and success criteria as separate, independent factors, but two sides of project success which are in an interrelationship with each other. Another characteristic of this is era is the realization that the internal and external stakeholders and the project environment contribute in a great extent to project success.

The fourth era started at the dawn of the new millennium and still lasts. In this era, the strategic orientation – which was the characteristic also of the third era – was deepened due to the rapidly changing and more complex world (enough to think about the globalization and the widespread of the technological novelties, like the internet) (Hartnan and Ashrafi, 2002). Due to this, the need for analyzing the interrelationships among critical success factors and success criteria has increased.

Pinto and Slevin (1988) have identified ten project success factors, which are regarded as a classic piece of work in the realm of project success. The list produced by Pinto and Slevin (1988) is universally quoted in the perspective of project success factors and included factors like including project mission, top management support, project schedules/plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, troubleshooting, communication, *characteristics of the project team leader* (emphasis added), power and politics, environmental events, and urgency.

In 2002, another list of ten factors for information systems projects was produced by Hartman and Ashrafi (2002), which was very similar to Pinto and Slevin's (1988) list. This list was constructed from benchmarking project performance in several benchmarking networks, which were being managed by him; hence it may be termed as subjective assessment of actual project performance.

In a recent review on the study of project success in project management journals, Ika (2009) note that although there is considerable research on success criteria and critical success factors, there is a gap in studying the link between the two. Previously, Turner & Müller (2005), reviewed leadership and its use in project management studies, concluding that there is not enough research done on the impact of leadership styles on project success. Many project management studies investigate the critical success factors to projects (Belout, 1998; Baccarini 1999; Jugdev and Müller, 2005) and project failures (Linberg, 1999; Dilts & Pence, 2005). Other studies investigated the political skill of PMs (Graham, 1996) and the vision of PMs (Christenson & Walker, 2004).

From above discussion two conclusions can be drawn. Firstly, a project success criterion is in the process of continuous evolution since formalization of project management knowledge. Reasons may be attributed to development/crystallization of project management methodologies and techniques over a period of time and advancement in technology in implementing these methodologies/ techniques. Secondly, significant differences and concords exist amongst the researchers of different times, as to what implies with regards to project success; which is probably the consequence of the first.

2.2.4. Project Success – Contemporary Views and Measurement Parameters

Project success is a crucial concept and determining the degree of success or failure is very complex (Chan & Scott, 2004). The topic of project success has always been a central concern in the project management literature (e.g., Cooke–Davies, 2002; Fortune & White, 2006). A significant amount of research has gone into the identification of the determinants of project success (Jetu & Riedl, 2012).

In a general sense, success can be framed in terms of two elements: efficiency and effectiveness. Efficiency refers to the degree to which an organization ―does things right, maximizing outputs for the given inputs. Effectiveness, on the other hand, refers to the degree to which an organization ―does the right thing, performing the necessary actions to attain the project‘s goals (Belout, 1998).

In terms of project management, we can relate efficiency to the evaluation of success through the lens of the traditional triangle of virtue: time, cost, and quality (Jugdev & Müller, 2005; Pinto & Slevin, 1988). A project is considered to be successful if there is no time or cost overruns and it meets expectations (Narayanaswamy, Grover & Henry, 2013). A significant research effort has been dedicated to the development of tools and techniques to achieve control over these three criteria (Belassi & Turkel, 1996). While these three elements are important considerations, they do not by themselves guarantee that a project will be considered successful. Effectiveness is more nuanced because it is a subjective measure. Researchers have addressed this issue by incorporating measures of satisfaction, including client satisfaction, end user satisfaction, and stakeholder satisfaction (Lim & Mohamed, 1999). These success criteria (time, cost, quality, and satisfaction) drive the evaluation of project outcomes.

In addition to the project outcomes, the career success of the PM depends on their ability to influence the project‘s processes. Cooke-Davies (2002) identifies three dimensions of project success: (1) project success; (2) project management process success; and (3) consistency of success over multiple projects. Researchers have not neglected this issue. A number of critical success factors have been identified and described and critical success factor frameworks developed (Lim & Mohamed, 1999; Clarke, 1999; Morris & Hough, 1987).

Collaboration of multiple specialists and need to integrate their skills in a befitting manner is required for successful execution of the project and to achieve uniformity of the ideas and views within the team while taking into account the budget and schedule constraints (Hoegl & Parboteeah, 2007).

2.3. Empirical Review

Previous studies focused mainly on technical competencies of PMs. Recent studies discussed the project leadership so far, concluded that project leadership competencies are positively related with the project success, for example Geoghegan et'al discussed that leadership competencies were found to be positively correlated with the project success. Another important reason is that project management was considered as technical field, but now most researchers have realized the behavioral aspect of the project leaders (Jugdev and Muller, 2005).

Porthouse and Dulewicz (2007) argued that PMs should possess leadership qualities because leadership is significantly related with the project success. In addition, the organizations have realized that projects are an integral part of the organization success likewise; project leadership is a key factor for project success. Therefore, the organizations should focus on developing leadership competencies among PMs through training and development.

Other studies have examined the relationships of leaders' personality traits as applied to project management (Malach-Pines, Dvir, & Sadeh, 2008; Muller, Geraldi, & Turner, 2012). Both of these studies examined various traits of PMs, and the association of these traits toward the success of projects that ranged in various levels of complexity. Muller, Geraldi, and Turner (2012) have applied a framework of leadership competencies such as intellectual, sociability, farsightedness, result orientation of PMs, and how competency in this framework affects project outcomes. The results from Muller, Geraldi, and Turner (2012) indicate personal traits like the quality of intellect did not show any significant impact on project success even though they were taught important in dealing with complex projects while result orientation/focus of the PM was found to have significant association with project success.

Prior research (e.g., Byrd & Turner, 2001) identified requirement of both hard and soft skills as key aspects for success of PMs. However, their interdependence has mostly been overlooked in real sense. Recent researchers have found new trends (Klaus, 2010). A study indicated that hard skills contribute only 15% to one's success, whereas 85% of success is due to soft skills (Watts & Watts, 2008, as cited in John, 2009).

In her study of project management effectiveness, Hyavari (2006) defines technical leadership competence as the "competency to use project management tools and methods to carry out projects". The significance of technical competence as it relates to a PM's success is unclear. Anderson and Tucker (1994), for example, advise that selecting a PM with an appropriate technical background is essential, but caveat their statement by saying that technical competence without managerial capabilities is not enough. Goodwin (1993) offers that PMs who have too strong a focus on the technical aspects of a project may fail to recognize organizational, political, and other external realities to the detriment of his work. However. other studies report that technical competence is related to success, or at least perceived to be related. Thamhain (2004), for example, finds that the use of project management tools and techniques has a strong influence on team performance. Although it appears that technical competence is not as significant as other PM attributes in predicting success, its importance within the literature still draws the expectation that the level of technical competence a PM possesses will positively influence the level of success he/she achieves.

Trivellasa and Drimoussisb (2013) conducted a research by classifying PMs in two groups i.e. successful and unsuccessful PMs to test any difference in leadership attributes. Trivellasa and Drimoussisb (2013) found that Soft skills such as communication, coordination, interpersonal relationships and teambuilding were ranked higher by PMs in successful projects. Manazar et'al also found that the strongest relationship exists between project success and communication skills, coordination skills and problems finding and analyzing skills; $r = 0.695$, $r = 0.691$ and $r = 0.675$ respectively. , $p < 0.01$, followed by interpersonal skills and team building skills while conducting a study of impact of PM's soft leadership skills on project success. Similarly, Manazar et,al found that the strongest relationship exists between project success and communication skills, coordination skills and problems finding and analyzing skills; $r = 0.695$, $r = 0.691$ and $r = 0.675$ respectively. , $p < 0.01$, followed by interpersonal skills and team building skills.

Trivellasa and Drimoussisb (2013) also concluded that PMs in successful projects exhibit high levels of self-awareness, and relatively low levels of relationship management. The wider

difference between PMs in successful and less successful projects was detected for social awareness. Under a similar logic, successful PMs demonstrated significantly higher levels of emotional intelligence than their counterparts..

The topic of project success has always been a central concern in the project management literature especially given that there is very little agreement on project success criteria in-spite of its frequency of discussion (Siguroarsan, 2009). Although many studies on project success have been published during the past decades, a universally accepted definition has not yet been established (Cook & Davies, 2002; Jugdev & Muller, 2005). However, contemporary scholary articles have identified various success factors. Hence, a project is considered to be successful if there is no time or cost overruns and it meets expectations (Narayanaswamy, Grover & Henry, 2013). Collaboration of multiple specialists and need to integrate their skills in a befitting manner is required for successful execution of the project (Sicotte & Langley, 2000) and to achieve uniformity of the ideas and views within the team while taking into account the budget and schedule constraints (Hoegl & Parboteeah, 2007).

ERA has developed its own means of measuring project success. The success is measured in terms of

- Completion within budget which is also tied to the schedule and progress made as funding is based on those factors.
- Quality or specification level and
- Completion within schedule.

Progress made on the project is measured by dividing the total project duration into three equal periods in such a way that:

- At the end of the first one third period, the minimum expected progress is 9%.
- At the end of the second one third period, the minimum expected progress is 38%
- At the end of the last one third period or at the end of the project period, the minimum expected progress is 80%.

2.4. Conceptual Framework

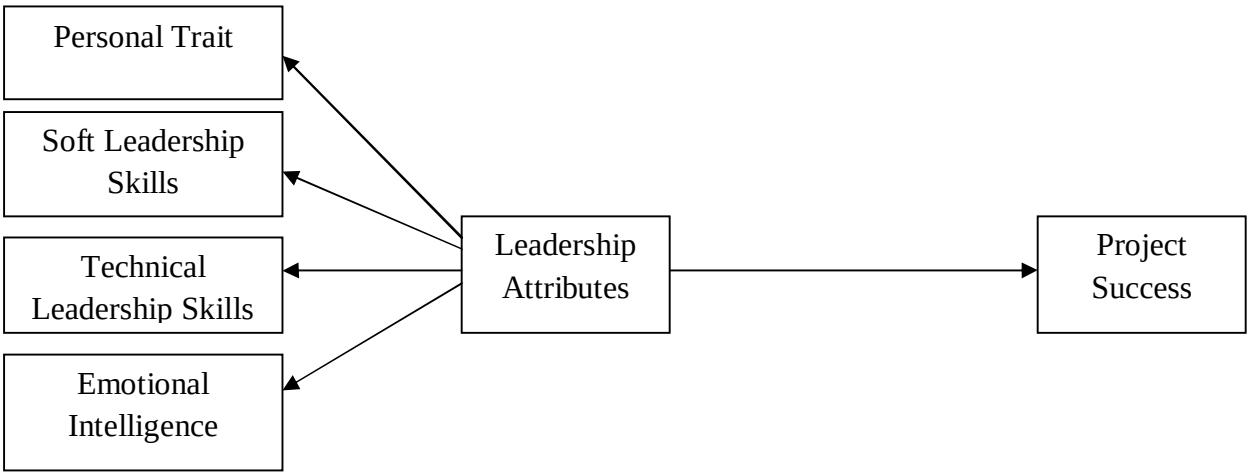

Figure 2.2 Conceptual framework

The contribution of this framework is to provide a connection between these research streams. The framework incorporates the findings of leadership theorists and project management scholars within a contingency approach as described by Ika (2009) as well as project management scholars within the competing value framework approach by Dulewicz & Higgs, (2004).

The PM‘s leadership attribute is comprised of the individual‘s personal traits, his or her level of emotional intelligence, acquired technical leadership skills and soft leadership skills. Management literature has shown that the most effective leaders have both hard and soft skills. The competing value framework model implicitly acknowledges the presence of characteristics and/or behaviors that overlap conceptually with the competences associated with emotional intelligence.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This research is a cross sectional study which is aimed at investigating the impact of leadership attributes of PMs on project success. Therefore, this chapter explores several techniques and strategies that were utilized in answering the research questions and provides an in-depth detail of the composition of the research methodologies and the motives for selecting such approach.

The leadership attributes of PMs that were considered under this research were personal traits, soft leadership skills, technical leadership skills and emotional intelligence. The personal traits comprised of farsightedness or the ability to operate in the future tense, approachableness/ accessibility, honesty and integrity, self- confidence, result oriented, enthusiasm, persuasiveness and social adaptability. The soft skills included in the study pertained to communication skills, interpersonal skills, coordination skills, problem solving skills, temporal skills and Team building & delegation abilities. The technical skills were based on the knowledge areas/project management processes that were listed under the PMBOK Guide. The emotional intelligence included two dimensions/competencies i.e. the personal (self-awareness, self management) and social (social awareness, relationship management) competencies of PMs.

Few scholars have been cited as frequently as Pinto, Slevin, and Prescott for their contributions to project success and related critical success factors (CSF) in the 1980s. Studies since then built on their articles to broaden and refine understanding on the topic. The project success criteria considered in this research were time, cost and quality/specification.

3.2. Research Design

According to McDaniel and Gates (1999), a research design is a plan for a study that provides specification of procedures to be followed by the researcher in order to achieve the research objective. Similarly, many researchers (e.g., Churchill and Iacabucci, 2005) call it a blueprint for a research to be followed in order to successfully implement the research. This research leans

towards explanatory design as it is focused on attempting to test the impact of leadership attributes of PMs on project success.

3.3. Unit of Analysis

The PMs that are working under the wings of the ERA will be the unit of analysis for this research.

3.4. Sampling Technique

The respondents for the research were PMs that have had experience in managing infrastructure projects. Stratified random sampling technique was used for drawing samples from the population. This sampling technique was employed due to the fact that ERA has its project organization to be classified into seven construction management directorates namely north region, south region, west region, central region, east region, express way and Design & building directorates. The complete list of projects undertaken by these directorates can be found attached in Annex 1.

Currently ERA is running 151 infrastructure projects all over Ethiopia. Therefore, this figure was used as the population and a sample size of 109 was determined based on a confidence level of 95% and margin of error (confidence interval) of 5%. The following sampling formula was employed to arrive at the sample size.

$$n = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1+\left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

Where,

n= Sample Size
N = Population Size
p= sample proportion
e = Margin of error
z= z-score

The projects were organized by region and type of the project. Therefore, there were seven strata, which followed the organization structure of ERA, namely west region, east region, south region, north region, central region, expressway and design & building. Neyman allocation was used to

draw samples from each stratum so as to a sample allocation plan that provides the most precision, given a fixed sample size.

$n_h = n * (N_h * \sigma_h) / [\Sigma (N_i * \sigma_i)]$

Where n_h is the sample size for stratum *h*, n is total sample size, N_h is the population size for stratum *h*, and σ_h is the standard deviation of stratum *h*.. After the sample size to be taken from each stratum was determined, the questionnaires were distributed to each directorate (strata) of ERA. Table 3.1 presents the drawing of samples from each stratum.

No.	Strata	Total Population	Sample Drawn
1	South Region	30	22
2	West Region	24	17
3	Central Region	22	16
4	North Region	23	17
5	East Region	21	15
6	Expressway	4	2
7	Design and building	27	20

Table 3.1: Sample drawn from each stratum

3.5. Research Instrument and Data Collection

A structured questionnaire was used to gather data from the sample. A questionnaire survey was adopted for collecting data because of its advantage in yielding responses in standard format from a large number of respondents and the benefit of collecting data from respondents that are from geographically dispersed locations.

The questionnaire was adopted from previous literatures which were consolidated in a structured manner and administrated to the PMs. The questionnaire had four parts. The first part of the questionnaire was disclosing statement as to the purpose of the questionnaire and assurance of confidentiality of information contained within. The second part solicited demographic information such as gender, age, education level and experience of the respondent. The third part of the questionnaire contained information about the project success rate while the final section of the questionnaire identified ratings of four leadership attributes mainly personal trait, technical

leadership skills, soft leadership skills and emotional intelligence and their respective contribution to project success.

The personal trait category contained eight items. The items used for measuring the personal trait of the PM were adopted from Nanus (1989). The technical leadership skill category items also contained eight items. The items used for measuring the PM's technical leadership skills were adopted from PMBOK Guide. The soft leadership skills category contained six items which were adopted from Shi & Chen, 2006. The emotional intelligence category contained four items were adopted from Goleman et al (2002). The project success rate was filled in by the resident engineer of the project before the questionnaire was disseminated to the respective PM. Items used for measuring the project success were adopted from ERA and are in line with Narayanaswamy, Grover and Henry (2013) definition of project success.

Before the data collection could commence required permissions to conduct the survey were obtained from ERA. The questionnaires were distributed by the planning directorate to each regional construction management directorate. Then through fax and email, each construction management directorate sent the questionnaires to resident engineers of the project with the instruction that the project success rate was to be filled by the resident engineer before disseminating the questionnaire to the PM. The overall process took over three weeks to collect the data and the response rate was 92.6%. A total of 109 questionnaires were distributed to the sample and 101 were returned completely filled while 3 questionnaires had missing values and were discarded from further analysis.

