

Impact of Challenging Goals on Project Performance with Mediating Role of Job Satisfaction and Moderating Role of Six Sigma Method

By

Shehryar Ali Zafar

MASTER OF SCIENCE IN PROJECT MANAGEMENT



**DEPARTMENT OF MANAGEMENT SCIENCES
CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
ISLAMABAD**

2017

Impact of Challenging Goals on Project Performance with Mediating Role of Job Satisfaction and Moderating Role of Six Sigma Method

By

Shehryar Ali Zafar

A research thesis submitted to the Department of Management Sciences,
Capital University of Science and Technology, Islamabad
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN PROJECT MANAGEMENT



**DEPARTMENT OF MANAGEMENT SCIENCES
CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY
ISLAMABAD
2017**



**CAPITAL UNIVERSITY OF SCIENCE & TECHNOLOGY
ISLAMABAD**

Islamabad Expressway, Kahuta Road, Zone-V, Islamabad
Phone: +92 51 111 555 666, Fax: 92 51 4486705
Email: info@cust.edu.pk, Website: <http://www.cust.edu.pk>

CERTIFICATE OF APPROVAL

**Impact of Challenging Goals on Project Performance with Mediating
Role of Job Satisfaction and Moderating Role of Six Sigma Method**

by

Sheheryar Ali Zafar-MPM161017

THESIS EXAMINING COMMITTEE

S No	Examiner	Name	Organization
(a)	External Examiner	Dr. Riaz Ahmed	Bahria University, Islamabad
(b)	Internal Examiner	Dr. S. M. M. Raza Naqvi	CUST, Islamabad
(c)	Supervisor	Dr. Shabbar Hussain	CUST, Islamabad

Dr. Shabbar Hussain

Thesis Supervisor

October, 2017

Dr. Sajid Bashir

Head of Department

Department of Management Sciences

Dated : October, 2017

Dr. Arshad Hassan

Dean

Faculty of Management and Social Sciences

Dated : October, 2017

Certificate

This is to certify that Mr. Sheheryar Ali Zafar has incorporated all observations, suggestions and comments made by the external evaluators as well as the internal examiners and thesis supervisor. The title of his Thesis is: Impact of Challenging Goals on Project Performance with Mediating Role of Job Satisfaction and Moderating Role of Six Sigma Method.

Dr. Shabbar Hussain
(Thesis Supervisor)

DEDICATION

I dedicate this work to my parents as it was not possible for me to complete this work without their prayers.

ACKNOWLEDGEMENT

In the name of Allah, The most Gracious, The most merciful.

I am thankful to Allah for His guidance and divine support that this work is finally completed as result of continuous and persistence effort.

I am very thankful to my parents for their prayers and continuous support throughout my academic year.

My gratitude goes to Dr. Shabbar Hussain, a teacher, a mentor, very supportive and a very good human being, for sharing his knowledge and extraordinary kindness. His guidance enlightened my vision and made the work easier. I feel honored to work under his supervision. His supervision led me to the successful accomplishment of this work.

I am very thankful to my friends and family member for their moral and cooperative support throughout the time. I will keep you in my prayers.

Thank you so much Sir. Thank you everyone... ☺

Shehryar Ali Zafar

sheheryarali02@gmail.com

Contents

ABSTRACT	vii
CHAPTER 1.....	1
1. INTRODUCTION.....	1
1.1. Background	1
1.2. Main Study.....	2
1.3. Research Gap	3
1.4. Supporting Theories	5
1.4.1. <i>Goal Setting Theory</i>	5
1.4.2. <i>Socio-Technical System (STS) Theory</i>	6
1.4.3. <i>Achievement Goal Theory</i>	7
1.5. Problem Statement.....	7
1.6. Research Questions	8
1.7. Research Objectives	8
1.8. Significance of the Study.....	9
CHAPTER 2.....	10
2. LITERATURE REVIEW.....	10
2.1. Research Model.....	19
2.2. Hypotheses	20
CHAPTER 3.....	21
3. RESEARCH METHODOLOGY	21
3.1. Research Design.....	21
3.1.1. <i>Research Philosophy</i>	21
3.1.2. <i>Type of Study</i>	22

3.1.3.	<i>Unit of Analysis</i>	22
3.1.4.	<i>Study Setting</i>	22
3.1.5.	<i>Time Horizon</i>	22
3.2.	Instrumentation	23
3.2.1.	<i>Challenging Goals</i>	23
3.2.2.	<i>Job Satisfaction</i>	23
3.2.3.	<i>Project Performance</i>	24
3.2.4.	<i>Six Sigma Method</i>	24
3.3.	Data Collection	24
3.3.1.	<i>Population</i>	24
3.3.2.	<i>Sample</i>	25
3.3.3.	<i>Ethical Consideration</i>	25
3.4.	Data Analysis Tools	25
3.4.1.	<i>Fit Statistics for Analysis</i>	26
3.5.	Analysis of Models	27
3.5.1.	<i>Measurement Model</i>	28
3.5.2.	<i>Structural Model</i>	28
CHAPTER 4.....		29
4.	ANALYSIS & RESULTS	29
4.1.	Descriptive Statistics	29
4.1.1.	<i>Gender</i>	29
4.1.2.	<i>Age</i>	30
4.1.3.	<i>Qualification</i>	31
4.1.4.	<i>Experience</i>	32
4.1.5.	<i>Mean, Standard Deviation, Skewness, and Kurtosis</i>	33

4.2.	Measurement Model Analysis & Results.....	35
4.2.1.	<i>Confirmatory Factor Analysis</i>	35
4.3.	Correlations.....	39
4.4.	Structural Model Analysis & Results.....	41
4.4.1.	<i>Single Regression</i>	41
4.4.2.	<i>Multiple Regression</i>	42
4.4.3.	<i>Mediation Analysis Evaluation</i>	43
4.4.4.	<i>Moderation Analysis Evaluation</i>	45
4.4.5.	<i>Model Analysis</i>	47
4.5.	Hypothesis Acceptance/Rejection	48
CHAPTER 5.....		49
5.	DISCUSSIONS AND RECOMMENDATIONS.....	49
5.1.	Theoretical Implication.....	49
5.2.	Managerial Implications.....	51
5.3.	Limitations.....	51
5.4.	Future Research Recommendations	52
5.5.	Conclusion.....	52
REFERENCES.....		53
Appendix A: Questionnaire.....		viii

List of Figures

Figure 1: Conceptual Model.....	19
Figure 2: CFA for Challenging Goals.....	35
Figure 3: CFA for Job Satisfaction	36
Figure 4: CFA for Project Performance	36
Figure 5: CFA for Six Sigma Method.....	37
Figure 6: CFA for Complete Model	38
Figure 7: Single Regression.....	41
Figure 8: Multiple Regressions	42
Figure 9: Mediation Paths.....	44
Figure 10: Moderation between Predictor and Outcome Vari ables	45
Figure 11: Moderation between Mediator and Outcome Vari ables	46
Figure 12: Model Analysis.....	47

List of Tables

Table 1: Gender Distribution.....	29
Table 2: Age Distribution.....	30
Table 3: Qualification Distribution.....	31
Table 4: Experience Distribution.....	32
Table 5: Mean, Standard Deviation, Skewness, and Kutosis	34
Table 6: Correlations	40

ABSTRACT

The research was conducted to explore the impact of Challenging Goals on Project Performance with mediating role of Job Satisfaction and moderating role of Six Sigma Method. Data was collected from the IT project based organizations situated in Islamabad and Lahore. Total 350 questionnaires were distributed among the employees and 300 were retrieved. The findings show that mediating role of Job Satisfaction has positive impact on Challenging Goals and Project Performance relationship. Employees that are willing to accept the challenges are likely to highly satisfy and improve the performance of an organization. Moderating role of Six Sigma Method also have positive impact between the relationship of Job Satisfaction and Project Performance, however it shows negative impact between the Challenging Goals and Project Performance relationship. This study is a significant contribution in the domain of project management and it has multiple implications at academic and managerial level. The study also suggests future directions for further research.

Keywords: Challenging Goals, Project Performance, Job Satisfaction, Six Sigma Method

The Impact of Challenging Goals on Projects Performance with Mediating Role of Job Satisfaction and Moderating Role of Six Sigma Method

CHAPTER 1

1. INTRODUCTION

1.1. Background

Project Management is a application of tools and techniques to complete a unique complex task by using different resources within time, cost and quality constraints (Atkinson, 1999). Interest in project management has grown significantly in the last few years. Practitioners and academics have shown great interest in this field. Project is the solution to problem with limited schedule, limited cost, and unique performance (Project Management Body of Knowledge, 2004). In modern organizations, project management has become the most important organizational activity as multiple projects' outcomes shape the future of an organization (Kaulio, 2008). Project outcomes assessment has become extremely important to everyone including managers, end users, and stakeholders (Shenher & Dvir, 1997). Williams (2005) argued that projects are mean to achieve an organization's strategic goals. However, many projects fail in spite of advances in discipline of project management (as cited in Anantatmula, 2010, p. 13). Therefore, many current research efforts are focusing on improving project success. According to Davies (2002), project management success can be measured against the traditional iron triangle

of project management that is within cost, time and meeting scope, whereas project success can be measured against the comprehensive objectives of the project. However, it covers both above definitions in this study. Jugdev and Müller (2005) found that the project success definition had changed with the passage of time from a narrow focus on iron triangle to broaden focus by including stakeholder requirements.

1.2. Main Study

Turner (1990) defined project as: “An endeavor in which human, material and financial resources are organized in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives” (as cited in Turner & Muller, 2003, p. 1).

In the past 30 years, project management has become an efficient tool to address unique and complex activities that are called projects (Munns & Bjeirmi, 1996). Today organizations need to respond swiftly changing and conflicting requirements of clients. To remain in current competitive harsh environment, organizations are searching for novel alternatives to improve project performance (Koch & Bendixen, 2005).

Individuals that accept challenging or difficult to achieve goals have higher performance than those that avoid accepting specific or “do your best” goals. Goals play serving role as a motivational mechanism and human actions are regulated by this mechanism (Arumugam, Antony, & Linderman, 2016). Challenging goals mobilize effort, direct attention, encourage persistence and influence strategy development (Seijts & Latham, 2005).

Implementation of measurement based strategy is the main objective of Six Sigma methodology. This strategy focuses on process improvement and reduction in disparities (Antony, 2004). The Six Sigma Method differentiates Six Sigma from other quality improvement techniques and as the focus to project execution (Linderman, Schroeder, Zaheer, & Choo, 2003; Antony, Jiju, Kumar, & Cho, 2007; Schroeder, Linderman, Liedtke, & Choo, 2008; Zu, Fredendall, & Douglas, 2008). Hoerl (1998) argued that, Six Sigma Method relies on scientific methods that include data collection and statistical analysis that reduce defects and disparities in process (as cited in Arumugam, Antony, & Linderman, 2016, p. 7). The Six Sigma Method follows a logical sequence of steps – Define, Measure, Analyze, Improve, and Control.

Six Sigma has gained global popularity over the past few years in organizations and industries (Linderman et al., 2003; McAdam, Hazlett & Henderson, 2005; Kwak & Anbari, 2006; Schroeder et al., 2008; Arumugam, Antony, & Linderman, 2016). In 1986, Motorola introduced the term Six Sigma to measure the defects and quality improvements and now it has become process improvement strategy for businesses to maximize their customers' satisfaction (Choo, Linderman, & Schroeder, 2007a; Zu, Fredendall, & Douglas, 2008; Parast, 2011).

1.3. Research Gap

Arumugam, Antony, and Linderman (2016) in their study proposed, job satisfaction may mediate the relationship between goals and performance that can help to understanding the procedure that explains the relationship.

Challenging goals enhance performance because they mobilize effort and encourage strategy development (Linderman, Schroeder, & Choo, 2006). Researchers have found a positive linear relationship that exists between specific high goals and task performance. According to Locke and Latham (1990), there are so many concepts in the past studies that have been developed to understand the relationship of goals and performance. Therefore, this argument clearly explains that specific high goals lead to even higher performance than urging people to do their best as they can (Latham & Locke, 2007). Researchers have also found that there is a significant relationship between group goals and group performance (Martocchio & Frink, 1994).

Six Sigma is well known for utilizing process improvement challenging goals. According to practitioners' of Six Sigma, a clear goal is the focus of Six Sigma that is extremely challenging, but still it is believable (Arumugam, Antony, & Linderman, 2016). Based on this concept, this study is going to conduct in Pakistani context. Even though Six Sigma is a new paradigm in the literature of quality management (Arumugam, Antony, & Linderman, 2016), but theories and concept from relevant field that have been presented earlier can be applied to understand this phenomenon as many projects here in Pakistan are in progress that also follow quality standards. McAdam and Lafferty (2004) in their study argued that, Six Sigma successful implementation requires looking both, people perspective (social) and process perspective (technical). The Six Sigma Method (DMAIC) not only helps to spot the problem but also look for alternate solutions, hence improves the processes. It is useful to present systematic problems solving approaches and promotes rational decision making (Arumugam, Antony, & Linderman, 2016). Six Sigma Method reduces the complexities of tasks within projects. Six Sigma Method helps

the team members to find the optimal solutions of complicated problems that facilitate achievements of goals. Therefore, team's abilities and skills should be altering by Six Sigma Method (Linderman, Schroeder, & Choo, 2006).

The study aims to investigate the challenging goals impact on project performance with moderating role of Six Sigma method and job satisfaction. First, this study will be a contribution to already existing literature of project management by investigating the effect of job satisfaction as a mediator between challenging goals and project performance that is identified in previous research. Second, although many organizations are handling projects and following quality standards but the pace of improvement is very slow. Thus, this study specifically focuses on quality measures of Six Sigma projects and the aspect of job satisfaction that may enhance the performance of project based organizations in Pakistan.

1.4. Supporting Theories

There are three important theories presented by the researchers that supports the study and will help to understand the relationship between variables.

1.4.1. Goal Setting Theory

Around 400 past researches have shown that challenging or in other words difficult goals lead to high performance than easy goals or "do your best" (Locke & Latham, 1990). Theory was developed over 25 year's period within industrial/organizational (I/O) psychology (Locke & Latham, 1990; 2002).

This theory also supports current study. To understand Six Sigma, goal theoretic perspective was proposed by Linderman et al., (2003) and argued that Six Sigma projects that have challenging goals, results in high team efforts and dedicated focus helps the team members to achieve high performance. Further results of empirical studies also showed that challenging project goals influences Six Sigma project performance. Linderman, Schroeder, and Choo, (2006) also stated that challenging goals play significant role in Six Sigma projects because such goals support intentional learning.

1.4.2. Socio-Technical System (STS) Theory

Socio-Technical System (STS) Theory was presented by Eric Trist in 1950. The term reflects the goals by integration of social requirements of individuals in workplace with technical requirements of the work to perform. According to this theory, both aspects must be viewed separately because they may follow different arrangements but they can be combined for joint optimization (Fox, 1995). Theory also states that combined effect of both aspects enhance performance. The technical system consists of tools and techniques necessary to transform inputs to outputs whereas the social system is about human presence and consists of individuals that involved in the work (Arumugam, Antony, & Linderman, 2016). Current study investigates both aspects of STS theory. The social aspect refers to goal setting whereas technical aspects refer to Six Sigma Method (Arumugam, Antony, & Linderman, 2016). This theory provides a clear understanding of the relationships between both systems within organizations (Trist & Bamforth, 1951). STS theory have important role in teams and provide guidelines when to transform their methods of work to enhance performance (Trist, 1978). When team members have to

attain challenging goals that refers to social system, they may have to change their methods that refer to technical system to achieve the optimal outcome (Arumugam, Antony, & Linderman, 2016).

1.4.3. Achievement Goal Theory

Goal orientation has received considerable attention in past studies. According to Dweck's (1999, p. 1040), achievement goal or goal orientation theory states that adaptive motivational patterns promote achievement of personally valued and challenging goals whereas nonadaptive patterns are those that fail to set and attain reasonable valued goals or in other words, attainment of goals that are potentially within one's reach" (as cited in Latham & Locke, 2007, p. 292). Researchers have found that individuals with learning goal orientation focus on mastering new tasks and they see errors as part of learning process. Opposite to learning goal orientation is performance goal orientation. Individuals with performance goal orientation do not accept challenging goals and prefer to choose such tasks that they think they can do or let them to look good in the others' eyes (Vandewalle, Cron, & Slocum, 2001). This theory relates to employee's job satisfaction and job performance that depends on their goal orientations.

1.5. Problem Statement

Customer expects quality as a long-lasting experience (Basu, 2011). Yet, quality is a problem in many project based organizations. Project managers accept the importance of iron triangle of time, cost and quality but focus more on cost and time. Quality is often compromised in order to complete projects within time and cost

(Atkinson, 1999). Lack of clarity about quality is often reported as the conflicts between quality management ignorance and project success (Basu, 2013). Challenging Goals can play an effective role in quality management. Challenging Goals, such as Six Sigma quality improvements motivates team members to think out of the box and engage them in intentional learning activities (Arumugam, Antony, & Linderman, 2016). This is the alarming issue and need to be addressed regarding quality management in projects.

1.6. Research Questions

Based on the stated problem statement, present study is intended to investigate the following research questions:

Question 1: What is the impact of Challenging Goals on Project Performance?

Question 2: Does Job Satisfaction mediate the relationship between Goals and Performance?

Question 3: Does Six Sigma Method moderate the relationship between Job Satisfaction and Project Performance, and relationship between Goals and Performance?

1.7. Research Objectives

The objectives of this study are multiple:

- First, this study focuses to investigate the impact of Challenging Goals on Project Performance.
- Second, this study aims to investigate the mediating role of Job Satisfaction and moderating role of Six Sigma Method between the relationships.

- Third, this study precisely focus Pakistani context because Pakistan has diverse culture and environment.

1.8. Significance of the Study

This study will provide help not only to scholars and practitioners but also government and policy maker to enhance project performance by reducing the quality problems. This study has significance because it will also be beneficial for businesses and project based organizations as this study is planned to the context of Pakistan.

The study has also fulfilled the theoretical gap which was existed in previous literature because the research on the Challenging Goals and Six Sigma Project Performance with Job Satisfaction was not done before in the field of project management. The present study has catered the need of the time by exploring the impact of Challenging Goals on Project Performance.

CHAPTER 2

2. LITERATURE REVIEW

The goal-theoretic point of view upholds that organizations can achieve more satisfactory outcomes by setting Challenging Goals to obtain better results (Locke & Latham, 1990). Fore mostly, specific goals must provide focal point to employees' struggle and divert their struggle to meaningful orientation. In addition to it, the productivity enhances if goals are specific, precise depend on the appreciation of the worker, as in the case of "do the best as you can," performance improves. The second essential being put forth by goal-theoretic point of view that goals should be challenging and laborious. By incorporating these two essentials being put forth the productivity of both employees' and organization enhances (Gutiérrez, Lloréns Montes, & Sanchez, 2009).

Challenging Goals that are exigent are not only related with increasing self efficacy in achieving something productive but also being related with constructive determinants. People having high goals are said to consider that efforts to achieve goals will provide them feeling of accomplishment, self enhancement and platform for verification of one's worth whereas people with low goals think otherwise. Challenging Goals in routine life are normally linked with lucrative productivity as compared with less Challenging Goals. For instance, students who aim for good grades in academic efforts look forward to have more valuable and lucrative future life like admission in

college, remuneration, work-related standing, and further prospects, as compared with average graders (Locke & Latham, 1990).

Studies on goal setting theory have indicated that there is a significant relationship between Challenging Goals and performance outcomes (Locke & Latham, 1990; Kleingeld, Van Mierlo, & Arends, 2011). Recent studies also show that goals are also set for groups not only for single person. Gutiérrez, Lloréns Montes, and Sanchez (2009) are off the view that Challenging Goals allow group members to develop collective perception that aids in timely completion of task and collective success. Precedent studies have also shown procedures being practiced in social set ups determine execution of quality management practices (MacDuffie, 1997). Katzenbach (1997) took into account concept of teamwork and elaborated team as collection of individuals with harmonious potentials striving to achieve collective ambition as put forth by specific working procedure. The struggle of teams must be organized in the light of specific goals and directed towards collective productive outcomes. The goals must be specifics to avoid the trouble of vagueness among the members (Martocchio & Frink, 1994). Martocchio and Frink, (1994) was off the view that specific and difficult group goals contribute more effort as compared to individual's goals. The unity among the members of the team will enhance if Challenging Goals are being set for them to achieve and thus enhancing productivity (Levine & Moreland, 1990). The individuals working in groups will work on common agenda being presented to them in a better way and will orient their efforts to common outcomes (Martocchio & Frink, 1994). Specific group goals are said to orient group effort by administering mindfulness, mobilizing effort and persistence, and encouraging development, and enabling to develop task attaining skills for achievement

of set goals in better way. Moreover, goals that are being set for team attainment are said to stimulate distinctive medium for constructive practices like scheduling, mass management, character building and group effectiveness (e.g., Weldon & Weingart, 1993). Ghoshal and Bartlett (1994) argue in organization research that Challenging Goals create challenging environment that allow individuals to widen their expectations.

Linderman, Schroeder, and Choo, (2006) is off the view that projects following Six Sigma approach with Challenging Goals will instill energy in team, stimulate their dedication, and prompt them to create approach for productive outcomes. A study of six sigma teamwork methodology in the light of objective-based viewpoints lead to conceptual learning and such concepts can aid in better explanation of the approach which can further be studied in more factual way (Linderman et al., 2003). Among all of the concepts few were consequently examined, goal setting while keeping in view the six sigma approaches was said to put in the accomplishment of high level performance (Linderman, Schroeder, & Choo, 2006). The conclusion is in accordance with goal-theoretic perspective which holds that specific Challenging Goals lead to better performance and satisfactory outcomes (Linderman et al. 2003; Linderman, Schroeder, & Choo, 2006). This leads to first hypothesis.

Hypothesis 1: Challenging Goals in Six Sigma Projects are positively associated with Project Performance.

Achievement goal theory and further studies in the regard put forth that job performance and Job Satisfaction of an employee depend upon their goal orientations (Phillips & Gully, 1997; Van Yperen & Janssen, 2002). Mastery orientation originates

from idea that person's characteristics are not fixed and unpredictable and putting in hard work in that regard results in better performance, on the other hand performance orientation originates from an idea that person's characteristics are not changeable, solid and internally oriented. People following performance orientation do not credit hard work for enrichment in performance. They believe that hard work is done by the ones lacking capability and poor performers' lack characteristics needed to perform well in the task (Dweck, 1999).

Literature also suggest that, people with mastery orientation get more enjoyment and satisfaction from the hard work they put to attain their goals as oppose to people with performance orientation as demonstrated by study on achievement goal theory (Pintrich, 2000; Van Yperen & Janssen, 2002).

In the light of this theory, workers having Challenging Goals get more Job Satisfaction because it associates with learning goal orientation. When task requires extra exertion the individuals with mastery orientation put in hard work all by themselves without being asked or supervised. People with mastery orientation consider hard work as advantageous characteristic of themselves and also take it as one of the parameters of achievement (Duda, 2001). As oppose to mastery orientation, people with performance orientation take hard work as indicator of lack of skills and capability, and leaves them indecisive of their competing caliber (Dweck & Leggett, 1988; Van Yperen & Janssen, 2002). In addition to that, people with mastery orientation mainly attribute control of their behavior to internal factors and causality (Dweck & Leggett, 1988), on the other hand people with performance orientation attribute control of their behavior to external factors (Button, Mathieu, & Zajac, 1996; Elliot, 1999; Philips & Gully, 1997). Studies on

stress related with task have unveiled that disruptive behavioral consequences result from lack of control (Karasek & Theorell, 1990; Van Yperen & Hagedoorn, 2003).

Supervisors' assistance being provided in task performance to workers with mastery orientation may also lead higher Job Satisfaction. Workers when provided autonomy at work feel involved in the task and considers themselves accountable for their actions, thus, making them feel satisfied both intrinsically and extrinsically (Deci & Ryan, 1987). Furthermore, supervisors' assistance while performing task is quite helpful for workers to avoid work-related troubles and thus increasing their job related contentment. Previous studies have unveiled that supervisor and employee relationship has constructive consequences and leads to high job contentment levels in employees 372 Academy of Management Journal June (Gerstner & Day, 1997; Green, Anderson, & Shivers, 1996).