3.6. Validity and Reliability

In order for the research results to be considered accurate, its findings must be both reliable and valid. Effort were made to ensure the content validity of the data collection instrument so as to assure that the survey questions represent topics that were being measured and were accurate (Gerhardt, 2004). The study has addressed the content validity of the survey instrument by using previous literature, by defining each competency in specific terms to increase understanding of terminology used in the survey and by obtaining an expert review of the survey content (Bauer, 2005). Hence, the instrument was provided to academics for an in depth discussions with assigned advisor. This process was fruitful, since the advisor comments contributed to the

cognitive relevance of the items comprised. Also the instrument was piloted to include any feedback to 15 employees of ERA including the director of planning, director of organizational change and development and various regional directorates of construction management.

Reliability pertains to whether the same results can be obtained constantly in repeated studies. It describes how well a research finding can be applied to the population from which a sample is drawn (Culler, 2009). One of the most common ways to do this is through the use of the Cronbach's Alpha statistic (Rattray & Jones, 2007). Cronbach's Alpha is a measure based on the correlations between different items on the same test and, hence, it measures the extent to which the items in the construct produce similar scores. Cronbach's Alpha will generally increase when the correlations between the items increase. An alpha of 0.6 – 0.7 indicates acceptable internal validity and 0.8 or higher is indicative of good reliability (Bryde, 2008). The Cronbach's Alpha for the instrument was 0.893 which yielded a good reliability. The details of the Chronbach's Alpha analysis can be found in Annex II.

3.7. Operationalization of Variables

a) Dependent Variable; project success is triumphant achievement of success criteria that must be defined upfront during the project initiation. Time, cost and quality were the main projects success criteria that were identified for further scrutiny. The grouping of PMs into successful and unsuccessful PM category was established with the coordination of organizational change and development directorate and with an input from the resident engineer of the respective PM. ERA has assigned the collaborating PMs and contractors into different categories based on their performance level for the sake of follow up of strategic projects, reward and motivation. The grouping which is based on performance is as follows.

- ✓ "A" (those PMs with performance below 50%),
- ✓ "B" (those PMs with performance 50%-64%),
- ✓ "C" (those PMs with performance 65%-79%),
- ✓ "D" (those PMs with performance 80%-94%) and

- ✓ “E” (those PMs with performance 95% and above).

PMs were grouped as successful and unsuccessful PMs based on the progress tracking means established by the ERA. Progress made on the project is measured by dividing the total project duration into three equal periods in such a way that:

- At the end of the first one third period, the minimum expected progress is 9%.
- At the end of the second one third period, the minimum expected progress is 38%
- At the end of the last one third period or at the end of the project period, the minimum expected progress is 80%. Therefore, those PMs with a success rate of 80% and above were categorized as successful while the rest were labeled unsuccessful.

The source of the progress measuring procedure used is attached in appendix IV and can also be found on the official website of ERA www.era.gov.et.

b) Independent Variable: The following are independents used in this study:

Variables	**Definition and measure**	**Expected effect on Success**
Personal Traits	The personal traits included farsightedness or the ability to operate in the future tense, approachableness/accessibility, honesty and integrity, self- confidence, result oriented, enthusiasm, persuasiveness and social adaptability. Each of the item in the instrument were measured on five point Likert scale, ranging from 1 = “Strongly Disagree” to 5 = “Strongly Agree”	+/-
Soft Skills	The PM’s Soft Skills included communication skills, interpersonal skills, coordination skills, team building and delegation ability, problem finding, analyzing, solving as well as temporal skills.	+

	Each of the item in the instrument were measured on five point Likert scale, ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree"	
Technical Skill	The technical skills were based on knowledge of the subject area and the extent of understanding on the project management processes adopted from PMBok Guide. Each of the item in the instrument were measured on five point Likert scale, ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree"	+
Emotional Intelligence	The emotional intelligence aimed to measure the personal (self-awareness, self management) and social (social awareness, relationship management) competencies of PMs. Each of the item in the instrument were measured on five point Likert scale, ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree"	+

Table 3.2: Operationalization of variables

3.8. Method of Data Analysis

Descriptive statistics, frequency tables, charts, mean score ranking order, independent sample t-test and regression analysis were used to answer the research questions posed in the first chapter of the research. The relationship between the dependent variable, project success, and the independent variables was expressed as a linear combination of the independent variables plus an error term. The multiple linear regression model is specified as follows:

$Y= \beta_0 + \beta_1 X1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$

Where: Y= project success

$\beta_{0=}$ Constant term X3= Technical skills

X1= Personal trait
X2= Soft skills
X4= Emotional intelligence
X5= Experience

Where the β_S are coefficients of independent variables, Xs are column vectors for the independent variables in this case; personal trait, soft skill, technical skills, emotional intelligence and experience; while ε is a vector of errors of prediction.

A statistical analysis was done by using IBM SPSS Version 20. The procedures of data classification and organization were set to validate the data for further analysis. After data classification and organization the statistical analysis was performed in order to accomplish the purpose of the study.

3.9. Ethical Considerations

The ethical approval and clearance for the study before data collection was obtained from the, School of Commerce, Addis Ababa University. The purpose of the research study was explained to respondents in order to gain their full consent to use the information obtained. The first page of the questionnaire contained privacy and confidentiality terms and the respondents were assured that the information provided will not be passed to a third party and will not be used for any other purpose other than as an input for the research. The researcher safeguarded all information related to the participants. Their privacy, identity and confidentiality were maintained by assigning them code numbers instead of names (anonymity). The completed questionnaires were filed safely and were accessible only to the researcher and thesis advisor.

CHAPTER 4

RESULTS AND DISCUSSION

The first section of this chapter presents a demographic description of the sample in terms of gender, age, educational level, work experience, and project success rate. The second section summarizes the response of participants of the research when it comes to leadership attributes that impact project success. Finally, the third section of this chapter includes results of inferential statistics that were conducted based on the data that was gathered from the sample.

4.1. Descriptive analysis

Descriptive statistics of the research used frequency (expressed in terms of percentage) and charts to present findings regarding demographic factors, leadership attributes and project success.

4.2. Demographic Factors

Regarding the gender composition of the sampled respondents, about 93.1% of them were male while the remaining 6.9% were female counterpart which generally indicates that the majority of the sampled respondents were predominantly male. 49.5% of the respondents were falling under the age category of 18 to 28 years of age while 42.6% of the respondents were aged between 29 up to 39. 7.9% of the respondents were aged between 40 to 50. Therefore, majority of the respondents were young enthusiast. 66.3% of the respondents have a bachelor degree literates while the rest of the respondents were educated on a master's degree level. The majority of the respondents (i.e. 89..1% of the respondents) had experiences of above a two years when it came to managing infrastructure projects directly. Over half of the respondents had a project success rate (based on the project progress rate filled by the resident engineer) falls within the category of 81-95% and 58.4% of the respondents were considered to be successful according to the parameters set by ERA.

Table 4.1: Frequency Table of Demographic Variables

Demographic Variables		Frequency	Percent
Gender of Respondent	Male	94	93.1
	Female	7	6.9
Age of Respondent	18-28	50	49.5
	29-39	43	42.6
	40-50	8	7.9
	51 and above	0	0
Education Level of Respondent	Bachelor Degree	67	66.3
	Masters Degree	34	33.7
Experience Level	Less than a Year	0	0
	Above 1 Year but Less than 2 Years	11	10.9
	2 Years and Above but Less than 5 Years	15	14.9
	Above 5 Years	75	74.2
Project Success Rate of Respondents	Below 50%	0	0
	50%-60%	8	7.9
	66%-80%	34	33.7
	81%-95%	56	55.4
	Above 95%	3	3
Success Category	Successful PM	59	58.4
	Unsuccessful PM	42	41.6

4.2.1 Relationship of Demographic Factors with Project Success Rate

I. Age and Project Success

50% of those respondents within the age of 18-28, 60.5% of those respondents within the age of 29-39 and 100% of respondents with age 40-50 were categorized as successful PMs. Therefore, Chi-Square test was conducted to look for any association between age and project success. The Chi-Square result (χ^2 (2) = 7.227, p < .05) revealed that there is a stastically significant association between age and project success.

Table 4.2: Cross-tabulation between the Age of Respondent and Project Success

			Successful	Unsuccessful
Age of Respondent	18-28	Count	25	25
		% within Age of Respondent	50.0%	50.0%
	29-39	Count	26	17
		% within Age of Respondent	60.5%	39.5%
	40-50	Count	8	0
		% within Age of Respondent	100.0%	0.0%
Chi-Square Test				
Pearson Chi-Square		df	Significance (2 Sided)	
7.227		2	0.02	

II. Education Level and Project Success

53.7% of respondents with a bachelor degree as well as 67.6% of respondents with Masters degree were successful PMs in their field. To determine if there was any association between education level and project success a Chi-Square test was conducted. The Chi-Square result, shown on the table below, were χ^2 (1) = 1.798, $p > .05$. Thus, it can be observed that there is no statistically significant association between education level and project success rate.

Table 4.3: Cross-tabulation between Education Level of Respondent and Project Success

			Successful	Unsuccessful
Education Level of Respondent	Bachelor Degree	Count	36	31
		% within Education Level of Respondent	53.7%	46.3%
	Masters Degree	Count	23	11
		% within Education Level of Respondent	67.6%	32.4%
Chi-Square Test				
Pearson Chi-Square		df	Significance (2 Sided)	
1.798		1	.180	

III. Experience and Project Success

Work experience of respondent has been classified into four categories for the purpose of this research i.e. those having less than a year of experience; those having more than a year but up to two years of experience; those having more than 2 years but less than five years of experience and those having more than five years of experience. 78.7% of those respondents with experience of above 5 years were the only ones that were dubbed as successful PM. So once again Chi-Square test was conducted to test for any association between experience and project success. The Chi-Square result ($\chi 2$ (2) = 49.185, $p < .01$) showed that there a statistically significant association between experience and project success rate and experience can also be a significant predictor of success in project field.

Table 4.4: Cross-tabulation between Experience of Respondent and Project Success

			Successful	Unsuccessful
Experience of Respondent	Above 1 Year but Less than 2 Years	Count	0	11
		% within Experience of Respondent	0.0%	100.0%
	2 Years and Above but Less than 5 Years	Count	0	15
		% within Experience of Respondent	0.0%	100.0%
	Above 5 Years	Count	59	16
		% within Experience of Respondent	78.7%	21.3%
Chi-Square Test				
Pearson Chi-Square		df	Significance (2 Sided)	
49.185		2	.000	

4.3. Assessment of Response to Leadership Attributes of PMs and Project Success

Respondents were asked to express their views of leadership attributes that affect the success of a project on a five scale rating instrument which ranged from strongly disagree to strongly agree. This section summarizes the frequency of responses given by the participants of the research. Furthermore, the data presented in this section has been split by project success rate in to two groups i.e. successful and unsuccessful PM based on the parameters that were set by ERA.

I. Personal Trait

The personal trait attribute of PMs contained eight items. The first item under personal trait asked respondents about the degree to which they concur with the notion that the project success was influenced by the farsightedness of the PM. To this end, 59.3% of successful PMs expressed that they strongly agree while the rest agreed with the statement. However, only 42.9% of those PM labeled as unsuccessful agreed with the aforementioned perspective while a staggering 57.2% either disagreed or remained indifferent towards the view that project success was affected by farsightedness of the PM.

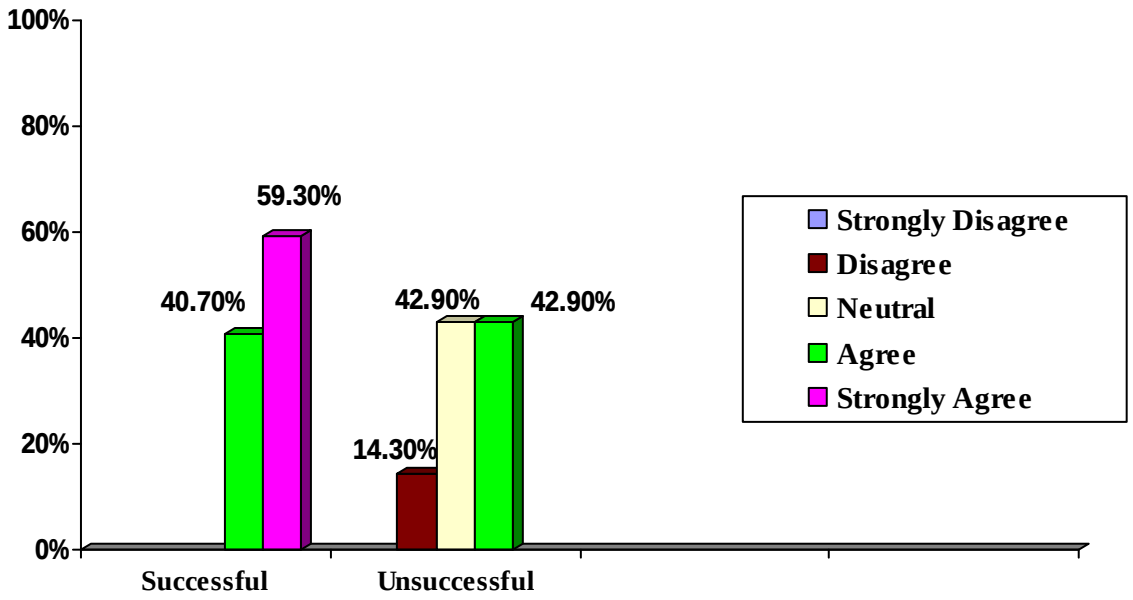

Figure 4.1: Farsightedness of the PM and Project Success

All the PMs that were categorized as successful either strongly agreed or agreed that team members having an easy access to the PM affects the project success. It's noteworthy to point out that 23.8% of the unsuccessful PMs remained indifferent when it came to the impact of approachableness of the PM and the rest concurred to the statement in a varying extent.

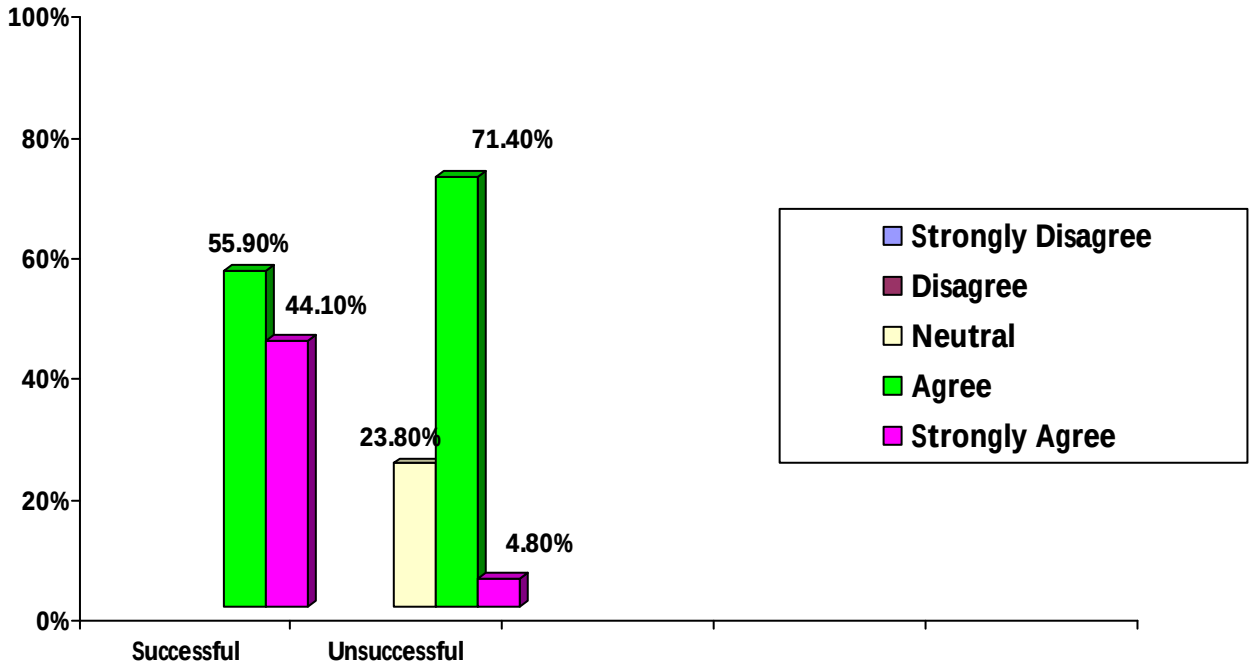

Figure 4.2 Easy Access to the PM and Project Success

10.2% of the successful PMs and 14.30% of the unsuccessful PMs remained indifferent as to the impact of honesty and integrity of the PM on the project success. The rest of the respondents in both groups expressed that they either agree or strongly agree on the fact that honesty and integrity held an influence on the successful completion of the project.