The ways employee's goal orientations are drafted govern the nature of their relationship with supervisors and quality of interactions too. The quality of leader-member exchange aids in the development of high level job performance and satisfaction.

Hypothesis2: Challenging Goals have positive impact on Job Satisfaction in Six Sigma Projects.

Higher stages of Job Satisfaction provide ways for higher task performances that are beneficial for both employee and organization they are working for (Judge, Thoresen, Bono, & Patton, 2001), the satisfaction with which task performed also effects efficiency, usefulness and the way task is being performed (Judge & Bono, 2001). Example being, employees' autonomy in performing task related activities and decision power increases

their satisfaction level (Kim, 2002; Hansen & Høst, 2012). Leadership style also plays an important role to enhance employee's Job Satisfaction (Kim, 2002). Employee Job Satisfaction decreases when an employee face unpleasant working environment, over workload, poor relationships with boss and ultimately results in decrease in performance on individual and organizational level (Hang-Yue, Foley, & Loi, 2005).

Employee Job Satisfaction has significant role in performance of overall organization. For organizations' point of view it is very important to know how to retain its employees by making them feel satisfied and motivated in order to get optimal performance. Job Satisfaction is so much important that it can be viewed as an indicator to measure achieved targets, increase in productivity and growth, and quality of tasks. Job Satisfaction is an attitude towards job and organizational performance can be measured as staff satisfaction. It is very clear that employee that holds high satisfaction exhibits positive attitude towards his job whereas a person that holds low or less satisfaction exhibits negative attitude towards his job and even towards organization. Employee satisfaction is closely related to profitability and performance of an organization (Latif, Ahmad, Qasim, Mushtaq, Ferdoos, & Naeem, 2013).

Generally workers love their job that has high Job Satisfaction. They feel themselves comfortable and justice in work environment and assumes that their job provide them some beneficial features for their career like tasks related challenges, diversity, reasonable pay, security and pleasant relationships with team members. Satisfied employee even devotes his/her personal time to his/her tasks. Such employees are more creative and committed to their tasks. They think out of the box to solve their task related problems and also support their leader and team members. Such employees

exhibit extra ordinary performance which also leads their organizations to achieve set goals (Bakotic, 2016). These arguments suggest third hypothesis.

Hypothesis 3: Job Satisfaction has positive impact on Project Performance.

Locke (1969) defines job satisfaction as pleasant or positive emotional condition that arises due to the assessment of one's job or job experiences'. According to Hoppock (1935), job satisfaction is the blend of various factors that include psychological, physiological and environmental factors. These factors when combine create job satisfaction.

In the light of Achievement Goal Theory and as it were discussed earlier, leader support and the employees with mastery orientation get high Job Satisfaction when they are assigned to perform Challenging Goals (Pintrich, 2000; Van Yperen & Janssen, 2002; Deci & Ryan, 1987), in return they show higher task performance that is beneficial not only for employee him/herself but also for organization as well (Judge et al., 2001). These arguments suggest forth hypothesis of the study.

Hypothesis 4: Job Satisfaction positively mediates between the impact of Challenging Goals and Project Performance.

Tools and techniques in Six Sigma Method help team member in better decision making, these tools and techniques are linked in a sequential manners. The logical bonding of Six Sigma Methodology provides mechanism and guidelines to complete the projects. According to Linderman, Schroeder, and Choo (2006), Six Sigma Method not only helps to achieve project goals but also helps the team members to search the optimal

solutions to complicated problems and hence reduce the complexities in project. Therefore, Six Sigma Method should transform the teams' capability to attain challenging goals.

In the light of Socio-Technical System theory, social system and technical system should be concomitance in order to optimize performance in work settings (Pasmore, 1988). Challenging Goals demand such social system where project teams are able to work hard to attain their objectives. In these types of settings teams get assist from technical system. It can be relate to project teams adherence to Six Sigma Method as it offers teams a roadmap to achieve project objectives (Choo, Linderman, & Schroeder, 2007; Zu, Fredendall, & Douglas, 2008; Antony et al., 2007), and also a systematic approach to solve the problems (Lam, 1995). On the basis of Socio-Technical System perspective, it can be said now that Challenging Goals should have compatibility with the utilization of Six Sigma Method. These arguments suggest fifth hypothesis.

H5: Six Sigma Method positively moderates between the impacts of Challenging Goals and Performance.

As it is discussed earlier, higher job satisfaction of an employee provides higher task performance. It also plays an important role in the performance of overall organization as well. It makes sense between two types of persons, one that holds high job satisfaction and one that holds low job satisfaction. Both will show different attitudes toward their jobs and entire organization (Judge et al., 2001; Latif et al., 2013). Ostroff (1992) argued that organizations are more effective that have satisfied employees than unsatisfied employees.

In the view of affective outcome of Job Satisfaction, workers with mastery orientation enjoy their tasks and feel satisfied from their hard work and achievement of challenging goals (Pintrich, 2000; Van Yperen & Janssen, 2002). In the context of Six Sigma projects, optimal performance is achieved through the binding of social and technical systems. It is also discussed earlier that Challenging Goals requires both settings in work environments. On the basis of these arguments, this suggest sixth hypothesis of the study.

H6: Six Sigma Method positively moderates between Job Satisfaction and Project Performance.

2.1. Research Model

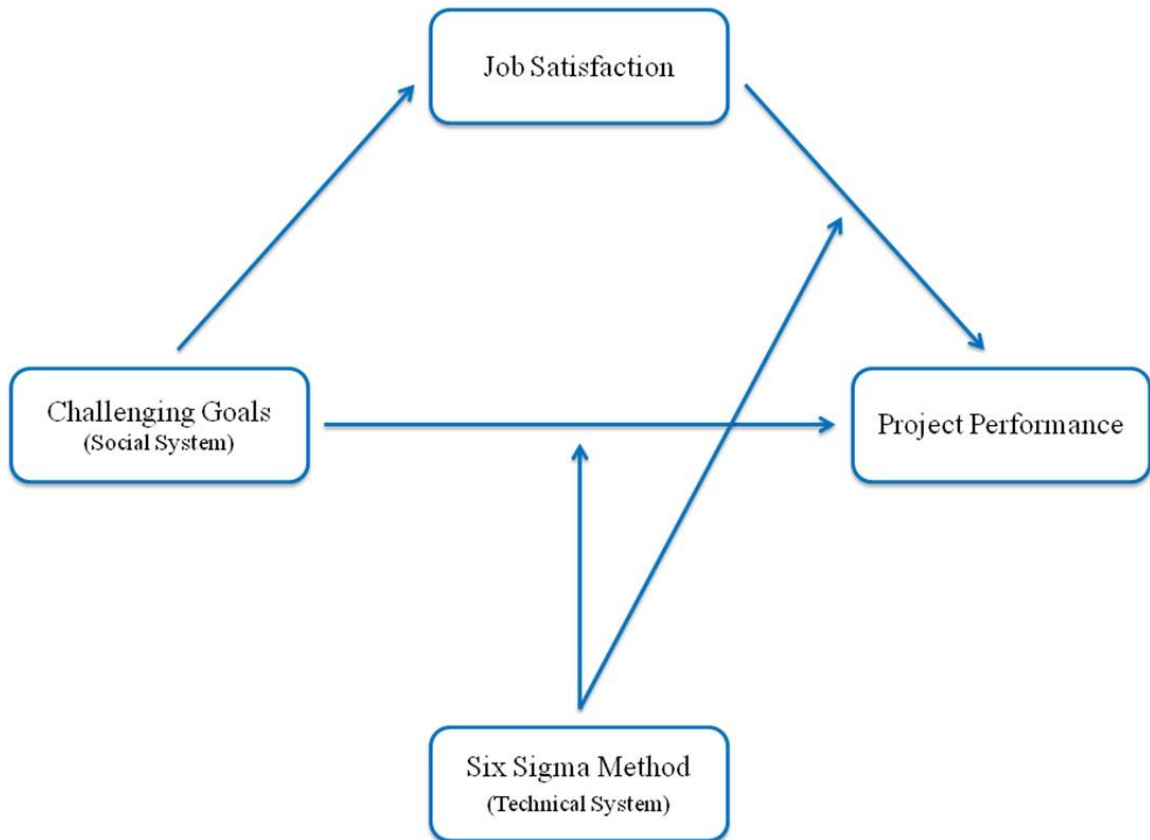


Figure 1: Conceptual Model

2.2. Hypotheses

H1: Challenging Goals in Six Sigma Projects are positively associated with Project Performance.

H2: Challenging Goals have positive impact on Job Satisfaction in Six Sigma Projects.

H3: Job Satisfaction has positive impact on Project Performance.

H4: Job Satisfaction positively mediates between the impact of Challenging Goals and Project Performance.

H5: Six Sigma Method positively moderates between the impacts of Challenging Goals and Performance.

H6: Six Sigma Method positively moderates between Job Satisfaction and Project Performance.

CHAPTER 3

3. RESEARCH METHODOLOGY

This chapter represents the overall methodology of the study. It deals with research design, data collection techniques and instrumentation. This study finds the relationship between Challenging Goals and Project Performance, with mediating role of Job Satisfaction and moderating role of Six Sigma Method.

3.1. Research Design

According to Zikmund (2003), research design is a plan followed by a researcher in order to describe the method for data collection and data analysis. Research design includes the purpose of the study, research philosophy, type of study, study setting, time horizon, and unit of analysis. Research design of this study is explained below in order to understand the defined results.

3.1.1. *Research Philosophy*

Research philosophy contains all paradigms of research elements within circle of knowledge. This study follows positivism research philosophy. Other research philosophies are realism, interpretive, and pragmatism (Saunders & Lewis, 2012).

3.1.2. Type of Study

This is a causal study and the type of this study is quantitative where data was collected from project managers and project team working on Six Sigma projects.

3.1.3. Unit of Analysis

Unit of Analysis are usually individuals and sometimes objects whose character and features are to be measured. It can be groups, industry, organization, country or culture for data collection. Unit of analysis of this study were employees of IT sector of Islamabad and Lahore.

3.1.4. Study Setting

Respondents were contacted online and offline for the purpose of collecting responses.

3.1.5. Time Horizon

According to Saunders and Lewis (2012), time horizons of any study are of two types: Cross-sectional and Longitudinal. In cross-sectional dimension, studies are time bound and can be conducted in specific horizon whereas in longitudinal dimension, studies conducted are not time bound and can be for long period of time. So the nature of this study is cross-sectional and duration is four months.

3.2. Instrumentation

This study contained closed ended questionnaires that were used to measuring four variables, and five sections: demographics variables (gender, age, qualification and experience), Challenging Goals, Job Satisfaction, Project Performance, and Method. The responses were tapped using a 5 point likert scale where 1 represents “strongly disagree” and 5 represents “strongly agreed”.

3.2.1. Challenging Goals

Questionnaire for Challenging Goal is constructed by Linderman, Schroeder, and Choo (2006) that contains 3 items. Items included “We found it very difficult to achieve the project goals”, “It was relatively easy to achieve the project goals”, and “The project goals were challenging to us”. All items loaded into a single factor and the factor loadings for each item ranged from 0.633 to 0.791.

3.2.2. Job Satisfaction

Questionnaire for Job Satisfaction is constructed by Taylor and Bowers (1974) that contains 7 items. Sample items included “All in all, you are satisfied with the persons in your work group?”, “All in all, you are satisfied with your supervisor”, “All in all, you are satisfied with your job”, “All in all, you are satisfied with this organization, compared to most”, “Considering your skills and the effort you put into your work, you are satisfied with your pay”, “You feel satisfied with the progress you have made in this organization up to now”, and “You feel satisfied with your chance for getting ahead in this organization in the future”. Coefficient alpha values ranged from 0.67 to 0.71.

3.2.3. Project Performance

Questionnaire for Six Sigma Project Performance was originally constructed by Nidumolu, (1995) but adopted from Ching Gu, Hoffman, Cao, and Schniederjans (2014) that contains 8 items. Items included “Projects are completed on time”, “Projects met budget requirements”, “Projects met expectations”, “Project team members are satisfied to work together”, “Benefits of projects to the organization are high”, “Projects resulted in sales growth”, “Projects helped the organization to increase market share”, and “Projects helped the organization improve its competitive position”. This scale had variance approximately 0.69.