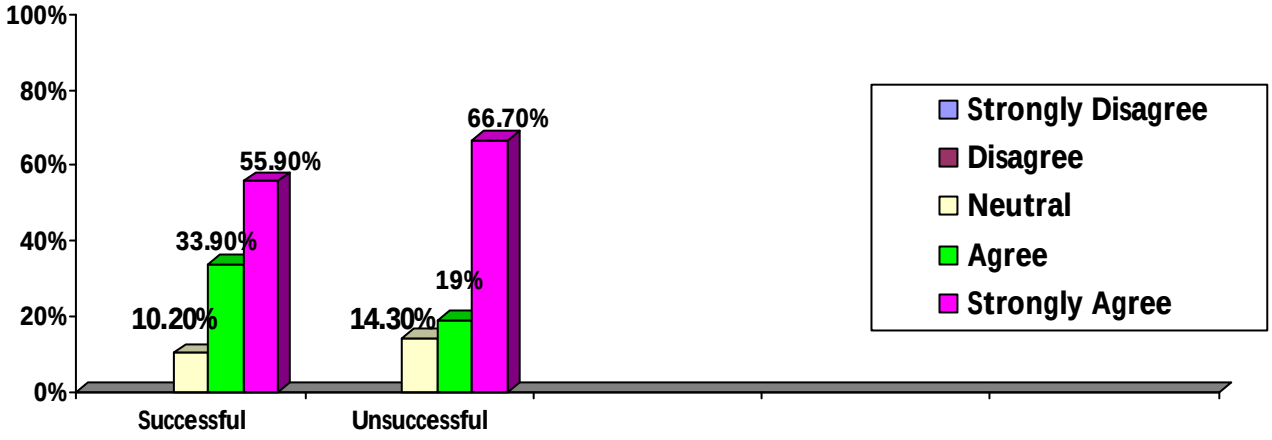

Figure 4.3: Honesty & Integrity of the PM and Project Success

All of those PMs that were categorized as successful and majority of unsuccessful PMs (81%) either agreed or strongly agreed that the self confidence of the PM does indeed affect the project

success. Nevertheless, it's indicated that 19% of those unsuccessful PMs remained indifferent to the issue at hand.

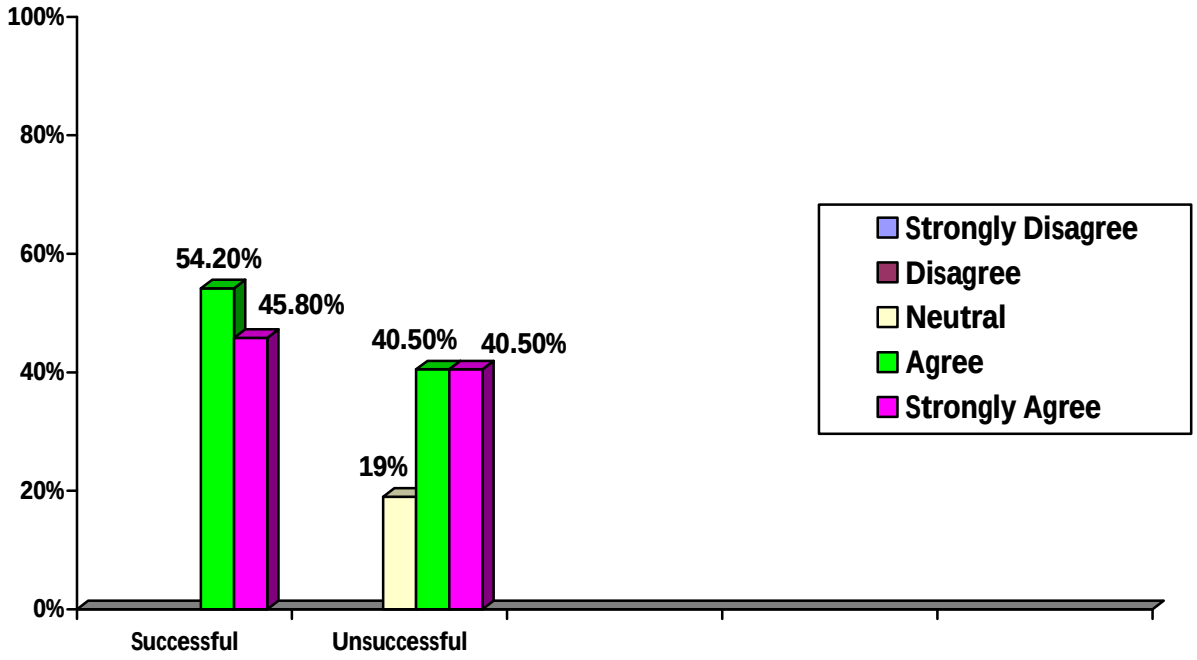

Figure 4.4: Self Confidence of the PM and Project Success

All the successful PMs either strongly agreed or agreed with the fact that the PM should be result oriented in order for the project to be successful. However, it's noteworthy to state that 9.5% of those PMs in the unsuccessful category feel that they are indifferent when it comes to the impact of result orientation of the PM on the success of the project.

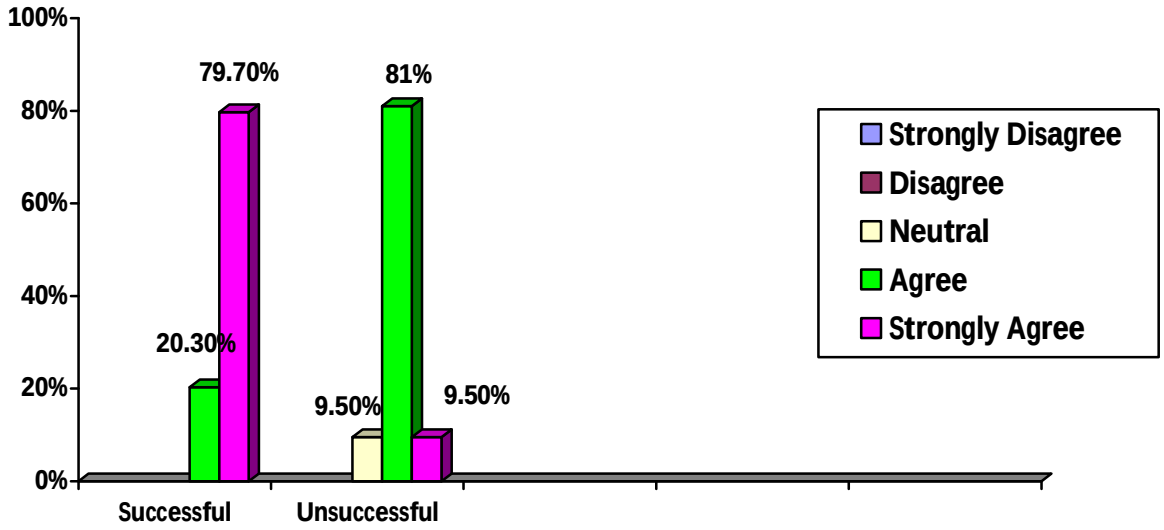

Figure 4.5: Result Oriented Behavior and Project Success

Majority of the PMs in both groups concurred with the notion that enthusiasm of the PM does indeed influence the success of a project. However, a small portion from both groups (i.e. 3% of successful PMs and 9.5% of unsuccessful PMs) remained indifferent to the notion that enthusiasm of the PM holding an influence on the successful completion of a project.

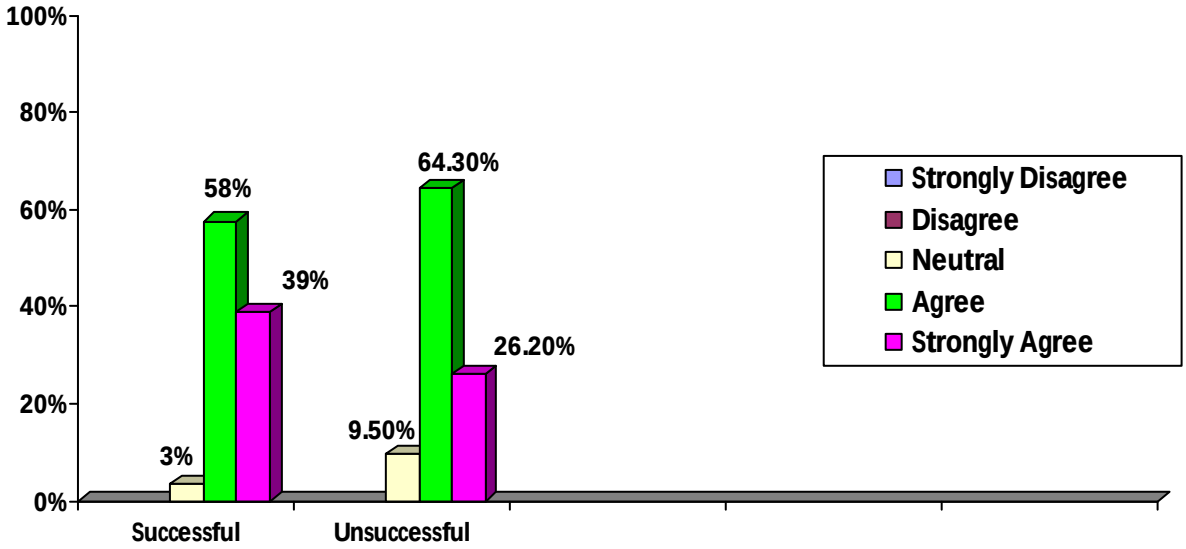

Figure 4.6: Enthusiasm of the PM and Project Success

All the PMs in the successful category stated that they either agreed or to a more extent strongly agreed with the view that the persuasiveness of the PM does factor in the project success.

However, 26.20% of the PMs in the unsuccessful category uttered that they are indifferent when it came to the notion that project success was influenced by the persuasiveness of the PM.

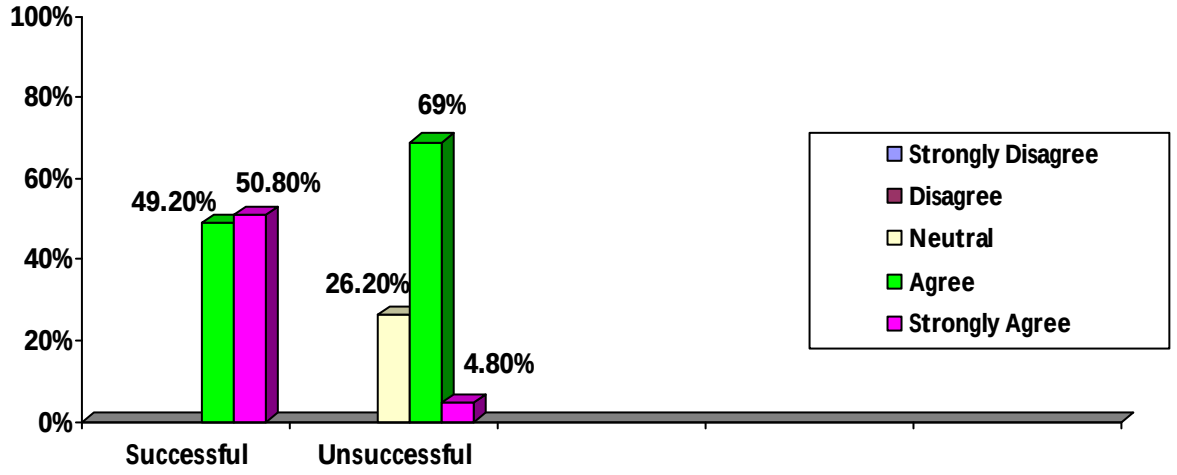

Figure 4.7: Persuasiveness of the PM and Project Success

The majority of the PMs concurred with the fact that social behavior and social adaptability of the PM had an influence on the project success. Nevertheless, 1.70% & 19% of successful and unsuccessful PMs, respectively, expressed that they held an apathetic opinion as when it came to the effects of social behavior and social adaptability on the project success.

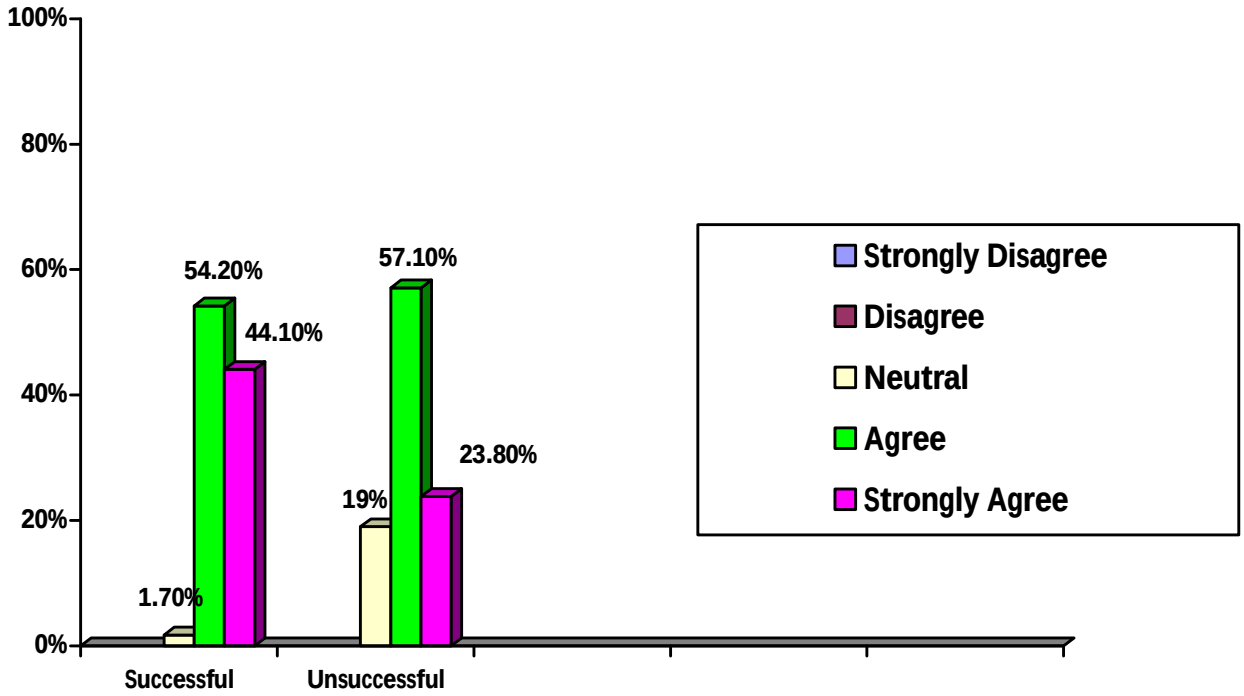

Figure 4.8: Social Behavior of the PM and Project Success

II. Technical Leadership Skills

The majorities of the PMs in both categories either strongly agreed or agreed that the knowledge of project cost management process has an impact on the project success. However, it should be noted that 14.3% of the unsuccessful PMs feel that they are indifferent as to the impact of knowledge cost management process of the PM on the project success.

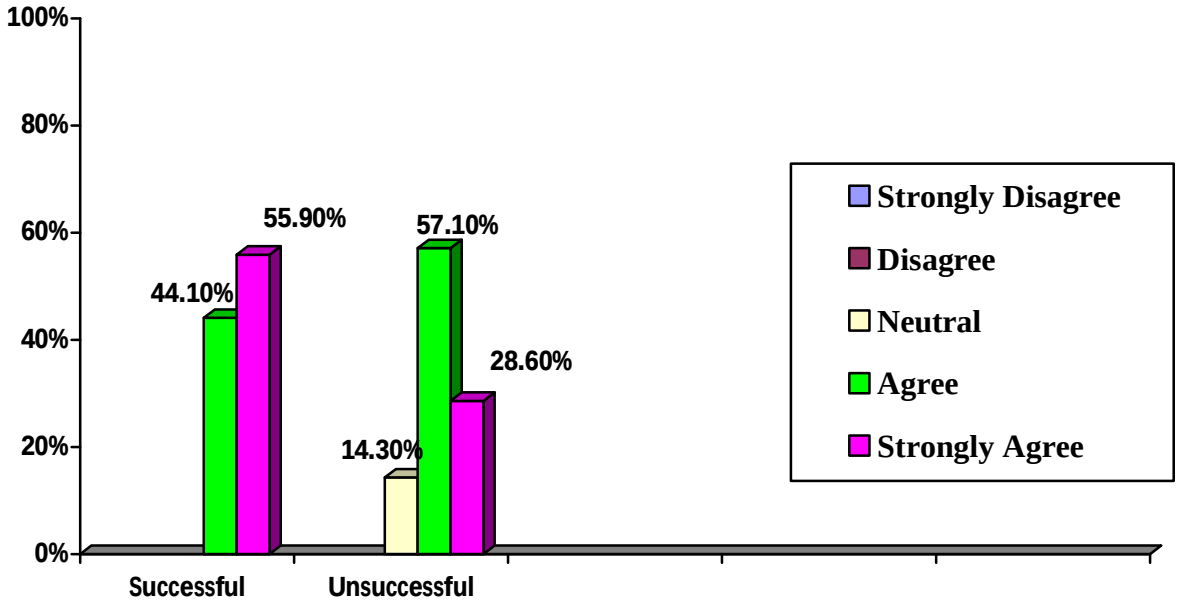

Figure 4.9: Knowledge of Project Cost Management and Project Success

All of the PMs in both categories either strongly agreed or agreed on the statement that the knowledge of project schedule management processes having an impact on the project success.

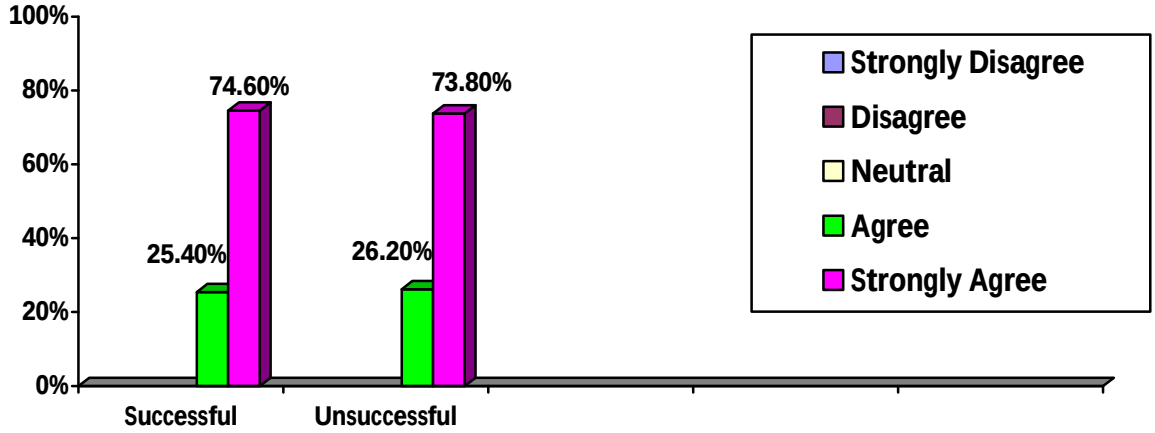

Figure 4.10: Knowledge of Project Schedule Management and Project Success

The majority of the successful and all of the unsuccessful PMs in both categories either strongly agreed or agreed on the fact that project success was influenced by the knowledge of project quality management processes of the PM. However, a small portion (3.4%) of the successful PMs consented that they are indifferent as to the influence of knowledge of quality management process on the success of the project.

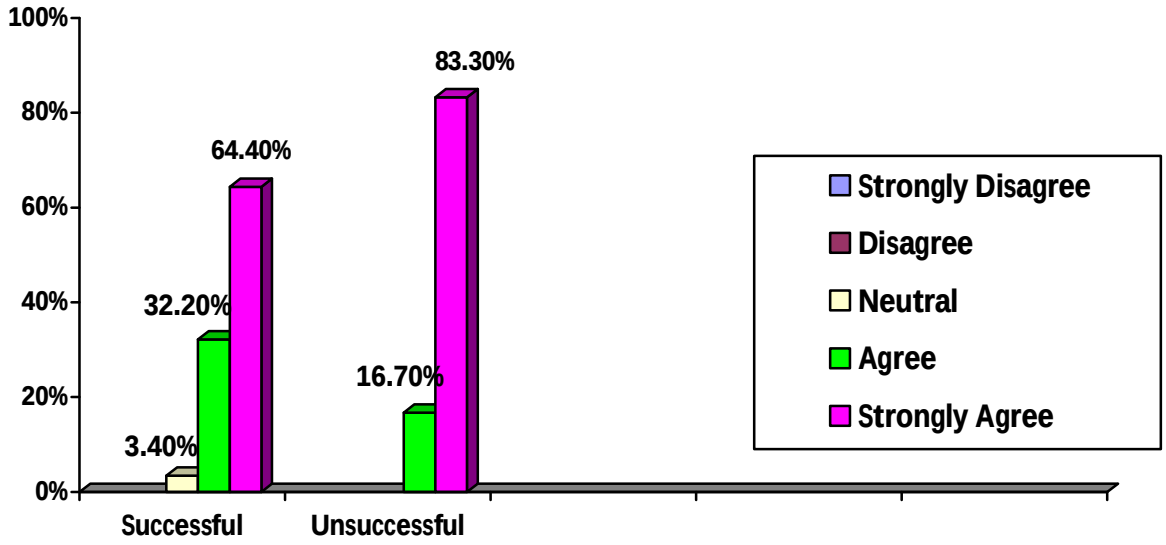

Figure 4.11: Knowledge of Project Quality Management and Project Success

All of the PMs in both categories either strongly agreed or agreed on the statement that the knowledge of project risk management processes having an impact on the project success. However, the extent or degree of agreement in both groups differs considerably as 54.20% of the successful PMs expressed that they strongly agreed on the impact of risk management on project success. This figure makes up more than half of the respondents in the successful PM category., In contrast only 31% of the unsuccessful PMs stated that they strongly agreed while the majority expressed that they agreed with the abovementioned subject .

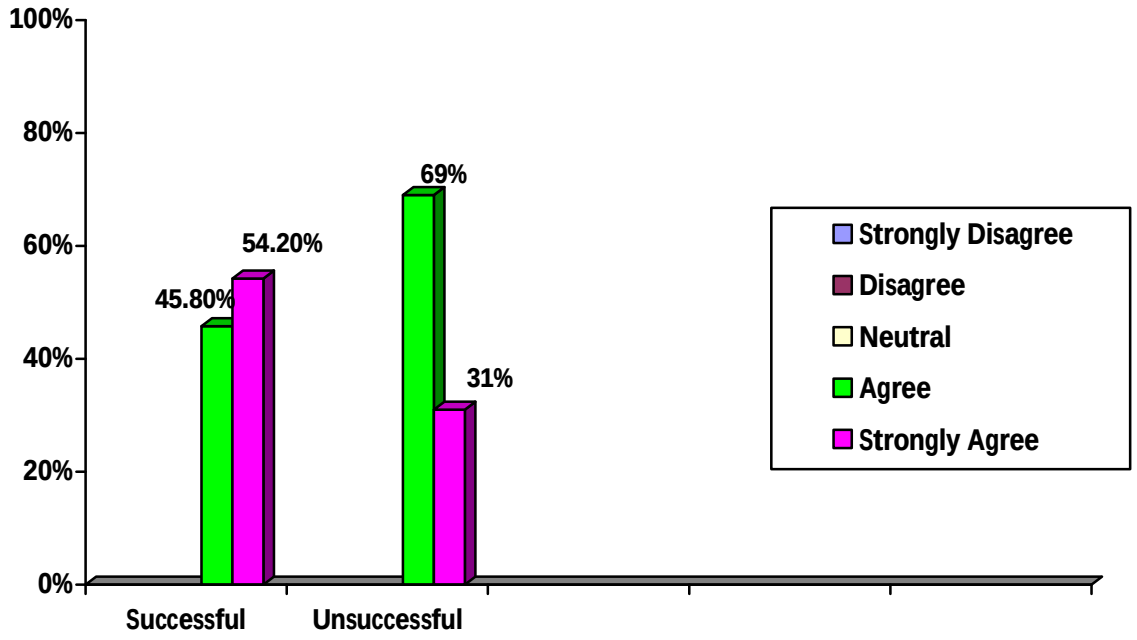

Figure 4.12: Knowledge of Project Risk Management and Project Success

All of the PMs in the successful category either agreed or strongly agreed that knowledge and application of project stakeholder management process does impact project success. On the other hand, 7.10% of the unsuccessful PMs remained indifferent while the rest either agreed or strongly agreed with the statement.

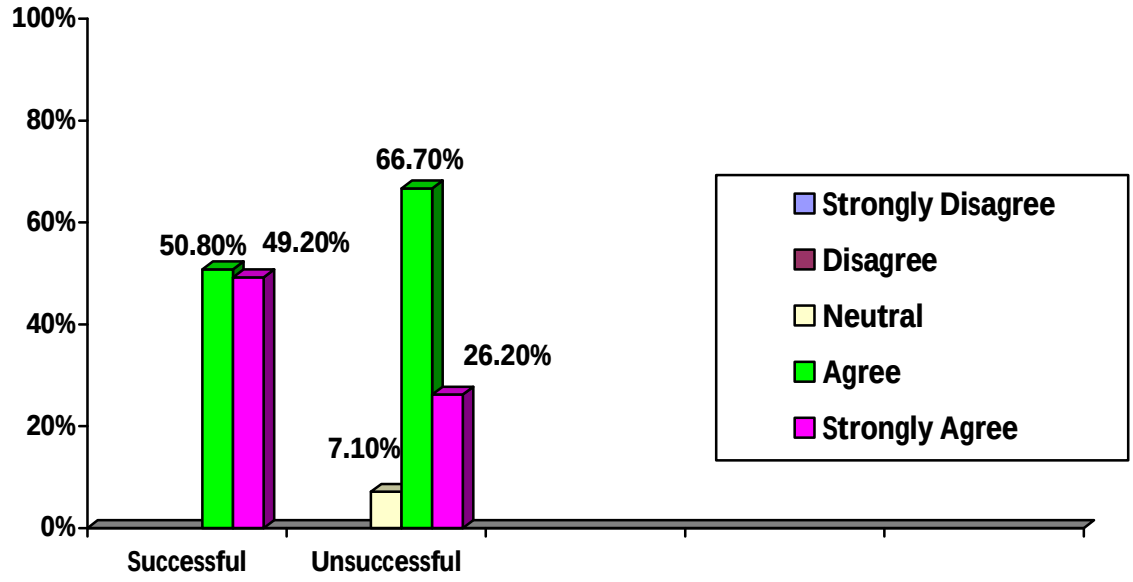

Figure 4.13: Knowledge of Project Stakeholder Management and Project Success

All of the PMs in the successful category either agreed or strongly agreed that knowledge and application of project communication management process holding an influence on the project success. However, 14.3% of the unsuccessful PMs remained indifferent while the rest either agreed or strongly agreed with the statement.

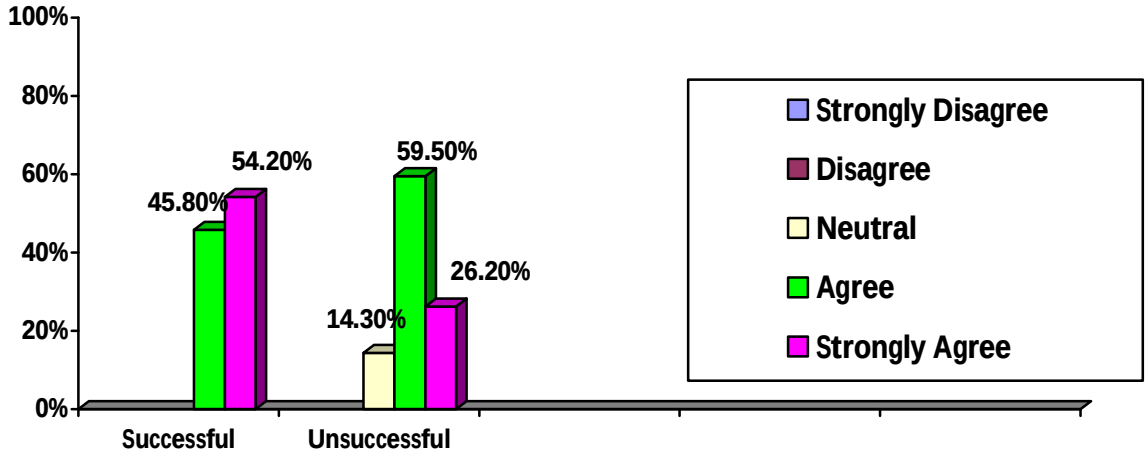

Figure 4.14: Knowledge of Project Communication Management and Project Success

The majority of PMs in both categories agreed or strongly agreed with the impact of knowledge of project procurement process on project success. However, 13.50% of successful PMs and 21.4% of unsuccessful PMs remained indifferent. Also it's noteworthy to point out that the degree of concur on the impact of knowledge of project procurement on the project success differs considerably. Nearly half of the successful PMs felt that they strongly agreed with the statement while only 9.6% of the unsuccessful PMs expressed the same views on the subject matter.

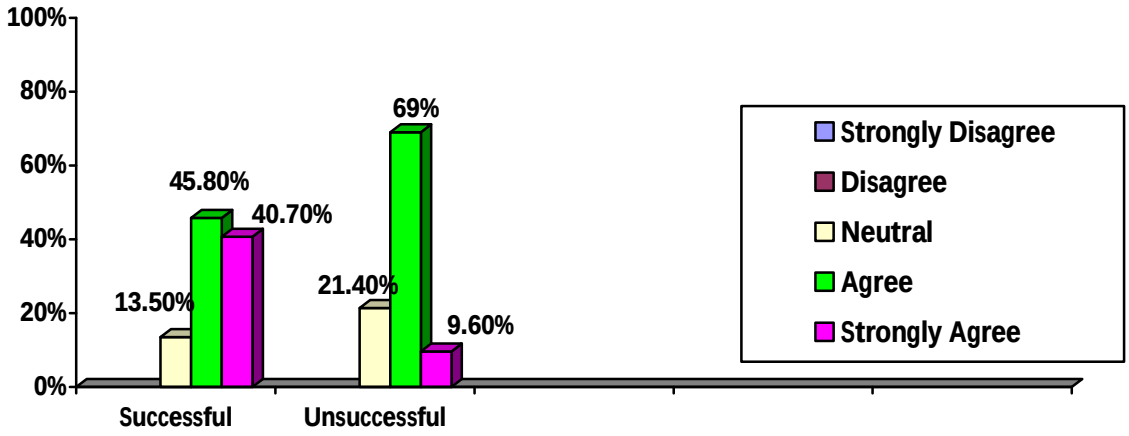

Figure 4.15: Knowledge of Project Procurement Management and Project Success

The majorities of PMs in both categories either strongly agree or agreed with the view that knowledge and application project human resource management impacting the project success. However, 3.4% of the successful PMs and 16.7% of the unsuccessful PMs remained indifferent.

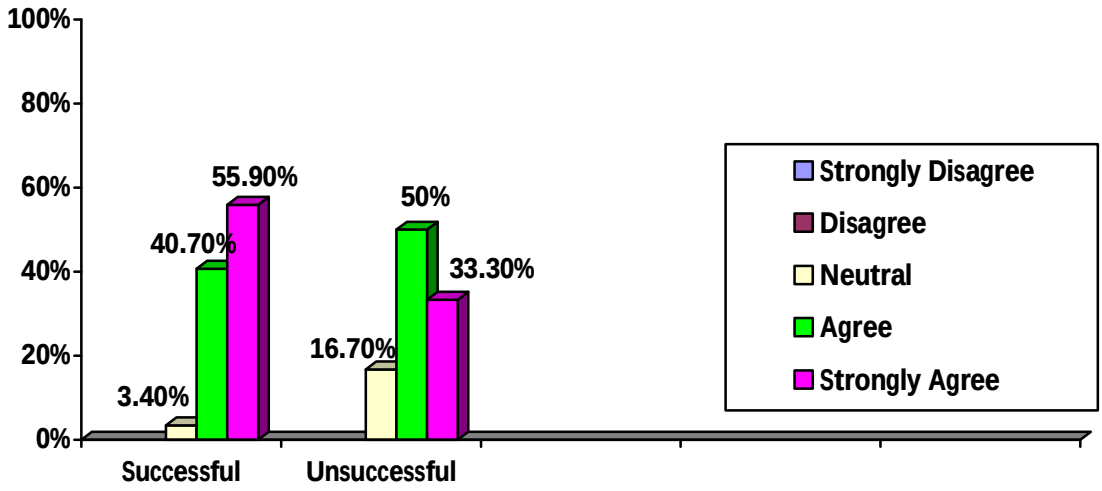

Figure 4.16: Project Human Resource Management and Project Success

III. Soft Leadership Skill

The majority of the PMs in both categories of success rate stipulated that they either strongly agreed or agreed with the fact that the communication skill of the PM influencing the outcome of the project with the exception of few (14.3%) of PMs from the unsuccessful category feeling indifferent about the subject matter.

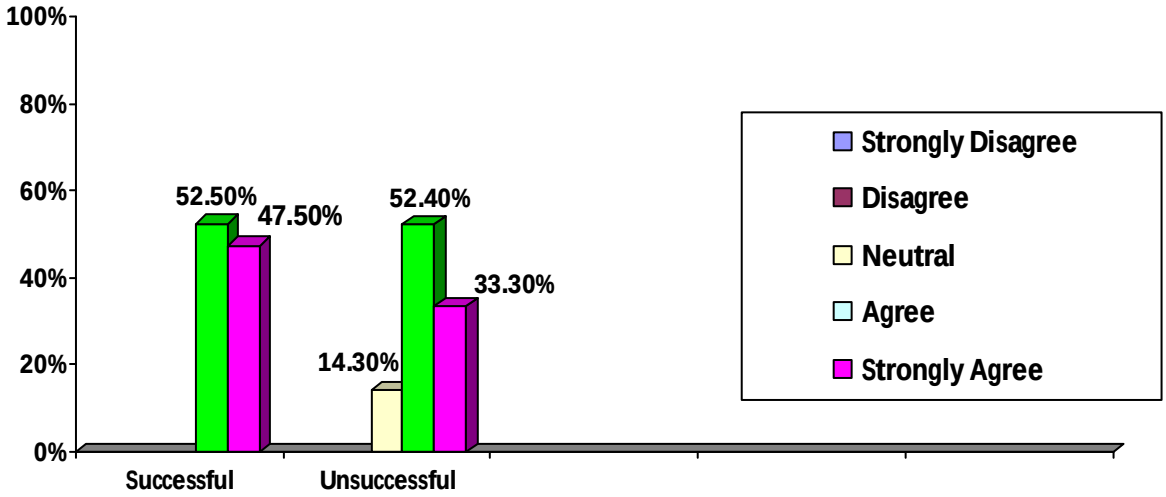

Figure 4.17: Communication Skill and Project Success

Again the majority of the PMs in both categories consented that interpersonal skill of the PM does impact project success with the exception of 1.7% of the successful PMs and 16.7% of the unsuccessful PMs feeling indifferent as to the influence of interpersonal skill of the project manager on the project success.