3.2.4. Six Sigma Method

Questionnaire for Six Sigma Method is constructed by Linderman, Schroeder, and Choo (2006) that contains 4 items. Items included “The project strictly followed the sequence of DMAIC steps”, “Each step in DMAIC was faithfully completed”, “There was an emphasis on applying various analysis tools wherever applicable in this project”, and “This team frequently used Six Sigma tools to analyze data and information”. All items loaded into a single factor and the factor loadings for each item ranged from 0.631 to 0.814.

3.3. Data Collection

3.3.1. Population

The population of this study includes project managers and project teams working on Six Sigma Projects of two major cities of Pakistan.

3.3.2. *Sample*

This study contains the sample of 300 respondents. Total 350 questionnaires were floated among the employees. Data was collected through online and offline self administered questionnaire. They were selected from IT industry of Pakistan. Questionnaires were filled by employees working on different IT projects in Islamabad and Lahore. Each questionnaire contained total 22 items.

3.3.3. *Ethical Consideration*

Each questionnaire was attached with a cover letter that described the aim of study with the promise that all the information provided by respondents will be used only for academic purpose and will be kept confidential.

3.4. Data Analysis Tools

Structural Equation Modeling (SEM) technique was used to analyze the data and to test hypotheses of this study. For this purpose IBM SPSS AMOS 20.0 and IBM SPSS 20.0 both were used to analyze the data. IBM SPSS was used to analyze Descriptive Statistics and Correlations of variables whereas IBM AMOS was used to analyze the measurement and structural models. Both models were tested through fit statistics. These statistics include multiple indices, for example, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

3.4.1. Fit Statistics for Analysis

3.4.1.1. Goodness of Fit Index (GFI)

Goodness of Fit Index (GFI) tells absolute fit for both models (Gefen, Straub & Boudreau, 2000). According to Raykov and Marcoulides (2000), GFI is a degree of variance and covariance proportion. The calculated range of GFI lies between 0 and 1. For good model fit, value should be near to 1. Value above 0.80 indicates acceptable fit whereas below 0.80 indicates poor model fit that is the evidence of rejection.

3.4.1.2. Adjusted Goodness of Fit Index (AGFI)

Adjusted Goodness of Fit Index (AGFI) is another index related to GFI. According to Byrne (2001), AGFI adjusts the value of GFI according to degree of freedom. The calculated range of AGFI also lies between 0 and 1. Value should be close to 1 for good model fit. Below 0.80 indicates poor model fit whereas above 0.80 is acceptable fit.

3.4.1.3. Comparative Fit Index (CFI)

Comparative Fit Index (CFI) was first introduced by Bentler (1990) and this index assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model. The calculated range of CFI lies between 0 and 1. For good model fit, value should be near to 1. Value above 0.90 indicates acceptable fit whereas below 0.90 indicates poor model fit.

3.4.1.4. *Root Mean Square Error of Approximation (RMSEA)*

According to Byrne (1998), Root Mean Square Error of Approximation (RMSEA) estimates model goodness with population co-variance matrix. Different authors have suggested different threshold values of RMSEA. According to Schumacker and Lomax (2004), the value for RMSEA should be less than 0.05. Hu and Bentler (1999) suggested the calculated range of RMSEA between 0.06 – 0.08. MacCullum et al., (1996) suggested the value should be equal to 0.10 or below 0.10.

3.4.1.5. *Standardized Root Mean Square Residual (SRMR)*

According to Byrne (1998), values for the Standardized Root Mean Square Residual (SRMR) range from 0 – 1. Value should be less than 0.05 to obtain well fitted model. Another argument is values as high as 0.08 are deemed acceptable (Hu & Bentler, 1999). An SRMR of 0 indicates perfect fit but it must be noted that SRMR will be lower when there is a high number of parameters in the model and in models based on large sample sizes.

3.5. Analysis of Models

According to Kline (1998), measurement model and structural model are key components of full model. It is necessary to test measurement model first and if the results are significant then structural model should be tested.

3.5.1. Measurement Model

Measurement Model contains two types of analysis. First one is Common Factor Analysis and the second one is Confirmatory Factor Analysis. However for this study Confirmatory Factor Analysis was done on the basis of fit statistics criteria.

3.5.2. Structural Model

According to Steenkamp and Baumgartner (2000), Structural Model contains the testing of path and relationships that are hypothesized in the study. Direct and Indirect Effects of variables were included in the model and analyzed on the basis of fit statistic criteria and the p-value as well.

CHAPTER 4

4. ANALYSIS & RESULTS

This chapter provides detailed analysis and results of collected data and hypotheses testing. First of all descriptive statistics of the model were presented by using IBM SPSS and then the results and analysis of Measurement Model and Structural Model were presented in detailed interpretations by using IBM SPSS AMOS.

4.1. Descriptive Statistics

Following tables shows demographic descriptive of the study. Descriptive Statistics Analysis was done by using IBM SPSS and the results are:

4.1.1. Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	252	84.0	84.0	84.0
Female	48	16.0	16.0	100.0
Total	300	100.0	100.0	

Table 1: Gender Distribution

Table 1 represents the gender composition of the sample. In this sample there were 84% male respondents and 16% were female respondents out of the sample size of 300.

4.1.2. Age

	Frequency	Percent	Valid Percent	Cumulative Percent
21 – 23	33	11.0	11.0	11.0
24 – 26	66	22.0	22.0	33.0
27 – 29	80	26.7	26.7	59.7
> 30	121	40.3	40.3	100.0
Total	300	100.0	100.0	

Table 2: Age Distribution

Table 2 represents the age composition of the sample of 300 respondents. 11% of respondents were between the ages of 21 – 23 range. 22% of respondents were between the ages of 24 – 26 range. 26.7% of respondents were between the ages of 27 – 29 range and 40.3% of respondents were above 30 ages that is highest percentage.

4.1.3. Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Intermediate	15	5.0	5.0	11.0
Graduate	155	51.7	51.7	56.7
Masters	120	40.0	40.0	96.7
Doctorate	10	3.3	3.3	100.0
Total	300	100.0	100.0	

Table 3: Qualification Distribution

Table 3 represents the qualification composition of 300 respondents. 5% respondents were Intermediate qualified. 51.7% were Graduate. 40% of respondents were Masters qualified and 3.3% were Doctorate qualified. The highest percentage of this sample were Graduated.

4.1.4. Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
1 – 3	110	36.7	36.7	36.7
4 – 6	103	34.3	34.3	71.0
7 – 9	38	12.7	12.7	83.7
10 – 12	31	10.3	10.3	94.0
13 – 15	12	4.0	4.0	98.0
> 15	6	2.0	2.0	100.0
Total	300	100.0	100.0	

Table 4: Experience Distribution

Table 4 represents experience composition of the sample of 300. In this sample 36.7% were within the range of 1 – 3 years experience. 34.3% were between the ranges of 4 – 6 years. 12.7% were between 7 – 9 years. 10.3% were between 10 – 12 years. 4.0% were between the range of 13 – 15 years and 2% were having more than 15 years experience. Respondents having experience within the range of 1 – 3 years are the highest percentage of the sample.

4.1.5. Mean, Standard Deviation, Skewness, and Kurtosis

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
D_G	300	1.1867	.39029	1.616	.141	.617	.281
D_A	300	3.9633	1.03225	-.532	.141	-.966	.281
D_Q	300	3.4167	.64116	.123	.141	-.167	.281
D_E	300	2.1667	1.25064	1.117	.141	.654	.281
CG_1	300	2.5467	1.15713	.779	.141	-.393	.281
CG_2	300	2.6100	1.12641	.261	.141	-.910	.281
CG_3	300	2.5133	1.21988	.798	.141	-.503	.281
JS_4	300	2.8967	1.17641	.599	.141	-1.052	.281
JS_5	300	2.9800	1.32367	.141	.141	-1.160	.281
JS_6	300	2.8300	1.28319	.484	.141	-1.145	.281
JS_7	300	2.8800	1.46038	.385	.141	-1.337	.281
JS_8	300	3.0233	1.34989	.163	.141	-1.213	.281
JS_9	300	2.7633	1.34909	.413	.141	-1.198	.281
JS_10	300	2.6667	1.27579	.178	.141	-1.265	.281
PP_11	300	2.4633	1.05151	.723	.141	-.360	.281
PP_12	300	2.5367	1.04192	.107	.141	-1.189	.281
PP_13	300	2.4300	1.11770	.784	.141	-.387	.281

PP_14	300	2.4500	1.00209	.409	.141	-.987	.281
PP_15	300	2.4633	1.05151	.723	.141	-.360	.281
PP_16	300	2.5367	1.04192	.107	.141	-1.189	.281
PP_17	300	2.4300	1.11770	.784	.141	-.387	.281
PP_18	300	2.4500	1.00209	.409	.141	-.987	.281
SSM_19	300	2.5500	1.16276	.784	.141	-.394	.281
SSM_20	300	2.6333	1.17052	.368	.141	-.785	.281
SSM_21	300	2.5233	1.22520	.786	.141	-.522	.281
SSM_22	300	2.5400	1.12515	.609	.141	-.599	.281
Valid N (listwise)	300						

Table 5: Mean, Standard Deviation, Skewness, and Kurtosis

Table 5 represents mean, standard deviation, skewness, and kurtosis values. N represents the total number of sample that is 300. D denotes demographics variable such as D_G for Gender, D_A for Age, D_Q for Qualification and D_E for Experience. This study contains 4 variables and there are total 22 items. Each variable and items are assigned by unique code such as CG represents Challenging Goals with 3 items (CG_1 – CG_3), JS represents Job Satisfaction with 7 items (JS_4 – JS_7), PP represents Project Performance with items (PP_8 – PP_18), and SSM represents Six Sigma Method with 4 items (SSM_19 – SSM_22). Skewness and Kurtosis values are within the range of (+/-) 2.2 (Sposito, Hand & Skarpness, 1983)

4.2. Measurement Model Analysis & Results

4.2.1. Confirmatory Factor Analysis

4.2.1.1. Confirmatory Factor Analysis for each Latent Variable

4.2.1.1.1. Challenging Goals

The first variable of the study was Challenging Goals coded as “CG” that included 3 items in scale. The factor loading of this scale was CG_1 = 0.90, CG_2 = 0.71, and CG_3 = 0.93. This variable showed favorable results and there was no need to delete any item in this variable. Statistic fit indices showed values that were on acceptable criteria, for example, GFI = 0.91, AGFI = 0.89, and RMSEA = 0.07.

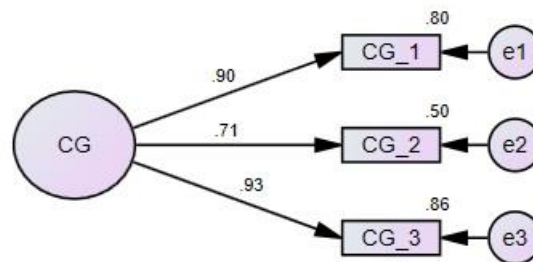


Figure 2: CFA for Challenging Goals

4.2.1.1.2. Job Satisfaction

Job Satisfaction was coded as “JS” that included 7 items in scale. The factor loading of this scale was JS_4 = 0.43, JS_6 = 0.76, JS_8 = 0.34, and JS_10 = 0.49. 3 items (JS_5, JS_7, and JS_9) were deleted because the values of factor loading were not significant. Rest of the values showed significant results. Statistic fit indices showed values that were on acceptable criteria, for example, GFI = 0.99, AGFI = 0.99, and RMSEA = 0.03.

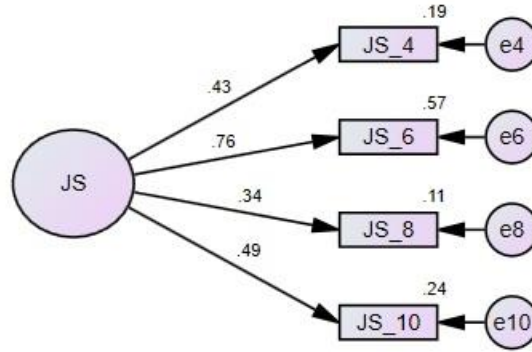


Figure 3: CFA for Job Satisfaction

4.2.1.1.3. Project Performance

Project Performance was coded as “PP” that included 8 items in scale. The factor loading of this scale was PP_11 = 0.48, PP_13 = 0.53, PP_15 = 0.67, and PP_17 = 0.38. 4 items (PP_12, PP_14, PP_16, and PP_18) were deleted because the values of factor loading were not significant. Rest of the values showed significant results. Statistic fit indices showed values that were on acceptable criteria, for example, GFI = 0.99, AGFI = 0.97, and RMSEA = 0.04.

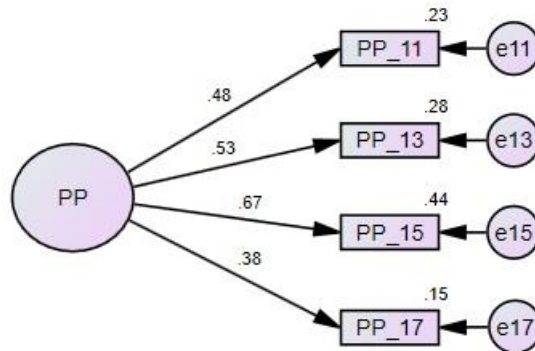


Figure 4: CFA for Project Performance

4.2.1.1.4. Six Sigma Method

Six Sigma Method was coded as “SSM” that included 4 items in scale. The factor loading of this scale was SSM_19 = 0.98, SSM_20 = 0.94, SSM_21 = 0.98, and SSM_22 = 0.97. This variable also showed favorable results and there was no need to delete any item in this variable. Statistic fit indices showed values that were on acceptable criteria, for example, GFI = 0.91, AGFI = 0.59, and RMSEA = 0.03.

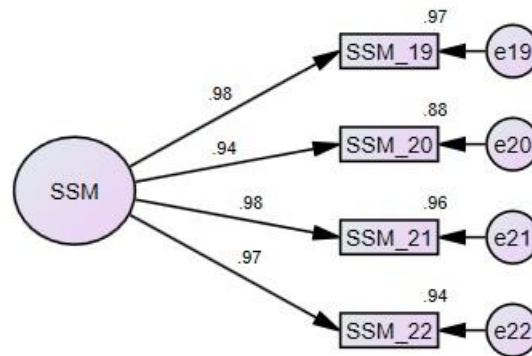


Figure 5: CFA for Six Sigma Method

4.2.1.2. Confirmatory Factor Analysis for all Latent Variable

The model was further tested with complete co-variance to check model fitness. This practice is also recommended in various literatures (Leach et al., 2008). Complete model CFA is presented in Figure 6 after deletion of the items that were not fit on acceptable criteria. The results show acceptable range for GFI = 0.90, AGFI = 0.86, CFI = 0.94, RMSEA = 0.08, and SRMR = 0.06. The value of GFI and CFI are close to 1, AGFI value is slightly below the acceptable range, and however value of RMSEA and SRMR are way below than the range of 0.05, but according to some literature it is also acceptable.

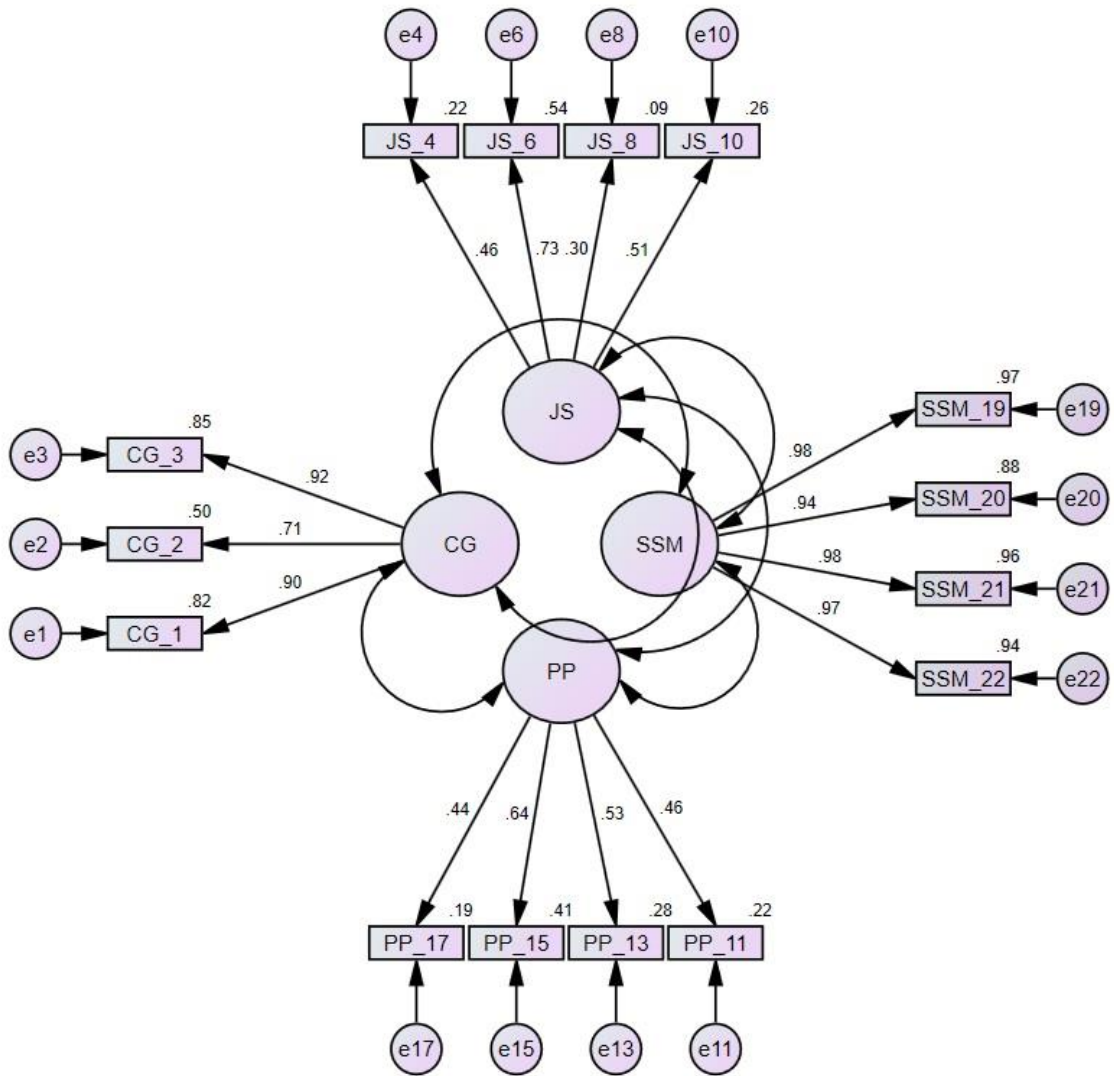


Figure 6: CFA for Complete Model

4.3. Correlations

Pearson's Correlation Analysis was done by using IBM SPSS tool. Table 6 shows the results of Correlations. The results exhibit that Challenging Goals (GG_Mean) is positively correlated with Job Satisfaction (JS_Mean) and the result is also significant (0.577**), Project Performance (PP_Mean) is significantly and positive correlated with Challenging Goals (CG_Mean) and the result is (0.603**), Project Performance (PP_Mean) is significantly and positive correlated with Job Satisfaction (JS_Mean) and the result is (0.534**), Six Sigma Method (SSM_Mean) is significantly and positive correlated with Challenging Goals (CG_Mean) and the result is (0.605**), Six Sigma Method (SSM_Mean) is significantly and positive correlated with Job Satisfaction (JS_Mean) and the result is (0.538**), and finally Six Sigma Method (SSM_Mean) is significantly and positive correlated with Project Performance (PP_Mean) and the result is (0.508**).

		CG_Mean	JS_Mean	PP_Mean	SSM_Mean
CG_Mean	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	300			
JS_Mean	Pearson Correlation	.577**	1		
	Sig. (2-tailed)	.000			
	N	300	300		
PP_Mean	Pearson Correlation	.603**	.534**	1	
	Sig. (2-tailed)	.000	.000		
	N	300	300	300	
SSM_Mean	Pearson Correlation	.605**	.538**	.508**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	300	300	300	300

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

Table 6: Correlations

4.4. Structural Model Analysis & Results

4.4.1. Single Regression

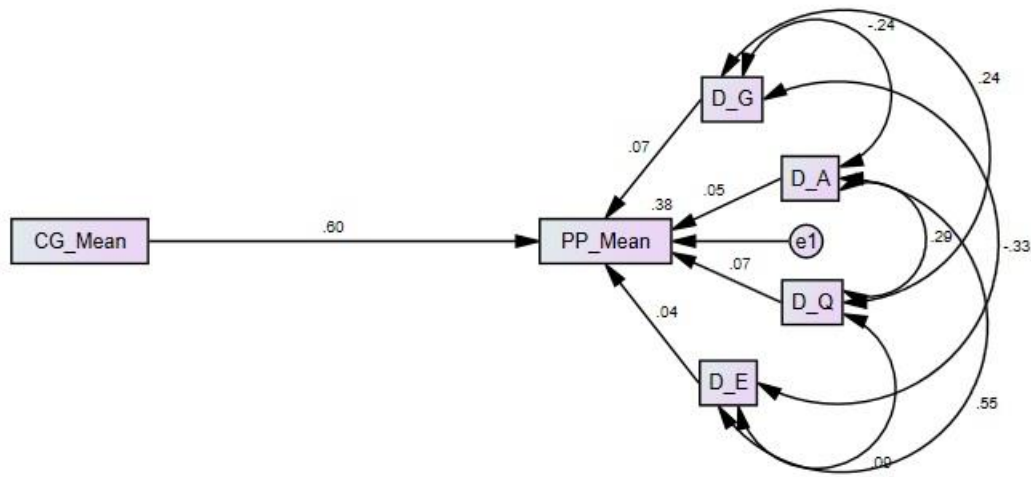


Figure 7: Single Regression

Figure 7 shows the results of single regression between predictor variable Challenging Goals (CG_Mean) and outcome variable Project Performance (PP_Mean) with controlled variables of demographics. The results showed highly significant ($p < 0.001$) relationship between these two variables with 0.60 regression weight. Overall statistics fit indices also showed acceptable values for example GFI = 0.99, AGFI = 0.96, CFI = 0.99, however values for RMSEA = 0.03, and SRMR = 0.03 showed below the range of acceptable criteria.

4.4.2. Multiple Regression

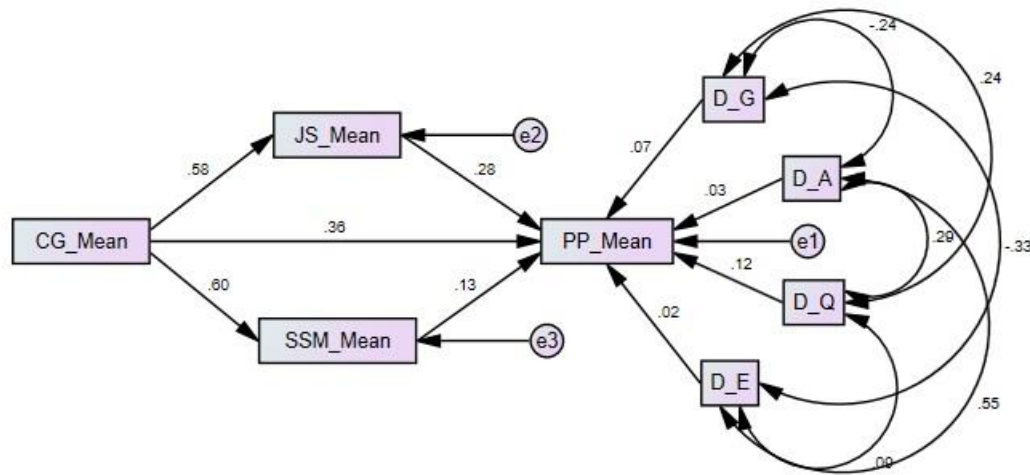


Figure 8: Multiple Regressions

Figure 8 shows the results of multiple regressions between all variables of the study with controlled variables of demographics. The results showed positive and highly significant relationships between these variables. Challenging Goals (CG-Mean) and Job Satisfaction (JS_Mean) showed highly significant relationship ($p < 0.001$) with 0.58 regression weight, Job Satisfaction (JS_Mean) and Project Performance (PP_Mean) showed highly significant relationship ($p < 0.001$) with 0.28 regression weight, Challenging Goals (CG_Mean) and Project Performance (PP_Mean) showed highly significant relationship ($p < 0.001$) with 0.36 regression weight, Challenging Goals (CG_Mean) and Six Sigma Method (SSM_Mean) showed highly significant relationship ($p < 0.001$) with 0.60 regression weight, and Six Sigma Method (SSM_Mean) and Project Performance (PP_Mean) showed significant relationship (0.018, $p < 0.05$) with 0.13 regression weight. Statistics fit indices also showed acceptable values for example GFI = 0.95, AGFI = 0.87, CFI = 0.92, RMSEA = 0.09, and SRMR = 0.05.