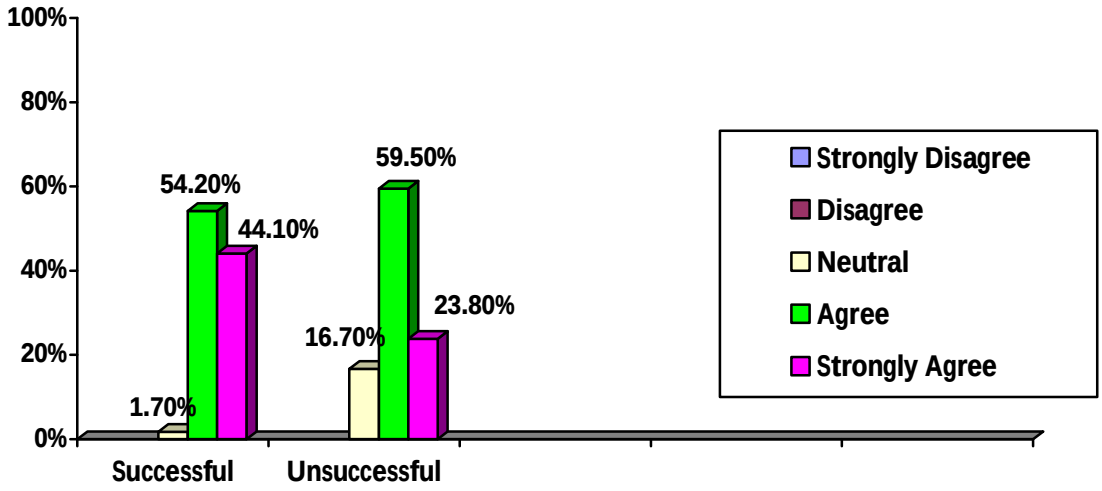

Figure 4.18: Interpersonal Skill and Project Success

The majority of the PMs in both categories concurred that project success was affected by the coordination skill of the PM with the exception of 4.8% of the unsuccessful PMs who felt indifferent as to the influence of coordination skill of the PM on the project success.

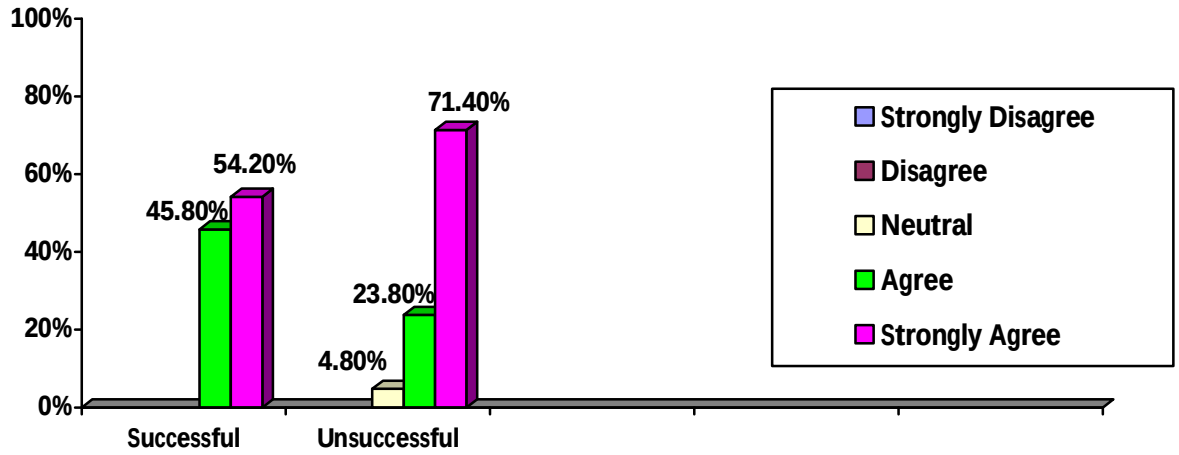

Figure 4.19: Coordination Skills and Project Success

The majority of PMs in each category expressed that they either strongly agreed or agreed with the statement that the project success was influenced by the team building and delegation ability

of the PM with exception of 4.8% of the PMs within unsuccessful category who felt that they are indifferent to the aforementioned statement. However the extent of agreement differs between the groups as more than half of the successful PMs stated that they strongly agreed with the statement while the majority of the unsuccessful PM said they only agreed with subject at hand.

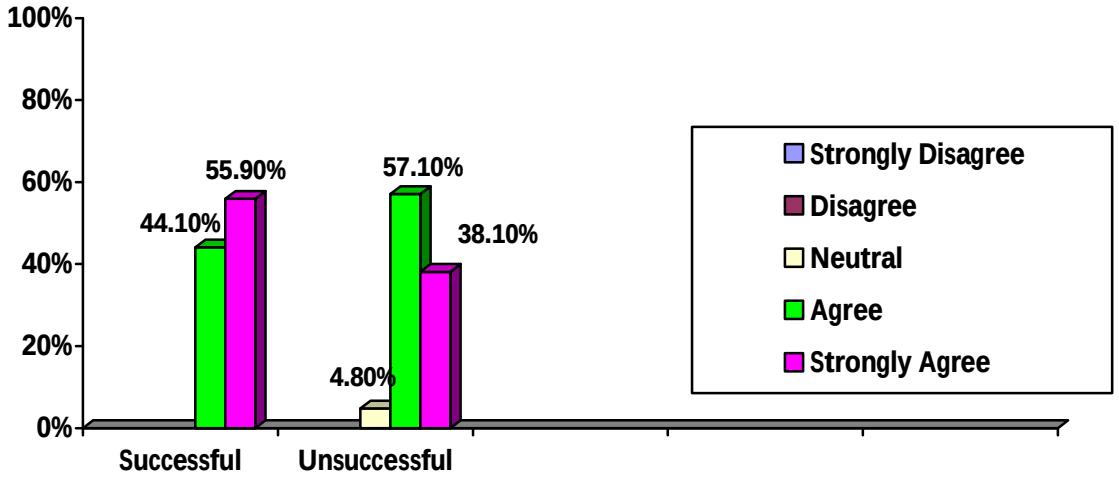

Figure 4.20: Team Building & Delegation Ability and Project Success

All of PMs in each category expressed that they either strongly agreed or agreed with the statement that problem discovery, analyzing and solution finding ability of the PM impacting the success of the project.

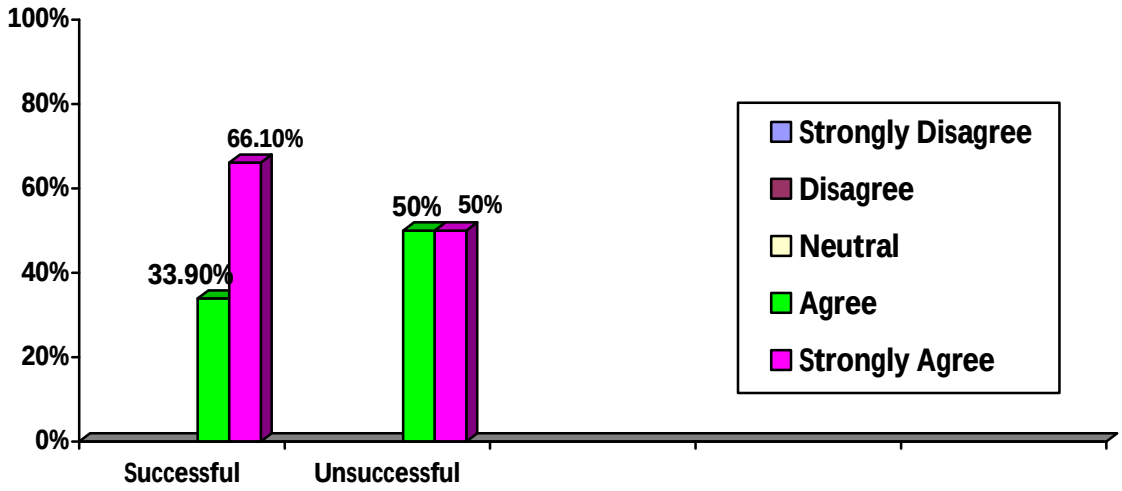

Figure 4.21: Problem Finding, Analyzing and Solution Discovering Ability and Project Success

All of PMs in each category expressed that they strongly agreed or agreed with the fact that temporal skills of the PM having an impact on the project success.

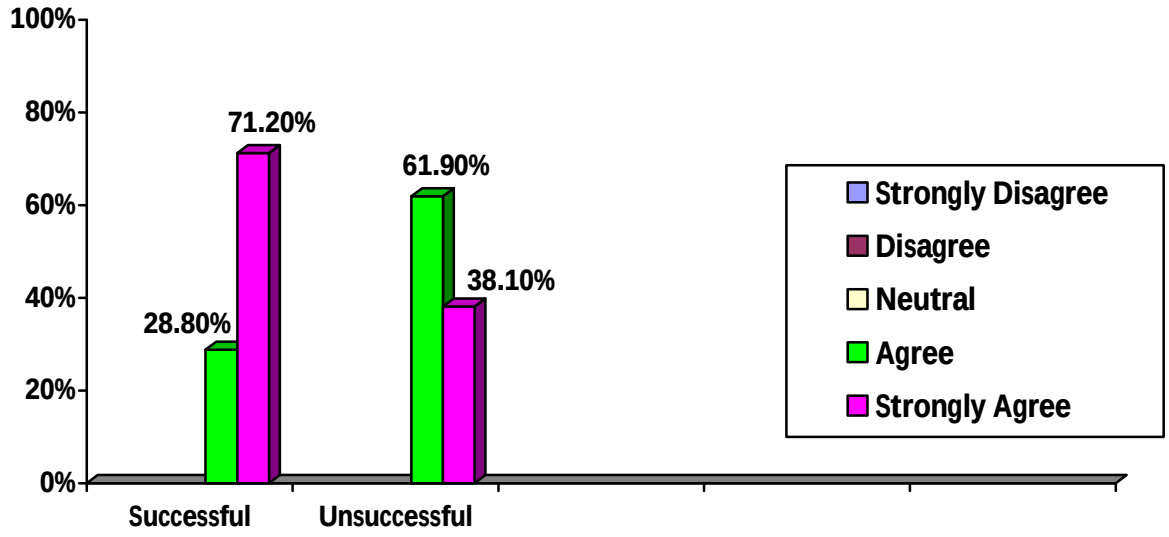

Figure 4.22: Temporal Skills and Project Success

IV. Emotional Intelligence

Those PMs under the successful category either strongly agreed or agreed with the statement that the project success is affected by the degree of self awareness of the PM. Similarly the majority of the unsuccessful PMs agreed with the aforementioned statement with the exception of few (9.5%) who stated that they were indifferent.

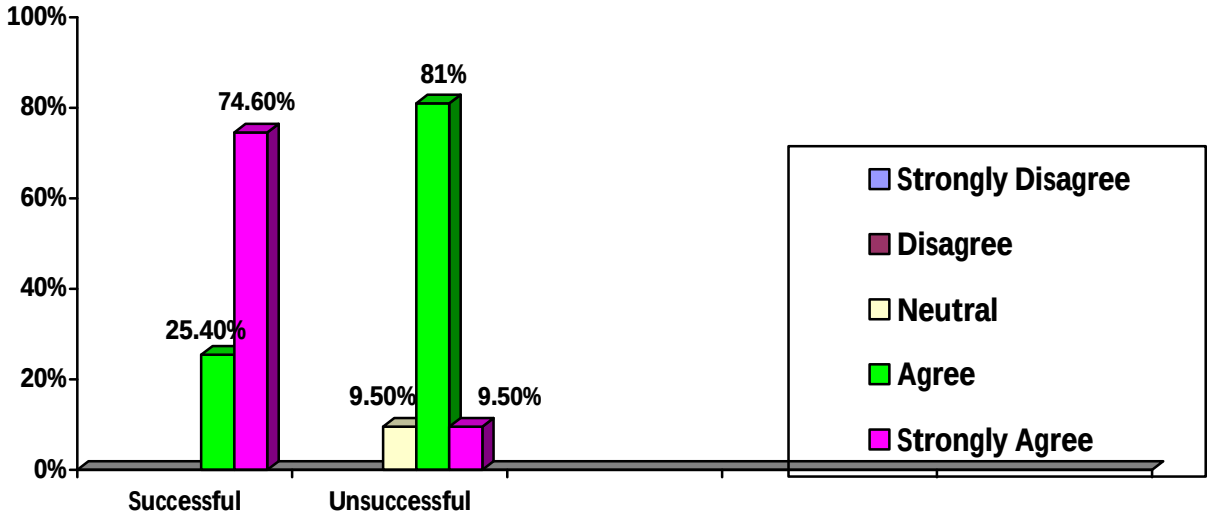

Figure 4.23: Degree of Self Awareness and Project Success

The majority of the PMs in both category either strongly agreed or agreed with the statement that the degree of self management of the PM having an impact on the project success with the exception of 1.7% of the successful PMs that remained indifferent. Also the extent of agreement differs between the groups as more than half of the successful PMs stated that they strongly agreed with the statement while the majority of the unsuccessful PM said they only agreed with subject at hand.

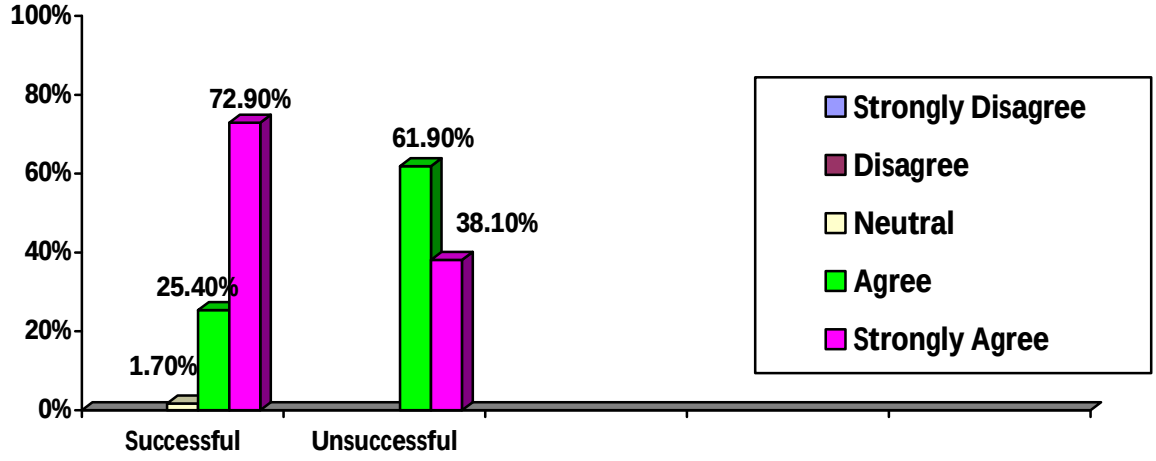

Figure 4.24: Degree of Self Management and Project Success

Once again all of the successful PMs either strongly agreed or agreed with the fact that social awareness of the PM impacting the project success. On the other hand, 16.7% of the unsuccessful PMs expressed that they were indifferent to the notion while the rest strongly agreed or agreed as to the impact of social awareness on the success of the project.

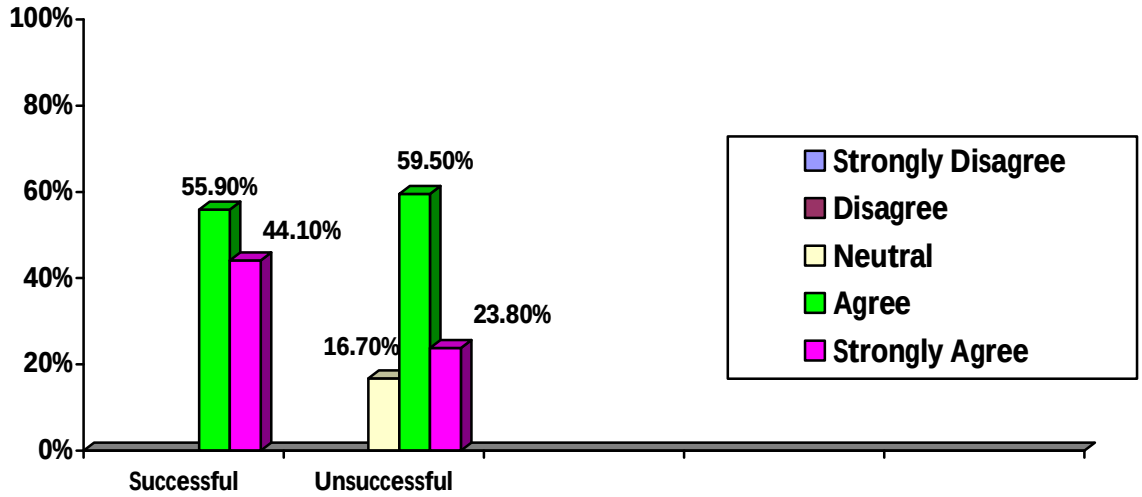

Figure 4.25: Social Awareness and Project Success

The majority of the PMs in both category either strongly agreed or agreed with the statement that the project success was affected by the relationship management ability of the PM with the exception of 19% of the unsuccessful PMs that remained indifferent.

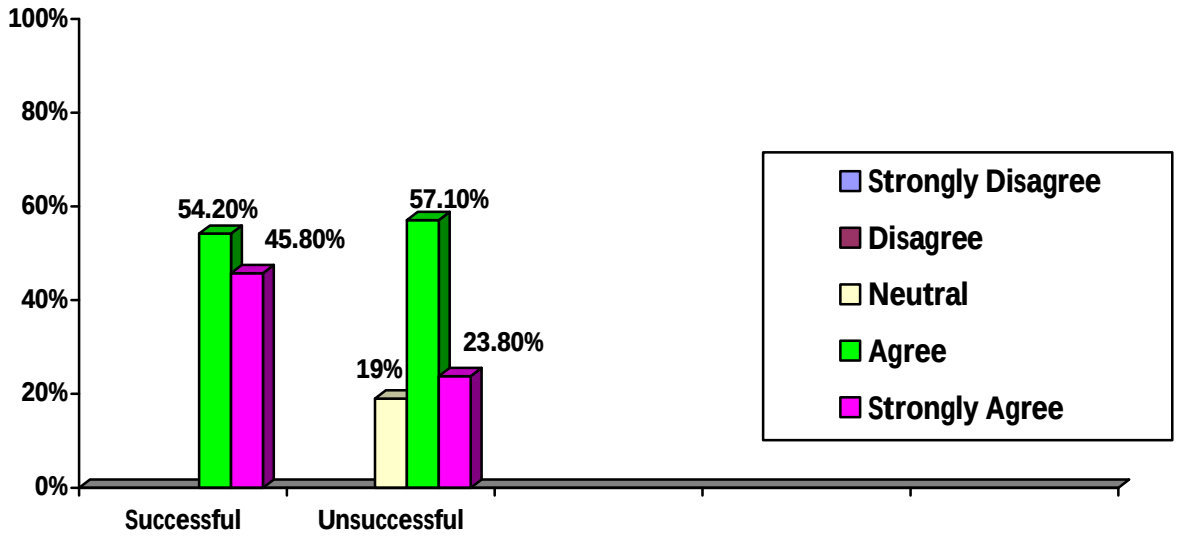

Figure 4.26: Relationship Management and Project Success

4.4. Analysis of Mean for Successful and Unsuccessful PMs

I. Graphical Analysis

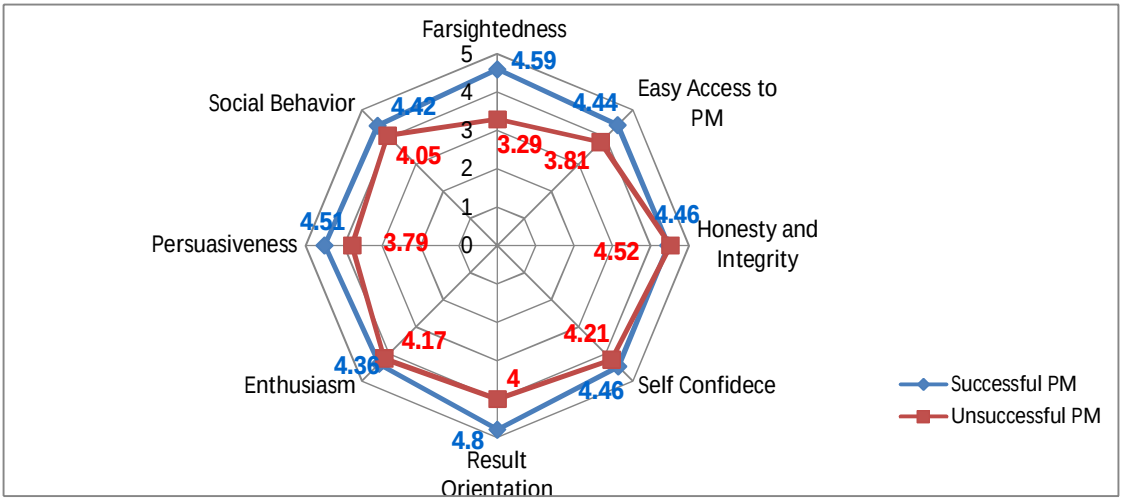

Figure 4.27: Mean of personal trait leadership attributes of PMs

The radar chart in figure 4.27 shows the mean score of successful and unsuccessful PMs when it comes to factors stipulated under personal traits. From the above chart it can be seen that successful PMs have a higher mean score in all factors under personal traits with the exception of honesty and integrity. Successful PMs believe that result oriented behavior is the most influential personal trait that affects project success as it had a mean score of 4.8. However, the unsuccessful PMs rated result orientation behavior with a mean score of 4 which indicated a considerable difference. The next personal trait item that was rated important by mean score is farsightedness. Farsightedness for successful PMs had a mean score of 4.59. The same item was considered to be the least important personal trait by the unsuccessful PMs. Persuasiveness was identified to be the third important determinant of project success with a mean score of 4.51. Similarly, this was the second least important determinant of project success for the unsuccessful PMs. Honesty and integrity came in as the fourth crucial determinant of project success for the successful PMs. However, this item was the most important determinant of project success for the unsuccessful PMs. Self confidence was the fifth important determinant identified by the successful PMs with a mean score of 4.46. Easy access took the sixth important determinant for successful PMs followed by social behavior and enthusiasm.

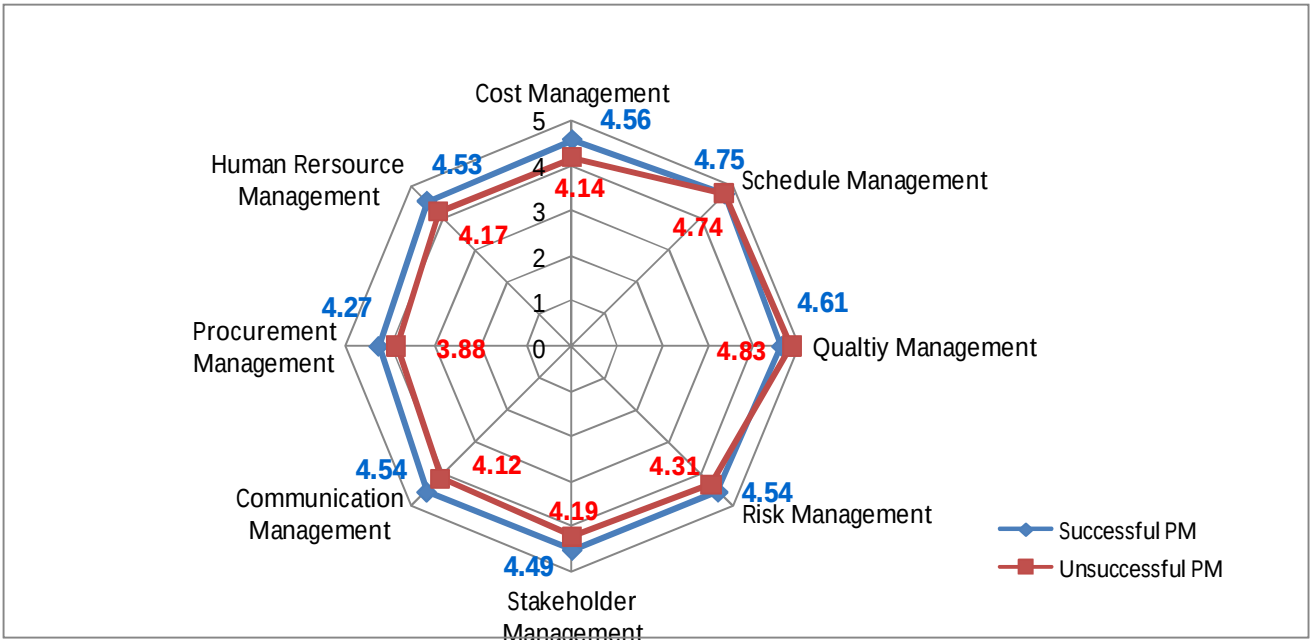

Figure 4.28: Mean of technical leadership attributes of PMs

Schedule management was the most important technical leadership attribute identified by the successful PMs with a mean score of 4.75. The same item was rated second important by the unsuccessful PMs with a mean score of 4.74. The second crucial determinant identified by the successful PMs was quality management with a mean score of 4.61. This same item was rated most important by unsuccessful PM with a mean score of 4.83. Cost management was the third important technical skill identified by the successful PMs with a mean score of 4.56. Cost management was given sixth place by the unsuccessful PMs with a mean score of 4.14. Risk and communication management came in fourth most important technical leadership skills for the successful PMs with an equal mean score of 4.54. Human resource management followed by stakeholder management and procurement management respectively were identified to be the sixth, seventh and eighth technical leadership attributes influencing project success. Procurement management was rated the least important among the technical leadership attributes by both successful and unsuccessful PMs.

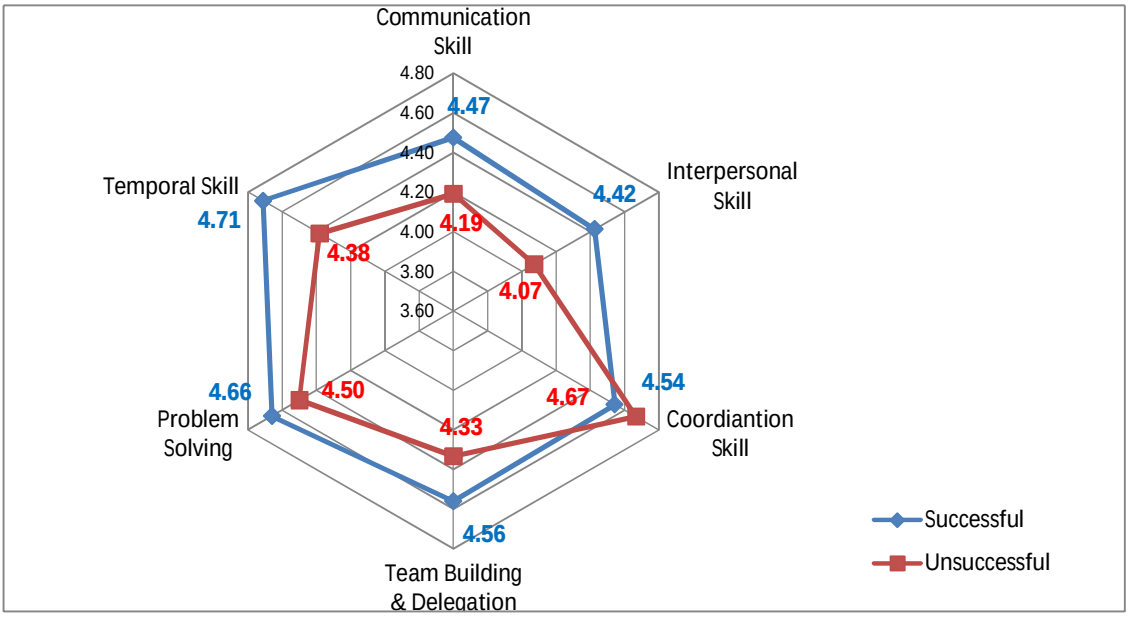

Figure 4.29: Mean of soft leadership attributes of PMs

Temporal skills were the most important soft skill that was identified by the successful PMs with a mean score of 4.71. Temporal skill was rated the third most important determinant of project success by the unsuccessful PMs with a man score of 4.38. The successful PMs rated problem

analysis and solving as the second most important determinant under soft leadership skills with a mean score of 4.66. This soft leadership skill was given a second by the unsuccessful PMs with a total mean score of 4.5. Team building and delegation came in third for the successful PMs in terms of its impact on project success. The same soft leadership attribute was rated fourth by the unsuccessful PMs. Following team building and delegation were coordination skill, communication skill and interpersonal skill with a mean of 4.54, 4.57 and 4.42. It's noteworthy to point out that communication and interpersonal skills were rated 5th and 6th by both successful and unsuccessful PMs.

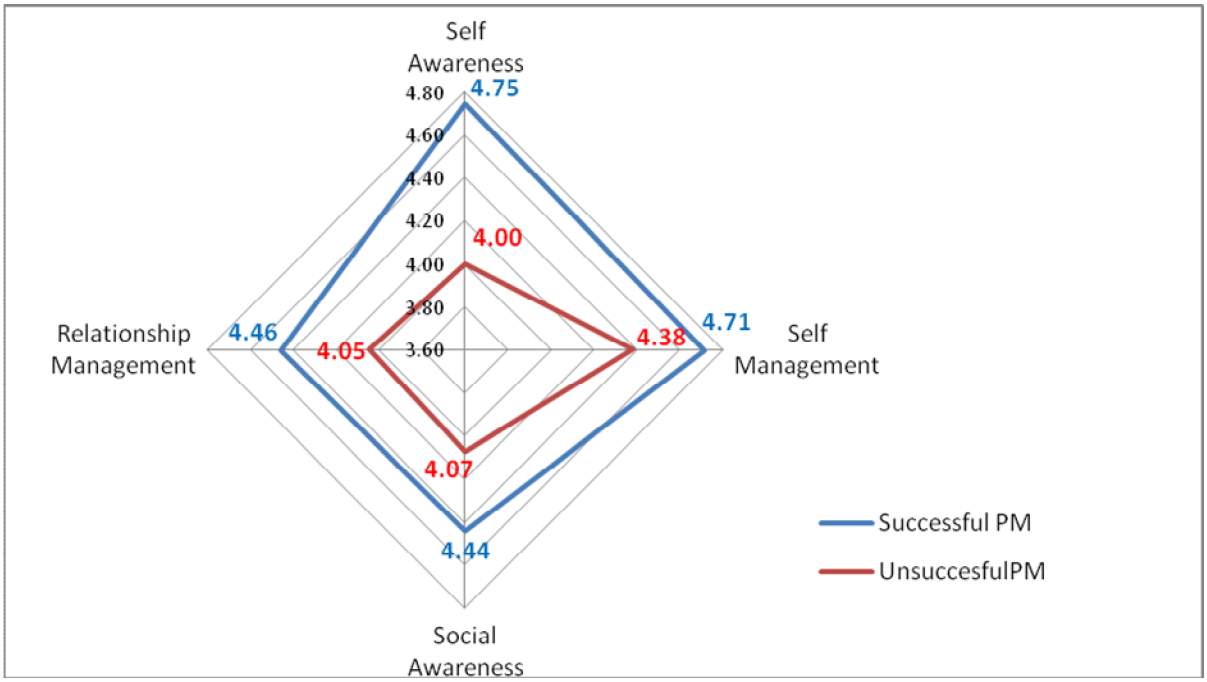

Figure 4.30: Mean of emotional intelligence leadership attributes of PMs

When it comes to emotional intelligence, it can be seen from the above figure that the successful PMs have a higher mean score on each factor included under emotional intelligence. Self awareness of the PM was rated the most important emotional intelligence factor that affected project success with a mean score of 4.75. The same item was rated the least by the unsuccessful PMs with a mean score of 4.00. Self management was rated second most determinant of project success by the successful PMs with a mean score of 4.71.Self management was perceived to be as the most important determinant of project success by the unsuccessful PMs with a total mean score of 4.38. Relationship management was rated as the third by both groups of PMs. Social awareness was rated as the least important determinant of project success by the successful PMs

with a mean score of 4.44 while the same emotional intelligence factor was deemed as second important by the unsuccessful PMs with a mean score of 4.07.