4.4.3. *Mediation Analysis Evaluation*

Mediation Analysis was done by employing bootstrap method to check the significance of each step as Baron and Kenny (1986) recommended. Mediation was run in three steps to ensure the significance of the analysis and the result showed positive significance (p-values) in each step.

4.4.3.1. *Mediation Step 1*

First test of mediation suggests to run model without mediator. The result showed positive highly significant ($p < 0.001$) value between the relationship. The regression weight between predictor and outcome variable is 0.60. Overall statistics fit indices also showed acceptable values for example GFI = 0.99, AGFI = 0.96, CFI = 0.99, however values for RMSEA = 0.03, and SRMR = 0.03 showed below the range of acceptable criteria.

4.4.3.2. *Mediation Step 2*

Second step of mediation suggest to run the model with mediator. The result showed positive significant (0.02, $p < 0.05$) value between the relationships. The regression weight between predictor and outcome variable is 0.12. Statistics fit indices also showed acceptable values for example GFI = 0.97, AGFI = 0.91, CFI = 0.96, RMSEA = 0.09, and SRMR = 0.05.

4.4.3.3. Mediation Step 3

Third step of mediation suggest to run the model by bootstrap method. The result showed positive significant (0.01, $p < 0.05$) value between the relationships. Statistic fit indices were in acceptable range as discussed above.

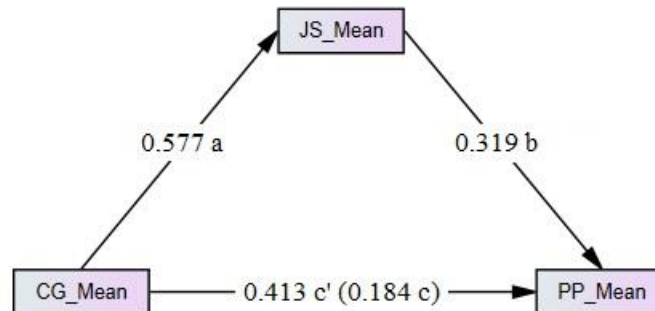


Figure 9: Mediation Paths

Figure 9 shows the mediation paths analysis. Path a results suggest that Challenging Goals is positively related to Job Satisfaction, ($\beta = 0.577$, $p < 0.001$). Path b results also suggest that Job Satisfaction is positively related to Project Performance, ($\beta = 0.319$, $p = 0.02$). Direct path c' results suggest that Challenging Goals is positively related to Project Performance ($\beta = 0.413$, $p < 0.001$). Path c results of mediation suggested that there is a partial mediating role of Job Satisfaction between Challenging Goals and Project Performance, ($\beta = 0.184$, $p = 0.01$). The change in c and c' confirmed the existence of mediator in the model.

4.4.4. Moderation Analysis Evaluation

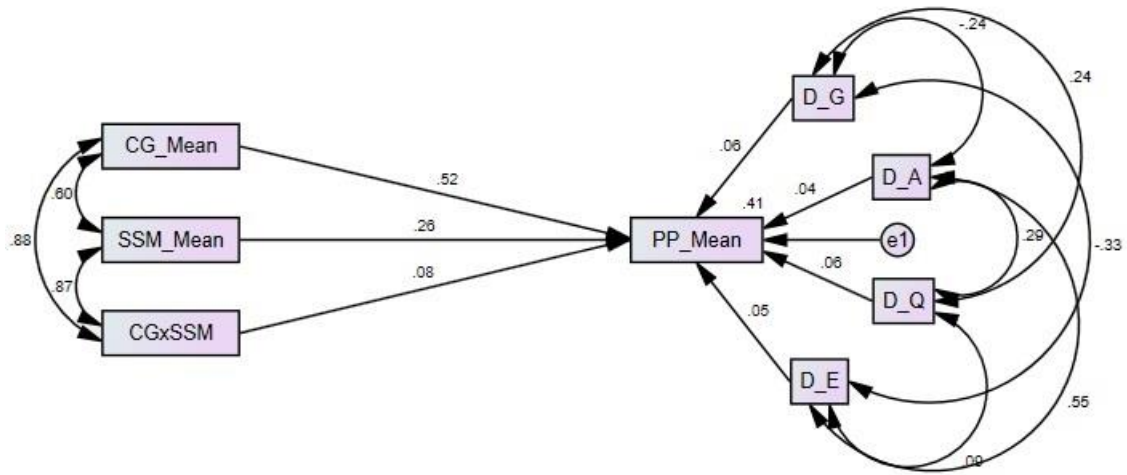


Figure 10: Moderation between Predictor and Outcome Variables

Figure 10 shows the results of moderating effect of Six Sigma Method between Challenging Goals and Project Performance. The result showed insignificant results of moderation between the relationship ($p = 0.08$, $p > 0.05$). The reason of insignificant interaction is discussed in chapter 5. However statistic of indices showed favorable result for example $GFI = 0.93$, $AGFI = 0.89$, $CFI = 0.91$, $RMSEA = 0.06$, and $SRMR = 0.06$.

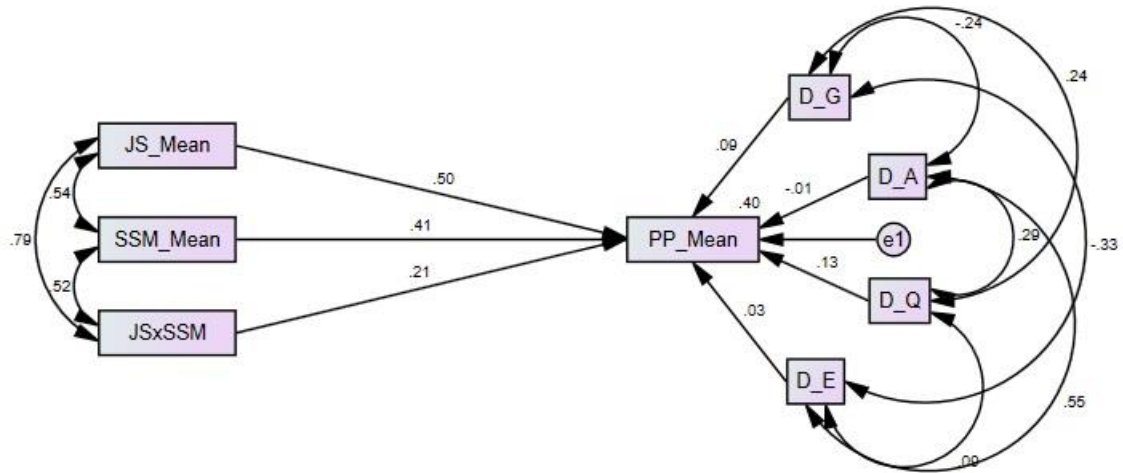


Figure 11: Moderation between Mediator and Outcome Variables

Figure 11 shows the results of moderating effect of Six Sigma Method between Job Satisfaction and Project Performance. The result showed significant results of moderation between the relationship ($p = 0.02$, $p < 0.05$). Statistic of indices also showed favorable result for example $GFI = 0.92$, $AGFI = 0.90$, $CFI = 0.91$, $RMSEA = 0.06$, and $SRMR = 0.05$.

4.4.5. Model Analysis

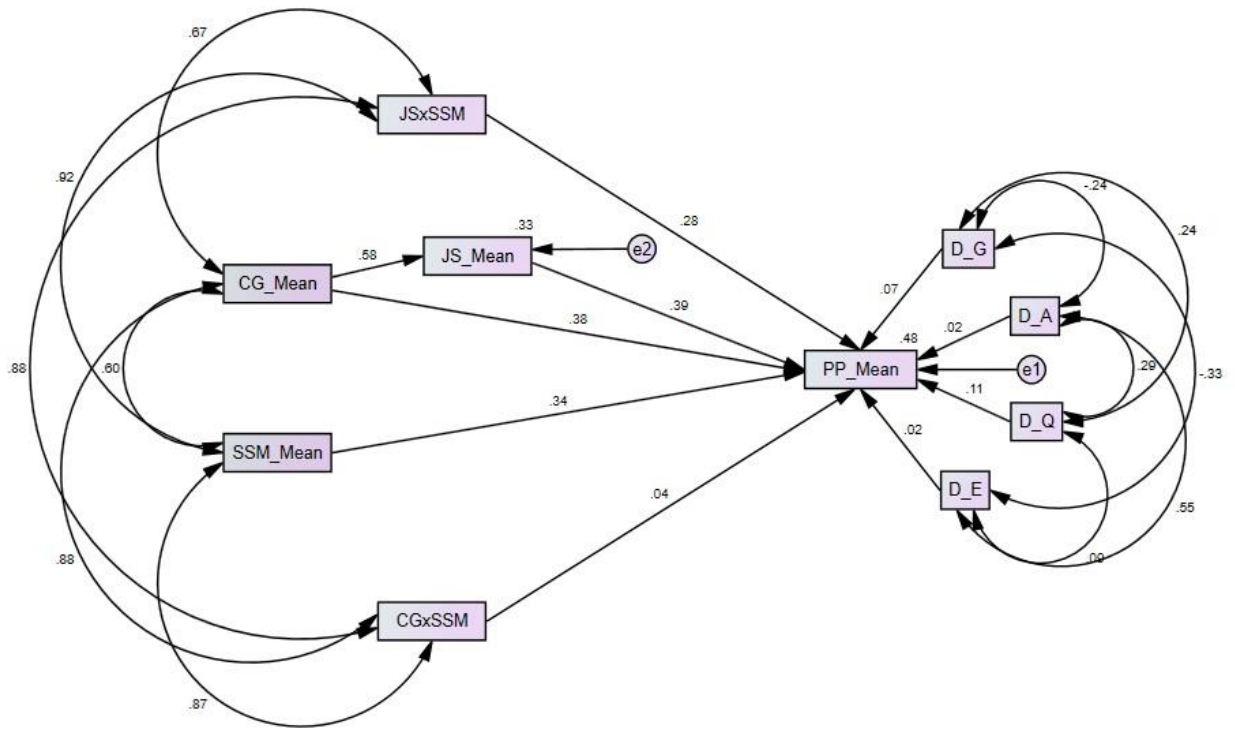


Figure 12: Model Analysis

Figure 12 shows the structural diagram of model with all variables of the study. Results are slightly different as compared to individual testing of model. Results showed significance between the relationships except the interaction of Challenging Goals and Job Satisfaction with Project Performance. Statistic of indices showed favorable results for overall model for example GFI = 0.93, AGFI = 0.90, CFI = 0.91, RMSEA = 0.05, and SRMR = 0.05.

4.5. Hypothesis Acceptance/Rejection

H1: Challenging Goals in Six Sigma Projects are positively associated with Project Performance.	Accepted
H2: Challenging Goals have positive impact on Job Satisfaction in Six Sigma Projects.	Accepted
H3: Job Satisfaction has positive impact on Project Performance.	Accepted
H4: Job Satisfaction positively mediates between the impact of Challenging Goals and Project Performance.	Accepted
H5: Six Sigma Method positively moderates between the impacts of Challenging Goals and Performance.	Rejected
H6: Six Sigma Method positively moderates between Job Satisfaction and Project Performance.	Accepted

CHAPTER 5

5. DISCUSSIONS AND RECOMMENDATIONS

5.1. Theoretical Implication

The main objective of the study was to examine the mechanism that leads the better project performance through Challenging Goals in Six Sigma projects. For this purpose study investigates the two main important factors of Six Sigma projects, Challenging Goals (social aspect) and Six Sigma Method (technical aspect). Study also investigates the factor of Job Satisfaction among employees in Six Sigma projects settings. Findings show that social and technical aspects and their interrelationship in Six Sigma projects are necessary to understand Project Performance.