II. Comparison between Successful and Unsuccessful PMs

Table 4.5: Independent sample T-test between Successful and Unsuccessful PMs

No	Leadership Attributes		Successful		Unsuccessful		T-test		
			Mean	Stand. Deviation	Mean	Stand. Deviation	t	df	sig
1	**Personal Traits**	Farsightedness	4.59	.495	3.29	.708	-10.302	68.645	.000
2		Easy access to the PM	4.44	.501	3.81	.505	-6.209	87.949	.000
3		**Honesty and Integrity of the PM**	**4.46**	**.678**	**4.52**	**.740**	**.458**	**83.501**	**.648**
4		Self Confidence of PM	4.46	.502	4.21	.750	-1.830	66.573	.003
5		Result Orientation	4.80	.406	4.00	.442	-9.236	83.730	.000
6		Enthusiasm of the PM	4.36	.550	4.17	.581	-1.666	99	.000
7		Persuasiveness of the PM	4.51	.504	3.79	.520	-6.975	86.810	.000
8		Social Behavior	4.42	.532	4.05	.661	-3.164	99	.002
9	**Technical Leadership attributes**	Cost Management	4.56	.501	4.14	.647	-3.646	99	.000
10		**Schedule Management**	**4.75**	**.439**	**4.74**	**.445**	**-.086**	**99**	**.932**
11		Quality Management	4.61	.558	4.83	.377	2.398	98.787	.001
12		Risk Management	4.54	.502	4.31	.468	-2.390	92.081	.000
13		Stakeholder Management	4.49	.504	4.19	.552	-2.844	99	.005
14		Communication Management	4.54	.502	4.12	.633	-3.744	99	.000
15		Procurement Management	4.27	.691	3.88	.550	-3.156	97.688	.002
16		Human Resource Management	4.53	.568	4.17	.696	-2.848	99	.005
17	**Soft Leadership attributes**	Communication Skills	4.47	.504	4.19	.671	-2.430	99	.008
18		Interpersonal Skills	4.42	.532	4.07	.640	-3.014	99	.003
19		**Coordination Skills**	**4.54**	**.502**	**4.67**	**.570**	**1.158**	**99**	**.250**
20		Team Building & Delegation	4.56	.501	4.33	.570	-2.110	99	.001
21		**Problem analysis and Solving**	**4.66**	**.477**	**4.50**	**.506**	**-1.629**	**99**	**.106**
22		Temporal Skills	4.71	.457	4.38	.492	-3.477	99	.001
23	**Emotional Intelligence**	Self Awareness	4.75	.439	4.00	.442	-8.383	88.148	.000
24		Self Management	4.71	.493	4.38	.492	-3.329	99	.001
25		Social Awareness	4.44	.501	4.07	.640	-3.251	99	.002
26		Relationship Management	4.46	.502	4.05	.661	-3.542	99	.001

The independent t-test shows whether there was a statistically significant difference between the successful and unsuccessful PMs regarding the different leadership attributes. It is by no means

an expression of relevance of leadership attributes when it comes to their contribution to project success. However, it can be an indicator of where the difference between the successful and unsuccessful PMs lie when it comes to the perception of importance of leadership attributes that affect the success of the project.

Of the items under personal trait, it can be observed that there is no statistically significant difference between successful and unsuccessful PMs regarding honesty & integrity. When it comes to the technical leadership skill, the t-test indicated that there is no statistically significant difference in schedule management between the successful and unsuccessful PMs. Similarly, it was found that there was no statistically significant difference between the two groups when it came to coordination skills and problem analysis & solving.

4.5. Regression Analysis

Before estimating any model, it is a must to check the validity of the model properly. Hence, as necessary, tests for multicollinearity were made. Tests for multicollinearity is done using variance inflation factor (VIF). As a rule of thumb, if the VIF of a variable exceeds 5, there is a serious multicollinearity problem. The VIF indicates whether a predictor has a strong linear relationship with the other predictor(s). Myers (1990) suggests that a value of 10 is a good value at which to worry. The data set shows no sign of significant colliniarity. Results of VIF and 1/vif are shown in the table 4.6.

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Experience of Respondent	.769	1.300
	Technical Leadership Skills	.475	2.106
	Soft Leadership Skills	.340	2.945
	Emotional Intelligence	.329	3.042
	Personal Traits	.326	3.069
a. Dependent Variable: successful vs unsuccessful			

Table 4.6: Multicollinearty test of the Regression Model

Kolmogorov-Smirnov (K-S) test and Shapiro-Wilk test were used to compare the scores in the sample to a normally distributed set of scores with the same mean and standard deviation so as to test if the sample distribution was normal. The result revealed that the sample data were normally distributed and is summarized below in the following table.

Table 4.7: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Personal Trait	.105	101	.200	.960	101	.724
Technical Leadership Skills	.100	101	.321	.969	101	.853
Soft Leadership Skills	.134	101	.185	.944	101	.676
Emotional Intelligence	.134	101	.282	.937	101	.751
Project Success	.384	101	.289	.626	101	.757

Linear regression needs the relationship between the independent and dependent variables to be linear. The linearity assumption was tested with the use of scatter plots. The results of the scatter plot reveled that linearity assumption was held. The results of the graph can be found attached in appendix V.

Table 4.8 summarizes the regression model used. The coefficients of the regression for personal trait, technical leadership skills, soft leadership skills, emotional intelligence and experience were found to be statistically significant while age was not statistically significant. Moreover, experience was found to be an influential factor impacting project success even though this factor is not considered as part of a leadership attribute. The regression model also denotes that 64.3% of the variation in project success is caused by leadership attribute factors and experience of the PM.

Table 4.8: Multiple Regression Result

Variables	Coefficients	Standard Error	t-value	Sig
Constant	2.391	.453	5.282	0.000
Age	.046	.055	.836	.405
Experience	.345	.050	6.893	.000
Personal Trait	.601	.109	4.542	.000
Technical Skill	.008	.135	1.242	.04
Soft Skill	.102	.139	5.979	.000
Emotional Intelligence	.128	.099	2.227	.028
F Static	F(5,95)=36.957			0.02
R2 (Adjusted R2)	.660(.643)			

It can be inferred from the regression analysis that the most influential factor among the PM's leadership attributes is the PM's personal trait. The coefficient for personal trait is .601, $p<0.01$. This meant that the personal trait was found to be among the leadership attributes that significantly affected project success. Result orientation, farsightedness and persuasiveness were among the top three personal traits of PMs that were believed to impact the project success.

The next crucial determinant leadership attribute was found to be emotional intelligence. Emotional intelligence relates to the degree of self management, self awareness, social awareness and relationship Management. A significant difference between successful and unsuccessful PMs was found regarding emotional intelligence. Self awareness was found to be the most significant determinant followed by self confidence and relationship management.

Soft leadership skills were the third leadership attributes identified which were found to be a statistically significant determinants of project success. Temporal skills, problem analysis and solving and **t**eam building & delegation were the top three soft leadership skills that were found to be important determinants of project success based on the views of the successful PMs.

Last but not least, technical leadership skills which were based on the importance of acquaintance with knowledge areas discussed in the PMBOK Guide were also found to be significant indicator of project success. Knowledge of project schedule management, quality management and risk

management were few of knowledge areas which were identified by the successful PMs as a must have so that the PM can succeed with the completion of the project.

4.6. Discussions

This section of the thesis tries to relate the findings with the research questions posed in the first section of the document.

a. *What are the most important attributes of PMs that make them successful?*

Meta-analysis of various literatures was conducted with the aim of pointing leadership attributes relevant to project success. Result of the meta-analysis revealed four categories revealed that there were four categories of leadership attributes of PMs that were closely associated with success. These were personal traits, technical leadership skills, soft leadership skills and emotional intelligence.

The personal traits included farsightedness or the ability to operate in the future tense, accessibility/approachableness of the PM, honesty and integrity, self- confidence, result oriented, enthusiasm, persuasiveness and social adaptability. The PM's Soft Skills included communication skill, interpersonal skill, coordination skill, team building and delegation ability, problem finding, analyzing, solving and temporal skills. The technical skills were based on knowledge of the subject area and the extent of understanding on the project management processes while the emotional intelligence aimed to measure the personal (self-awareness, self management) and social (social awareness, relationship management) competencies of PMs.

It can be inferred from the regression analysis that the most influential factors among the PM's leadership attributes is the PM's personal trait followed by emotional intelligence, soft leadership skills and technical leadership skills respectively.

Ranking of items within each attribute was conducted by using the mean score order ranking. Table 4.8 summarizes the ranking of items under each leadership attributes based on their mean score. Also t-test revealed that there is no statistically significant difference between successful and unsuccessful PMs for honesty & integrity, schedule management, coordination skills and Problem analysis & solving.

Table 4.9: Mean Score Ranked Order of Factors under Leadership Attributes

Personal Trait	Result Orientation	4.8
	Farsightedness	4.59
	Persuasiveness of the PM	4.51
	Honesty and Integrity of the PM	4.46
	Self Confidence of PM	4.46
	Easy access to the PM	4.44
	Social Behavior	4.42
	Enthusiasm of the PM	4.36
Emotional Intelligence	Self Awareness	4.75
	Self Management	4.71
	Relationship Management	4.46
	Social Awareness	4.44
Soft Leadership Skills	Temporal Skills	4.71
	Problem analysis and Solving	4.66
	Team Building & Delegation	4.56
	Coordination Skills	4.54
	Communication Skills	4.47
	Interpersonal Skills	4.42
Technical Leadership Skills	Schedule Management	4.75
	Quality Management	4.61
	Cost Management	4.56
	Risk Management	4.54
	Communication Management	4.54
	Human Resource Management	4.53
	Stakeholder Management	4.49
	Procurement Management	4.27

b. What is the relationship between the leadership attribute of the PM and the project success?

The regression model suggests that 64.3% of the variance in project success is due to the variance in leadership attributes combined with the experience of the PM. Furthermore, a positive relationship exists between each leadership attributes and project success. Those PMs enriched personal traits like result orientation, ability to operate in the future and persuasiveness are more

likely to be successful with infrastructure projects. Moreover, PMs with higher degree of self awareness and self management are more likely to lead to success. Also temporal skills and problem solving ability were the major soft skill leadership attributes that were associated with the successful completion of infrastructure projects. Similarly, schedule, cost and quality management were also deemed to be the most important technical leadership skills that should be possessed by PMs in order to be better equipped with successfully completing the project.

CHAPETER 5

CONCLUSION AND RECOMMENDATION

5.1. Summary

Chi-Square result revealed that there is a statistically significant association between age and project success as well as between experience and project success. However, there is no statistically significant association between education level and project success rate.

Successful PMs were found to have a higher mean score in all factors under personal traits with the exception of honesty and integrity. Successful PMs believe that result oriented behavior is the most influential personal trait that affects project success. The next personal trait item that was rated most important by successful PMs farsightedness which was considered to be the least important by the unsuccessful PMs. Persuasiveness was identified to be the third important determinant of project success by successful PMs while it was rated as the second least important determinant of project success by the unsuccessful PMs. Honesty and integrity came in as the fourth crucial determinant of project success for the successful PMs. However, this item was the most important determinant of project success for the unsuccessful PMs. Self confidence and easy access to the PM were the fifth and sixth important determinant identified by the successful PMs.

Successful PMs were found to have a higher mean score on each factor included under emotional intelligence. Self awareness of the PM was rated the most important emotional intelligence factor that affected project success while the same item was rated the least influential by the unsuccessful PMs. Self management was rated second most determinant of project success by the successful PMs while it was perceived to be the most important determinant of project success by the unsuccessful PMs. Relationship management was rated as the third by both groups of PMs. Social awareness was rated as the least important determinant of project success by the successful PMs while it was deemed as second important by the unsuccessful PMs.

Temporal skill were the most important soft skill that was identified by the successful PMs while the same item was rated the third most important determinant of project success by the unsuccessful PMs with Problem analysis and solving as the second most important determinant by both the successful and unsuccessful PMs. Team building and delegation came in third for the successful PMs while the same soft leadership attribute was rated fourth by the unsuccessful PMs. Coordination skill, communication skill and interpersonal skill came in as the fourth, fifth and sixth important determinants of project success, respectively.

Out of the technical leadership skills, Schedule management was the most important technical leadership attribute identified by the successful PMs. The same item was rated second important by the unsuccessful PMs with. The second crucial determinant identified by the successful PMs was quality management while the same item was rated most important by unsuccessful PM. Cost management was the third important technical skill identified by the successful PMs while the same item was rated sixth by the unsuccessful PMs.Risk and communication management came in fourth most important technical leadership skills for the successful PMs while Human resource management followed by stakeholder management and procurement management respectively were identified to be the sixth, seventh and eighth technical leadership attributes influencing project success. Procurement management was rated the least important among the technical leadership attributes by both successful and unsuccessful PMs.

5.2. Conclusion

This thesis has attempted to understand the construct of leadership under a project setting. This was done through meta-analysis of past literature which guided the identification of leadership attributes that a PM must possess in order to successfully accomplish projects. Then an attempt to discover the perception of PMs that lead to successful completion of project was made by classifying the PMs into two categories namely successful and unsuccessful PMs.

Analysis of data gathered revealed that project success was affected by experience of the PM as well as by leadership attributes such as personal trait, technical skills, soft skills and emotional intelligence. Furthermore these leadership attributes were found to have a positive correlation with project success. Previous studies so far, concluded that project leadership atributes are positively related with the project success, for example Geoghegan et’al discussed that

leadership attributes were found to be positively correlated with the project success. In a reacent study, Arendse (2013) stated that leadership attributes like personal traits and soft skill were among the contributing factors of project success.

The personal trait of the leader was found to contribute the most among the leadership attributes identified. Of the personal traits items considered under this study, result orientation, farsightedness and persuasiveness were found to be most determinants of project success with a mean score above 4.5. Other studies have examined the relationships of leaders' personality traits as applied to project management (Malach-Pines, Dvir, & Sadeh, 2008; Muller, Geraldi, & Turner, 2012). The results from Muller, Geraldi, and Turner (2012) indicate personal traits like result orientation/focus and persuasiveness of the PM were found to have significant association with project success.

The next most determinant leadership attribute found was emotional intelligence which includes factors like the degree of personal (self-awareness, self management) and social (social awareness, relationship management) competencies of PMs. Self awareness and self management were the most important items under emotional intelligence that influenced project success with a mean score above 4.5 while relationship management and social awareness trailed closely. Other studies like that of Trivellasa and Drimoussisb (2013) also concluded that PMs in successful projects exhibit high levels of self-awareness, and relatively lower levels of relationship management. The wider difference between PMs in successful and less successful projects was detected for social awareness. Under a similar logic, successful PMs demonstrated significantly higher levels of emotional intelligence than their counterparts.

Prior research (e.g., Byrd & Turner, 2001) identified requirement of both technical and soft skills as key determinants of project success. Recent researchers revealed that technical skills contribute only 15% to one's success, whereas 85% of success is due to soft skills (Watts & Watts, 2008, as cited in John, 2009). Similarly soft leadership skills were found to have a higher contribution than technical skills in this study. Soft skills like temporal skills, problem finding, analyzing, solving, team building and delegation and coordination skills were the most important factors identified with a mean score above 4.5. Trivellasa and Drimoussisb (2013) found that

Soft skills such as communication, coordination, interpersonal relationships and teambuilding were ranked higher by PMs in successful projects.

Although it appears that technical leadership were not as momentous as other PM leadership attributes in predicting success, its importance within the literature still draws the expectation that the level of technical competence a PM possesses will positively influence the level of success he/she achieves. Thamhain (2004), for example, finds that the use of project management tools and techniques has a strong influence on team performance. Project schedule management, project quality management, project cost management, project risk management, project communication management and project human resource management were the technical leadership skills that were rated higher by successful PMs.

5.3. Managerial Implication

The practical contribution of this study is that it explicitly shades light on leadership attributes that can impact project under a special consideration of infrastructure projects that are undertaken by ERA. Those holding the management position must be aware of the imperative importance experience of the PM, personal traits, emotional intelligence, soft and technical leadership when selecting a PM. These leadership attributes are found to be closely associated with project success.

Experience of the PM is one factor that can affect the outcome of the project. Therefore, during selection and assignment of PMs to projects, experience is an outmost factor that needs to be considered. Experienced PMs have a better prospect of culminating strategic projects, with a colossal financial outlay, to a successful end result.

There are various personality tests that can identify personality traits of PMs. Personal traits like result oriented behavior and ability to make decisions about the future trends of the project are critical to project success. Therefore, PMs with such personality traits have increased likelihood of bringing about the required end result from the project.

Self management and self awareness of the PM are also important determinants of project success. Self management requires the PM to take responsibility for one's own behavior and

well-being. It requires the PM to lead by example and pave the way to the project team members. The first and foremost skill of self-management refers to a personal ability to resist any stressful situations. Because a stressful situation usually blocks the ability to think and make rational decisions, one can't cope even with the simplest tasks at the workplace, so productivity goes down and frustration takes over. Self awareness refers to knowing one's own strength and weakness. Such deep knowledge of one's own self helps PMs to capitalize on opportunities and better deal with threats and uncertainties.

Soft skills like time management, problem solving ability and team building skills are important determinants of project success. Producing expected results in a timely manner determines the success of efforts made. Time management is an extremely important skill that makes all participants of the project be more productive. Problem solving requires the PM to operate facts and make right assumptions to analyze the situation, review problems, and find effective solutions. Team building is a collective term for various types of activities used to enhance social relations and define roles within teams, often involving collaborative tasks. Team building can enhance team work & productivity, create role clarification and better equip the team to handle conflict.