The results showed that Six Sigma Method does not support the relationship between Challenging Goals and Project Performance. Theoretically and practically it is true, Linderman, Schroeder, and Choo (2006), addressed this issue as; very challenging goals demand new processes and improvements in current performance. According to Arumugam, Antony, and Linderman (2016), Six Sigma project goals initially can be proved very challenging to project team but gradually it becomes the routine work to address the challenging goals in same manner because Six Sigma Method follows a structural and logical bonding of DMAIC. Structure method allows the team members to search for creative solutions but only for existing process. But for very challenging goals team needs to think out of the box and follows unstructured new ways to address the difficulties. Socio-Technical System theory also supports the argument. Theory provides

the guidelines when to transform methods of work to enhance performance (Trist, 1978). When team faces very high challenging goals the team will choose to deviate from the structured Six Sigma Method to achieve best results. These arguments are the reason for not supported role of Six Sigma Method between Challenging Goals and Project Performance. However the interaction role of Six Sigma Method supports the relationship between Job Satisfaction and Project Performance. Satisfied employees are key to success of any organization. As it is discussed earlier, Six Sigma incorporates Challenging Goals to perform, and workers with mastery goal orientation exhibit high job satisfaction when they are assigned to perform difficult task (Pintrich, 2000; Van Yperen & Janssen, 2002; Deci & Ryan, 1987). Although adherence to structural model of Six Sigma Method do not support the relationship of Challenging Goals and Project Performance in this study, but in case of relationship between Job Satisfaction and Project Performance, Six Sigma Method play supportive role because as it is discussed earlier, even for structured and logical bonding of Six Sigma Method, team members are allowed to search for creative solutions to the problems.

This study adds more understanding of Job Satisfaction between the relationship of Challenging Goals and Project Performance. This is obvious, because mastery goal oriented employees tend to show passion about their work. They demand challenging works to perform and try to solve the difficult problems in creative manners. Moreover if they are provided by supervisory support they feel much satisfied about their work and job and thus enhance the performance of organization.

Six Sigma is new quality management approach and existing relevant theories can be applied for more understanding. This study is also investigated by the theory of goal

setting and achievement goal theory to understand the mechanism and relationships between variables. The analytical approaches provide help to deeper understanding of Six Sigma projects and performance.

5.2. Managerial Implications

This study also contributes for managerial implications. the model is tested by adding the mediator as Job Satisfaction. Findings of the study suggest that adherence to Six Sigma Method has a positive effect on Performance with overall reinforcement of Goals, therefore project team should be provided by proper training and equipped with relevant skills, tools and techniques. Findings of study also suggest identifying the individuals that are capable to perform difficult tasks and have tendency to learn more skills. These employees may exhibit high satisfaction and should be provided by supervisory support to enhance the performance.

5.3. Limitations

This study also faced some limitations; the first one is short span of time. As this study is conducted in partial fulfillment of MS degree program, academic calendar do not allow enough time to conduct research for long time span. This study also faced some resource limitations and couldn't be conducted at broader level. Finally this study also faced the limitation of Six Sigma projects based organizations in Pakistan

5.4. Future Research Recommendations

Future researches are recommended to conduct the study with big sample size that may help to generalize the findings. It is also recommended to test the same model in other project sectors that may lead toward the different results as compared to this study.

5.5. Conclusion

This study was intended to investigate and improve our understanding of the impact of Challenging Goals on Project Performance with Mediating Role of Job Satisfaction and Six Sigma Method. It is concluded that there is significant direct effect of Challenging Goals on Project Performance and also indirect effect of Job Satisfaction on relationship. Interaction role of Six Sigma Method between the relationship of Job Satisfaction and Project Performance is also significant, however insignificant between Challenging Goals and Project Performance.

Study discusses all the justifications for the hypothesis acceptance and rejection with theoretical and practical implication of the study. Organizations that are intended to employ Six Sigma and that are already following Six Sigma Method need to focus social and technical aspects of Goals and Methods and their interrelationship in Six Sigma projects to fully understand and achieve Project Performance. Project teams should be allowed to think out of box and break the structural barriers to enhance the performance by providing creative solutions to problems. Project team should also have proper training and tools and techniques to address technical aspects of project. Moreover, employees should be provided by supervisory support in complex task environment to enhance their capabilities to enhance performance.

REFERENCES

- Anantatmula, V. S. (2010). Project Manager Leadership Role in Improving Project Performance. *Engineering Management Journal*, 22(1), 13-22.
- Antony, J. (2004). Some Pros and Cons of Six Sigma: An Academic Perspective. *The TQM Magazine*, 16(4), 303-306.
- Antony, J., Jiju Antony, F., Kumar, M., & Rae Cho, B. (2007). Six Sigma in Service Organizations: Benefits, Challenges and Difficulties, Common Myths, Empirical Observations and Success Factors. *International Journal of Quality & Reliability Management*, 24(3), 294-311.
- Arumugam, V., Antony, J., & Linderman, K. (2016). The Influence of Challenging Goals and Structured Method on Six Sigma Project Performance: A Mediated Moderation Analysis. *European Journal of Operational Research*, 254(1), 202-213.
- Atkinson, R. (1999). Project Management: Cost, Time and Quality, Two Best Guesses and A Phenomenon, It's Time to Accept Other Success Criteria. *International Journal of Project Management*, 17(6), 337-342.
- Bakotić, D. (2016). Relationship between Job Satisfaction and Organizational Performance. *Ekonomika Istraživanja*, 29(1), 118-130.
- Baron, R. M., & Kenny, D. A. (1986). The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.

- Basu, R. (2011). *Fit Sigma: A Lean Approach to Building Sustainable Quality Beyond Six Sigma*. John Wiley & Sons
- Basu, R. (2014). Managing Quality in Projects: An Empirical Study. *International Journal of Project Management*, 32(1), 178-187.
- Bentler, P. M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin*, 107(2), 238.
- Button, S. B., Mathieu, J. E., & Zajac, D. M. (1996). Goal Orientation in Organizational Research: A Conceptual and Empirical Foundation. *Organizational Behavior and Human Decision Processes*, 67(1), 26-48.
- Byrne, D. S. (1998). *Complexity Theory and the Social Sciences: An Introduction*. Psychology Press.
- Byrne, B. M. (2001). Structural Equation Modeling: Perspectives on the Present and the Future. *International Journal of Testing*, 1(3-4), 327-334.
- Choo, A. S., Linderman, K. W., & Schroeder, R. G. (2007). Method and Context Perspectives on Learning and Knowledge Creation in Quality Management. *Journal of Operations Management*, 25(4), 918-931.
- Ching Gu, V. C., Hoffman, J. J., Cao, Q., & Schniederjans, M. J. (2014). The Effects of Organizational Culture and Environmental Pressures on IT Project Performance: A Moderation Perspective. *International Journal of Project Management*, 32(7), 1170-1181.
- Davies, T. (2002). The “Real” Success Factors on Projects. *International Journal of Project Management*, 20(3), 185-190.

- Deci, E. L., & Ryan, R. M. (1987). The Support of Autonomy and the Control of Behavior. *Journal of Personality and Social Psychology*, 53(6), 1024.
- Duda, J. L. (2001). Achievement Goal Research in Sport: Pushing the Boundaries and Clarifying Some Misunderstandings. *Advances in Motivation in Sport and Exercise*, 129, 182.
- Dweck, C. S., & Leggett, E. L. (1988). A Social-Cognitive Approach to Motivation and Personality. *Psychological Review*, 95(2), 256.
- Dweck, C. S. 1999. *Self-Theories: Their Role in Motivation, Personality, and Development*. Ann Arbor, MI: Psychology Press, Taylor & Francis Group.
- Elliot, A. J. (1999). Approach and Avoidance Motivation and Achievement Goals. *Educational Psychologist*, 34(3), 169-189.
- Fox, W. M. (1995). Sociotechnical System Principles and Guidelines: Past and Present. *The Journal of Applied Behavioral Science*, 31(1), 91-105.
- Gefen, D., Straub, D.W., & Boudreau, M. (2000). Structural Equation Modeling and Regression: Guidelines for Research Practice. *Communications of the AIS*, 4(7), 1-70.
- Gerstner, C. R., & Day, D. V. (1997). Meta-Analytic Review of Leader–Member Exchange Theory: Correlates and Construct Issues.
- Ghoshal, S., & Bartlett, C. A. (1994). Linking Organizational Context and Managerial Action: The Dimensions of Quality of Management. *Strategic Management Journal*, 15(S2), 91-112.

- Green, S. G., Anderson, S. E., & Shivers, S. L. (1996). Demographic and Organizational Influences on Leader–Member Exchange and Related Work Attitudes. *Organizational Behavior and Human Decision Processes*, 66(2), 203-214.
- Gutiérrez Gutiérrez, L. J., Lloréns-Montes, F. J., & Bustinza Sánchez, Ó. F. (2009). Six Sigma: From A Goal-Theoretic Perspective to Shared-Vision Development. *International Journal of Operations & Production Management*, 29(2), 151-169.
- Hang-Yue, N., Foley, S., & Loi, R. (2005). Work Role Stressors and Turnover Intentions: A Study of Professional Clergy in Hong Kong. *The International Journal of Human Resource Management*, 16(11), 2133-2146.
- Hansen, J. R., & Høst, V. (2012). Understanding the Relationships Between Decentralized Organizational Decision Structure, Job Context, and Job Satisfaction — A Survey of Danish Public Managers. *Review of Public Personnel Administration*, 32(3), 288-308.
- Hoppock, R. (1935). *Job Satisfaction* (Vol. 47). New York: Harper and Brothers.
- Hu, L., & Bentler, P.M. (1999). Cut Off Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Structural Equation Modeling*, 6 (1), 1-55.
- Judge, T. A., & Bono, J. E. (2001). Relationship of Core Self-Evaluations Traits — Self-Esteem, Generalized Self-Efficacy, Locus of Control, And Emotional Stability — With Job Satisfaction and Job Performance: A Meta-Analysis. *Journal of Applied Psychology*, 86(1), 80.

- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The Job Satisfaction – Job Performance Relationship: A Qualitative and Quantitative Review.
- Jugdev, K., & Müller, R. (2005). A Retrospective Look at our Evolving Understanding of Project Success. Project Management Institute.
- Karasek, R. &. (1990). *Healthy Work: Stress, Productivity and the Reconstruction of Working Life*. New York: Basic Books.
- Katzenbach, J.R. (1997), “The Myth of the Top Management Team”, *Harvard Business Review*, Vol. 75, pp. 83-93.
- Kaulio, M. A. (2008). Project Leadership in Multi-Project Settings: Findings from a Critical Incident Study. *International Journal of Project Management*, 26(4), 338-347.
- Kim, S. (2002). Participative Management and Job Satisfaction: Lessons for Management Leadership. *Public Administration Review*, 62(2), 231-241.
- Kleingeld, A., Van Mierlo, H., & Arends, L. (2011). The Effect of Goal Setting on Group Performance: A Meta-Analysis.
- Kline, R.B. (1998). *Principles and Practice of Structural Equation Modeling*. New York: Guilford Press.
- Koch, C., & Bendixen, M. (2005). Multiple Perspectives on Organizing: Projects between Tyranny and Perforation. *Building Research & Information*, 33(6), 536-546.
- Kwak, Y. H., & Anbari, F. T. (2006). Benefits, Obstacles, and Future of Six Sigma Approach. *Technovation*, 26(5), 708-715.

- Lam, S. S. (1995). Quality Management and Job Satisfaction: An Empirical Study. *International Journal of Quality & Reliability Management*, 12(4), 72-78.
- Latham, G. P., & Locke, E. A. (2007). New Developments In and Directions for Goal-Setting Research. *European Psychologist*, 12(4), 290-300.
- Latif, M. S., Ahmad, M., Qasim, M., Mushtaq, M., Ferdoos, A., & Naeem, H. (2013). Impact of Employee's Job Satisfaction on Organizational Performance. *European Journal of Business and Management*, 5(5), 166-171.
- Leach, C. W., Van Zomeren, M., Zebel, S., Vliek, M. L., Pennekamp, S. F., Doosje, B., & Spears, R. (2008). Group-Level Self-Definition and Self-Investment: A Hierarchical (Multicomponent) Model of In-Group Identification. *Journal of Personality and Social Psychology*, 95(1), 144.
- Levine, J. M., & Moreland, R. L. (1990). Progress in Small Group Research. *Annual Review of Psychology*, 41(1), 585-634.
- Linderman, K., Schroeder, R. G., & Choo, A. S. (2006). Six Sigma: The Role of Goals in Improvement Teams. *Journal of Operations Management*, 24(6), 779-790.
- Linderman, K., Schroeder, R. G., Zaheer, S., & Choo, A. S. (2003). Six Sigma: A Goal-Theoretic Perspective. *Journal of Operations Management*, 21(2), 193-203.
- Locke, E. A., & Latham, G. P. (1990). Work Motivation and Satisfaction: Light at the End of the Tunnel. *Psychological Science*, 1(4), 240-246.
- Locke, E. A., & Latham, G. P. (2002). Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-Year Odyssey. *American Psychologist*, 57(9), 705.