Technical skills like project schedule management, project quality management, project cost management, project risk management, project communication management and project human resource management can be imperative to the success of the project.

5.4. Recommendations

It's recommended that devising a system to evaluate and compare such attributes can provide a monumental contribution to the success of the project. Recruitment, selection and assignment of individuals to projects should be designed to include not only experience but also leadership attributes so that better results could be achieved.

Those at senior level should consider the experience of the PM before the selection and assignment to projects processes since experience is an important factor that determines the fate of a project. Senior management should assign experienced PMs to strategic projects by taking their priority into account. Also a training and experience sharing platforms should be arranged

so that inexperienced PMs can be better equipped to deal with the complexities of projects. Training in areas of team work, communication, project management and sensitivity trainings can have vital contribution towards improving leadership attributes required of the PM. A lesson learned and best practice documents should be available in an organized manner and should be communicated to all PMs so that they can be able to better deal with problems that have arisen in the past.

Personality test should be administered before selecting and assigning PMs to projects to ensure personality-project fit. Result oriented behavior has been identified as the most important personal trait to drive project success. Therefore, its outmost importance to provide the proper motivation needed to PMs so that they could exhibit such behaviors.

Self management and self awareness of the PM are also important determinants of project success. Therefore, all round objective performance appraisal system can provide a substantial input about the weakness and strength of the PMs and help them understand their performance and behavior in an improved manner. Furthermore, platforms like quality circle can be used to make behavioral appraisals and constructive criticisms.

Time management or temporal skills were the most rated soft leadership skill that drives project success. A time management system like biometric sign in, attendance sheet etc… should be implemented. Furthermore, PMs should be encouraged to attend various platforms (training, conferences, and online resources) accessible to them so that they can improve their soft skills in this regards.

Templates and processes like risk register, Pert chart, quality assurance, three point estimates should be employed to enable an enhanced support of projects through the project management policy, process and direction. Also state of the art technologies (Microsoft Project 07) can be employed in ties with the processes and directives already being utilized to ensure a better and much improved outcome.

5.5. Recommendation for Future Research

Project success by itself is a complex construct. The complexity arises from the dynamic nature of the construct itself as success criteria are continually being updated and are becoming more vigorous. Another reason for the complexity is due to the percussion effect as projects that are perceived as failures at launch can later be considered successes, whereas those considered successful at launch can turn out to be catastrophic failures. Yet another complexity arises from the perspective of various stakeholders that take part in the project. The same project can be both a resounding success and an abysmal failure, depending on which stakeholder is evaluating the project‘s outcome.

This study has assessed PMs’ viewpoints with regard to core variables, namely, personal traits, technical skills, soft skills and emotional intelligence which are part of leadership attributes that can influence the successful completion of project. There are other different determinants that have been not been included in this research topic which can influence the success of the project. Thus, for further study it is suggested that project success has to be assessed for all relevant factors. This would help in designing a more comprehensive and effective strategies, processes and templates for the overall improvement in the levels of project success.

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Annex I: Sampling framework of Projects by Strata

South Region			
1	Humbo-Arbaminch Lot 1	16	Belta-Otolo
2	Humbo-Arbaminch Lot 2	17	Otolo-Sawula
3	Hawassa Chiko	18	Sawla-Laska
4	Chiko Yirgachefe	19	Salayish-Omo
5	Yirgachefe Hageremariam	20	Seru-Km20 Lot 1
6	Mega Moyle	21	Km20-Shene Wonz Lot 2
7	Aleta-Wondo-Bonsa-Daye	22	Turmi-Omorate
8	Hageremariam-Yabello	23	Adaba-Angeto
9	Mazoria-Hadero	24	Omo Bridge /for Kuraz Sugar Factory Access/
10	Hadero-Durgi	25	Durgi-Gibe Wonze (Cont 2)
11	Kebremengest-Shakisso	26	Sodo-km 70
12	Konso-Yabello	27	Km70-Sawla
13	Jinka-Mandir Lot 1	28	Tercha-Chida
14	Sawula-Kako Lot 1	29	Oblo-Dermi
15	Arbaminich-Belta	30	Daye-Chiri-Nansebo
West Region			
1	Bonga-Mizan	13	Nekemt-Bure Lot 3
2	Ambo-Wolisso	14	Adura-Akobo & Adura-Burbe
3	Gedo-Menebegna	15	Gidami-Mugi
4	mekenejo-Ayera	16	Aysid-Kong/Guba-Begondi
5	Ayira-Chanka	17	Kong-Begondi-Wenbera
6	Chanka-Dembidollo	18	Mizan-Dima
7	Nekemt-Bedelle	19	Dima-Rad
8	Bedelle-Metu /Lot 1/	20	Nekemt Town Bypass
9	Bedelle-Metu /Lot 2/	21	Asosa-Daleti Con.2
10	Durgi-Gibe Wonze (cont. 1)	22	Gambella-Eliya
11	Nekemt-Bure Lot 1	23	Tepi-Mizan
12	Nekemt-Bure Lot 2	24	Km 75-Meti Lot 2
Centeral Region			
1	Sembo-Shola Gebeya-Gorfo-Gindeber	12	Sansusi-Tetek-Kela
2	Menebegna-Lemlem Berha	13	Muketuri-AlemKetema
3	Efeson-Mehal Meda	14	Melkasa-Sodore-Nuraera-Metehara Jn
4	Mehalmeda-Abus/ Km 72	15	Shambu-Bako
5	Abus /Km 72/-Alem Ketema	16	Iteya-Robe-Seru
6	Ankober-Dulecha	17	Ginchi-Km 65
7	Dulecha-Awash Arba	18	Menebegna-Fincha-Shambu
8	Chancho-Derba Junction- Becho	19	AlemKetema-Degolo

9	Koka-Adulala-D/Zeit	20	Degolo-Kelela
10	Sodo-Tercha Lot 1	21	Abomsa-Asko-Dibu River
11	Sodo-Tercha Lot 2	22	Dibu River-Baday-Cheleleka
North Region			
1	Zarima-Mayitsemir	13	Dabat-Ajire/Tegele
2	Mekelle-Sertmender	14	Tsegede Junction-Ketema Nigus
3	Wererji-Adwa	15	Jara-Gedo-Debre Tabor
4	Gashena-Bilbila	16	Dansha-Abederafik-Maykadira
5	Zema River Bridge-Bahirdar	17	Desie-Kutaber-Tenta Junction
6	Azezo-Gorgora	18	Aykel-Zufan-Km 69 Con 1
7	Bilbila-Sekota	19	Azezo-Gondar
8	Zagora-Gassay	20	Mekelle-Dengolat-Km 70
9	Hawusewa-Ab'ala-Irbeti	21	Pawe jn-Km 70 Lot 1
10	Adiremet-Dejena-Dansha	22	Mota-JaraGedo
11	Abi'adi-Hawzen-Fireweni	23	Km 69-Angereb Con 2
12	Sanja-Qiraqer		
East Region			
1	Sumera-Dubti, Mile & logiya Bypass Road	12	Chereti-HagerMekor
2	Kombolcha-Burka	13	Afdera-Erbeti Jn-Km 48 Con1
3	Burka-Mille	14	Km 48-Ertale Jn-Ahmedela Con 2
4	Diredawa-Melka Jebdu	15	Babile-Fik-Babile town Km 33 Con 1
5	Harar City Bypass	16	Babile-Fik- Babile Town km 33 Cont 1
6	Shebele-Imi	17	Babile-Fik- Babile Town km 33- Km 66 Cont 2
7	Duchoto-Galafi Jn/Dobi-Elidar-Boliho	18	Babile-Fik- Babile Town km 33- Km 93 Cont 3
8	Arbereketi-Gelemso	19	Babile-Fik- Babile Town km 33- Km 93 Cont 4
9	Gelemso-Micheta	20	Fik-Hamero
10	Dalol-Bada	21	Jijiga-Fafen-Gelalshe-Degehmedo
11	Mille Bridges		
Expressway			
1	Modjo-Meki	3	Ziway-Arsi Negle
2	Meki-Zeway	4	Arsi Negele-Hawassa
Design and Building			
1	Dejen/tik-Felegebrehan	15	Sugar Factory 1-2-Hana
2	Diredawa-Dewelle	16	Sugar Factory 6-Omo
3	Pawe jn- Fendika-Ayima	17	Moricho-Dimtu-Bitena Cont.1
4	Mendir-Hana Lot 2	18	Sugar Factory 3-4
5	Lebu-Akaki-Goro	19	Sugar Factory 4-6
6	Tekeze River Bridge-Abi'adi	20	Beles-Mekane Birhan
7	Debark-Buahit	21	Bitena-Maykote-Sodo
8	Buahit-Diliyibeza	22	Seroqa-Abrhajira-Abderafi

9	Laska-Salayish	23	Abobo-K.m 75 Lot 1
10	Omo-Maji	24	Hargela-KM 60
11	Bojaber-Werabe	25	Addis-Adama
12	Agula-Berahile	26	Access to Kesem Sugar Factory
13	Berahile-Dalol	27	Modjo Bridge Construction
14	Chole-Magna		

Annex II Cronbach's Alpha

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Gender of Respondent	126.90	80.650	.090	.894
Age of Respondent	126.39	80.459	.023	.898
Education Level of Respondent	125.63	79.674	.145	.895
Experience of Respondent	124.34	76.726	.334	.892
Project Success Rate	124.44	74.128	.552	.888
successful vs unsuccessful	126.39	75.159	.667	.886
The project manager's farsightedness or the ability to operate in the future has impact on project success	123.92	71.614	.590	.887
The project team having easy access to the project manager has impact on the project success	123.79	74.946	.571	.887
Honesty and integrity of the project manager has impact on project success	123.49	77.252	.274	.893
Self confidence of the project manager has impact on the project success	123.61	76.299	.406	.891
The project manager's focus on result has impact on the project success	123.50	76.392	.438	.890
Enthusiasm of the project manager has impact on the project success	123.69	75.875	.499	.889
Persuasiveness of the project manager has impact on the project success	123.76	75.743	.462	.889
The project manager's social behavior, social adaptability and extrovert nature has impact on project success	123.70	73.631	.675	.885
The project manager's knowledge of cost management and budgeting process impacts the project success	123.58	75.785	.478	.889
The project manager's knowledge of schedule management process impacts the project success	123.23	78.578	.303	.892
The project manager's knowledge of quality management process impacts the project success	123.27	79.258	.182	.893
The project manager's knowledge of risk management process impact the project success	123.52	77.812	.348	.892
The project manager's knowledge of stakeholder identification and management process impact the project success	123.60	77.762	.321	.892
The project manager's knowledge of communication management process impact the project success	123.60	75.462	.514	.889
The project manager's knowledge of procurement management process impact the project success	123.86	76.181	.390	.891

The project manager's knowledge of human resource management process impacts the project success	123.59	75.164	.496	.889
The project manager's communication skills have impact on the project success	123.61	76.979	.365	.891
The project manager's interpersonal skills have impact on the project success	123.69	73.855	.668	.885
The project manager's coordination skills have impact on the project success	123.38	78.997	.195	.893
The project manager's team building and delegation skills have impact on the project success	123.50	76.472	.462	.890
The project manager's problem finding, analyzing and solving skills have impact on the project success	123.38	77.277	.416	.890
The project manager's time management (temporal) skills have impact on the project success	123.40	76.122	.549	.888
The project manager's degree of self awareness has impact on project success	123.53	76.571	.422	.890
The project manager's degree of self management has impact on project success	123.40	76.282	.508	.889
The project manager's degree of social awareness of working environment has impact on the project success	123.68	73.919	.678	.885
The project manager's relationship management approach with various stakeholders has impact on project success	123.68	73.779	.671	.885

Annex III: Questionnaire

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

MASTER PROGRAMS IN PROJECT MANAGEMENT

Dear Sir/Madam

Good day! I am a graduae student in the postgraduate program of Project Management at Addis Ababa University, School of Commerce. I am currently undertaking a research project on the topic “The Impact of Leadership Attributes of Project Managers on the Project Success; The Case Study of Ethiopian Road Authority” to fulfill the partial requirement for the Master’s Degree program.

You are one of the respondents that have been selected to participate in this research. I would be grateful if you kindly take few minutes of your time from your busy schedule to fill out this questionnaire by reflecting on your personal experience with regard to the issues raised. Your willingness and cooperation in giving a genuine information is well appreciated and the information you provide will be used for academic purpose only and will be kept in strict confidentiality.

If you would like to gain further information about this study or have a problem in completing this questionnaire, please contact me via email kaleb.tadesse@gmail.com or on my cell phone 0912-19-92-05.

I would like to thank you in advance for your cooperation and taking the time to consider my request.

Section 1: General information

Please circle the answer you have selected.

1. Sex?

☐ Female ☐ Male

2. Age?

☐ 18-28 ☐ 40-50

☐ 29-39 ☐ 51and above

3. Education level?

☐ Diploma ☐ Doctorate degree

☐ Bachelor Degree ☐ other

☐ Masters Degree

4. Experience

☐ Less than a year ☐ 2 years and above but below five years

☐ Above 1 year but less than 2 years ☐ Above 5 years

5. Project success rate (Not to be filled by Respondent)

☐ Below 50% ☐ 80%-94%

☐ 50%-64% ☐ 95% and above

☐ 65%-79%

Section 2: Leadership Attribute and Project Success

Please respond according to your first reaction to each statement by putting X or ✓mark to show the degree to which you concur with the statement.

No.	Personal Traits	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project manager's farsightedness or the ability to operate in the future has impact on project success					
2	The project team having easy access to the project manager has impact on the project success					
3	Honesty and integrity of the project manager has impact on project success					
4	Self confidence of the project manager has impact on the project success					
5	The project manager's focus on result has impact on the project success					
6	Enthusiasm of the project manager has impact on the project success					
7	Persuasiveness of the project manager has impact on the project success					
8	The project manager's social behavior, social adaptability and extrovert nature has impact on project success					

No.	Technical Skills	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project manager's knowledge of cost management and budgeting process impacts the project success					
2	The project manager's knowledge of schedule management process impacts the project success					
3	The project manager's knowledge of quality management process impacts the project success					
4	The project manager's knowledge of risk management process impact the project success					
5	The project manager's knowledge of stakeholder identification and management process impact the project success					
6	The project manager's knowledge of communication management process impact the project success					
7	The project manager's knowledge of procurement management process impact the project success					
8	The project manager's knowledge of human resource management process impacts the project success					

No.	Soft Skills	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project manager's communication skills have impact on the project success					
2	The project manager's interpersonal skills have impact on the project success					
3	The project manager's coordination skills have impact on the project success					
4	The project manager's team building and delegation skills have impact on the project success					
5	The project manager's problem finding, analyzing and solving skills have impact on the project success					
6	The project manager's time management (temporal) skills have impact on the project success					

No.	Emotional Intelligence	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project manager's degree of self awareness has impact on project success					
2	The project manager's degree of self management has impact on project success					
3	The project manager's degree of social awareness of working environment has impact on the project success					
4	The project manager's relationship management approach with various stakeholders has impact on project success					

Appendix IV: Pefromance Assesment of ERA

Ethiopian Roads Authority
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Performance Evaluation of Contractors under Government Financed Tenders.

In works contracts of government financed projects, one of the major qualification criteria is performance assessment of bidders on ongoing projects. For bidders having ongoing projects with ERA, the performance assessment will be carried out following the below indicated procedure (formula).If bidders do not have projects with ERA, the performance assessment shall be carried out following qualitative assessment of bidder's performance based on written feedback from their employers. The performance assessment is carried out every calendar month.

Under each evaluation, the performance of the bidder in the immediate previous month (from the

date/month of deadline for submission of the tender in reference) is used for evaluation.

1. Performance Evaluation Formula for Local Contractors

The total contract duration is divided into three equal periods in such a way that:

- At the end of the first one third period, the minimum expected progress is **9%**.
- At the end of the second one third period, the minimum expected progress is **38%**
- At the end of the last one third period or at the end of the contract period, the minimum expected progress is **80%**

Contractors, who fail to complete projects after elapse of one fourth period of the contract duration, will be disqualified.

For the intermediate months, the following formulae will be used:

I. For the first one third duration of contract, the formula for determination of expected minimum performance is, **9t1**

Where **t1** = (Elapsed time in months minus mobilization time in months)/(One third of the contract period in months minus mobilization time in months)

II. For the second one third duration of contract, , the formula for determination of expected minimum performance is, **9+29t2**

Where **t2** = (Elapsed time in months minus One third of the contract period in months)/(One third of the contract period in months)

III. For the last one third duration of contract , the formula for performance evaluation is, **38+32t3**

Where **t3** = (Elapsed time in months minus 2 X One third of the contract period in months)/(One third of the contract period in months)

IV. Beyond contract period but only up to a period of one fourth of the contract period, the formula for determination of expected minimum performance is, **70+30t4**

Where **t4** = (Elapsed time in months minus contract period in months)/ (One fourth of the contract period in months)

Appendix V: Linearity Test