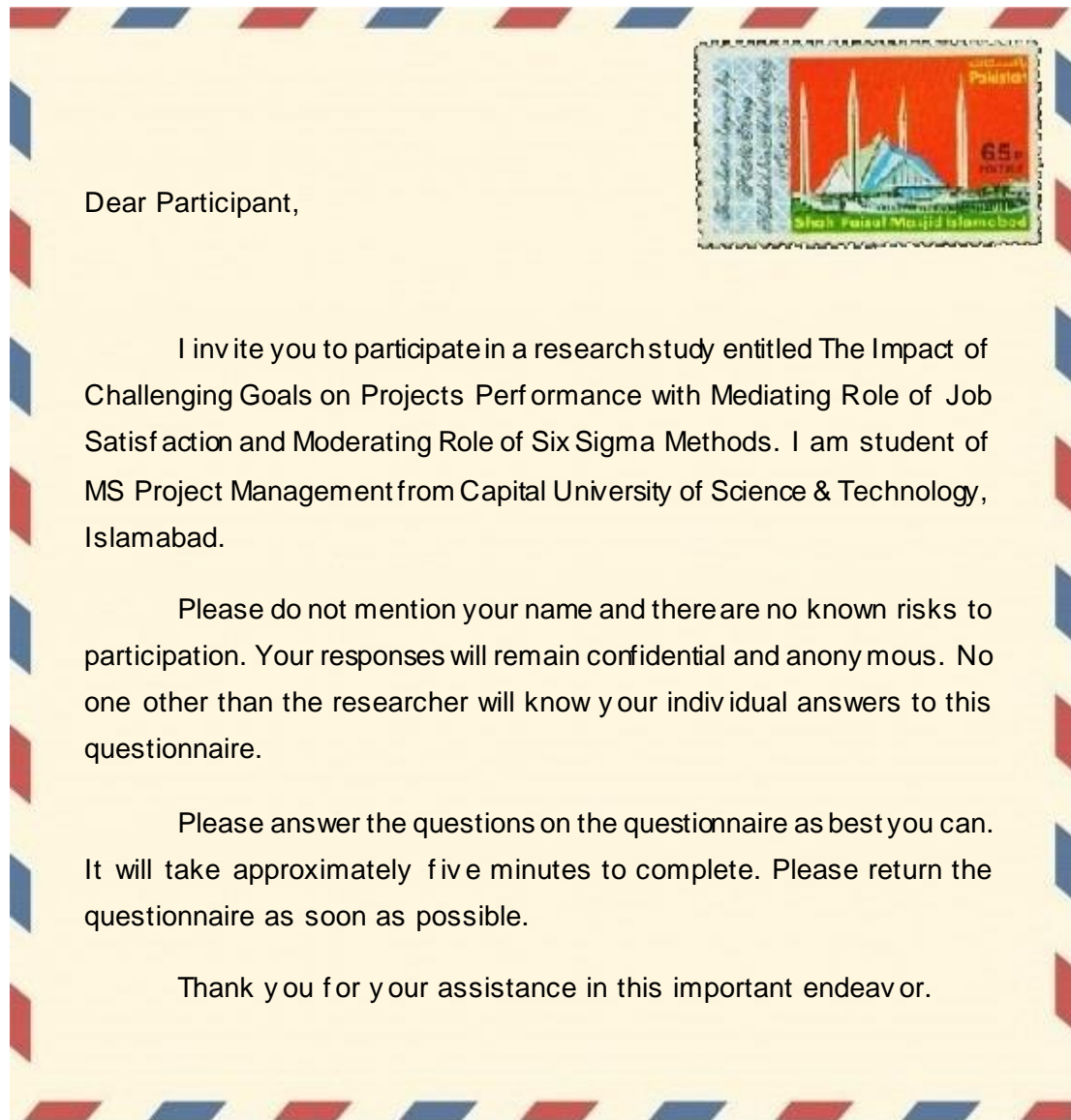
- Locke, E. A. (1969). What Is Job Satisfaction? *Organizational Behavior and Human Performance*, 4(4), 309-336.
- Locke, E. A., & Latham, G. P. (1990). Work Motivation and Satisfaction: Light at the End of the Tunnel. *Psychological Science*, 1(4), 240-246.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. *Psychological Methods*, 1(2), 130.
- MacDuffie, J. P. (1997). The Road to “Root Cause”: Shop-Floor Problem-Solving at Three Auto Assembly Plants. *Management Science*, 43(4), 479-502.
- Martocchio, J. J., & Frink, D. D. (1994). A Review of the Influence of Group Goals on Group Performance. *Academy Of Management Journal*, 37(5), 1285-1301.
- McAdam, R., & Lafferty, B. (2004). A Multilevel Case Study Critique of Six Sigma: Statistical Control or Strategic Change?. *International Journal of Operations & Production Management*, 24(5), 530-549.
- McAdam, R., Hazlett, S. A., & Henderson, J. (2005). A Critical Review of Six Sigma: Exploring the Dichotomies. *International Journal of Organizational Analysis*, 13(2), 151-174.
- Munns, A. K., & Bjeirmi, B. F. (1996). The Role of Project Management in Achieving Project Success. *International Journal of Project Management*, 14(2), 81-87.
- Nidumolu, S. (1995). The Effect of Coordination and Uncertainty on Software Project Performance: Residual Performance Risk as an Intervening Variable. *Information Systems Research*, 6(3), 191-219.

- Ostroff, C. (1992). The Relationship between Satisfaction, Attitudes, and Performance: An Organizational Level Analysis. *Journal of Applied Psychology*, 77, 963–974.
- Parast, M. M. (2011). The Effect of Six Sigma Projects on Innovation and Firm Performance. *International Journal of Project Management*, 29(1), 45-55.
- Pasmore, W. A. (1988). *Designing Effective Organizations: The Socio-Technical Systems Perspective*. New York: Wiley.
- Phillips, J. M., & Gully, S. M. (1997). Role of Goal Orientation, Ability, Need for Achievement, and Locus of Control in the Self-Efficacy and Goal-Setting Process. *Journal of Applied Psychology*, 82(5), 792-802.
- Pintrich, P. R. (2000). An Achievement Goal Theory Perspective on Issues in Motivation Terminology, Theory, and Research. *Contemporary Educational Psychology*, 25(1), 92-104.
- Project Management Institute. (2004). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*. Newtown Square, Pa: Project Management Institute.
- Raykov, T., & Marcoulides, G. A. (2000). A Method for Comparing Completely Standardized Solutions in Multiple Groups. *Structural Equation Modeling*, 7(2), 292-308.
- Saunders, M. N., & Lewis, P. (2012). *Doing Research in Business & Management: An Essential Guide to Planning Your Project*. Pearson.
- Schroeder, R. G., Linderman, K., Liedtke, C., & Choo, A. S. (2008). Six Sigma: Definition and Underlying Theory. *Journal of Operations Management*, 26(4), 536-554.

- Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner's Guide to Structural Equation Modeling*. Psychology Press.
- Seijts, G. H., & Latham, G. P. (2005). Learning Versus Performance Goals: When should each be used?. *The Academy of Management Executive*, 19(1), 124-131.
- Shenher, A. J., Levy, O., & Dvir, D. (1997). Mapping the Dimensions of Project Success. *Project Management Journal*, 28(2), 5-13.
- Sposito, V. A., Hand, M. L., & Skarpness, B. (1983). On the Efficiency of Using the Sample Kurtosis in Selecting Optimal Lpestimators. *Communications in Statistical-Simulation and Computation*, 12(3), 265-272.
- Steenkamp, J. B. E., & Baumgartner, H. (2000). On the Use of Structural Equation Models for Marketing Modeling. *International Journal of Research in Marketing*, 17(2), 195-202.
- Taylor, J. C., & Bowers, D. G. (1974). The Survey of Organizations: Toward a Machine Scored, Standardized Questionnaire. *Ann Arbor: University of Michigan, Institute for Social Research*.
- Trist, E. L. (1978). On Socio-Technical Systems. *Socio-Technical Systems: A Sourcebook*, 43-57.
- Trist, E. L., & Bamforth, K. W. (1951). Some Social and Psychological Consequences of the Longwall Method of Coal-Getting: An Examination of the Psychological Situation and Defenses of a Work Group in Relation to the Social Structure and Technological Content of the Work System. *Human Relations*, 4(1), 3-38.
- Turner, J. R., & Müller, R. (2003). On The Nature of the Project as a Temporary Organization. *International Journal of Project Management*, 21(1), 1-8.

- Van Yperen, N. W., & Hagedoorn, M. (2003). Do High Job Demands Increase Intrinsic Motivation or Fatigue or Both? The Role of Job Control and Job Social Support. *Academy of Management Journal*, 46(3), 339-348.
- Van Yperen, N. W., & Janssen, O. (2002). Fatigued and Dissatisfied or Fatigued but Satisfied? Goal Orientations and Responses to High Job Demands. *Academy of Management Journal*, 45(6), 1161-1171.
- Vandewalle, D., Cron, W. L., & Slocum Jr, J. W. (2001). The Role of Goal Orientation Following Performance Feedback. *Journal of Applied Psychology*, 86(4), 629.
- Weldon, E., & Weingart, L. R. (1993). Group Goals and Group Performance. *British Journal of Social Psychology*, 32(4), 307-334.
- Zikmund, W. G. (2003). Sample Designs and Sampling Procedures. *Business Research Methods*, 7, 368-400.
- Zu, X., Fredendall, L. D., & Douglas, T. J. (2008). The Evolving Theory of Quality Management: The Role of Six Sigma. *Journal of Operations Management*, 26(5), 630-650.

Appendix A: Questionnaire



Gender: _____

Age: _____

Qualification: _____

Experience: _____

Section I: Challenging Goals

Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD)

	Questions	SA	A	N	D	SD
01	We found it very difficult to achieve the project goals.	1	2	3	4	5
02	It was relatively easy to achieve the project goals.	1	2	3	4	5
03	The project goals were challenging to us.	1	2	3	4	5

Section II: Job Satisfaction

Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD)

	Questions	SA	A	N	D	SD
04	All in all, you are satisfied with the persons in your work group.	1	2	3	4	5
05	All in all, you are satisfied with your supervisor.	1	2	3	4	5
06	All in all, you are satisfied with your job.	1	2	3	4	5
07	All in all, you are satisfied with this organization, compared to most.	1	2	3	4	5
08	Considering your skills and the effort you put into your work, you are satisfied with your pay.	1	2	3	4	5
09	You feel satisfied with the progress you have made in this organization up to now.	1	2	3	4	5
10	You feel satisfied with your chance for getting ahead in this organization in the future.	1	2	3	4	5

Section III: Project Performance

Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD)

	Questions	SA	A	N	D	SD
11	Projects are completed on time.	1	2	3	4	5
12	Projects met budget requirements.	1	2	3	4	5
13	Projects met expectations.	1	2	3	4	5
14	Project team members are satisfied to work together.	1	2	3	4	5
15	Benefits of projects to the organization are high.	1	2	3	4	5
16	Projects resulted in sales growth.	1	2	3	4	5
17	Projects helped the organization to increase market share.	1	2	3	4	5
18	Projects helped the organization improve its competitive position.	1	2	3	4	5

Section IV: Six Sigma Methods

Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD)

	Questions	SA	A	N	D	SD
19	The project strictly followed the sequence of DMAIC steps.	1	2	3	4	5
20	Each step in DMAIC was faithfully completed.	1	2	3	4	5
21	There was an emphasis on applying various analysis tools wherever applicable in this project.	1	2	3	4	5
22	This team frequently used Six Sigma tools to analyze data and information.	1	2	3	4	5

* DMAIC – Define, Measure, Analyze, Improve, and Control