

**The Relationship of Managerial Control and Performance of Information
System Projects: Moderating Role of Resource Commitment and Top
Management Support.**

By

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Registration No MPM153002

Master of Science in Project Management



**A Research thesis submitted to Department of Management & Social Science, Faculty of
Business Administration & Social Science, Capital University of Science & Technology,
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**DEPARTMENT OF MANAGEMENT & SOCIAL SCIENCE, CAPITAL UNIVERSITY
OF SCIENCE & TECHNOLOGY, ISLAMABAD**

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Certificate

This is certified that Ms. Narmeen Kanwal has fulfilled all the obligatory of observation, comments and suggestions made by internal and external examiner and thesis supervisor. The topic of this research work is: **The Relationship of Managerial Control and Performance of Information System Projects: Moderating Role of Resource Commitment and Top Management Support.**

Forwarded for required action

Dr. Shazia Akhtar
(Supervisor of Thesis)



In the Name of Allah the Most Beneficent the Most Merciful

DEDICATIONS

This thesis is devoted to my beloved parents

Muhammad Sher, Naseem Akhtar

and my respected teacher Dr. Shazia Akhar

who guided me on each and every step

and acknowledged me with treasure of knowledge.

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ABSTRACT

Grip over managerial control has remained the main focus of research to enhance the features of the information system projects. But the integrity about the relationship of managerial control and information system project has been investigated with the negative effect of the risks, therefore the current research work present the identification of resource commitment and top management support to create the positive impact for the relationship of managerial control and information system projects. This research study is investigated in the context of developing economy of Pakistan where the scarcity of resources and limited top management support is a common issue for projects. For this purpose, data is collected from 262 project in four different cities of Pakistan, in which cluster of sectors are utilized to collect data from project manager and client liaison. Empirical results indicate that relationship of managerial control and information system projects has positive high significance in the context of Pakistan whereas the impact of resource commitment and top management support build low variance in the relationship of managerial control and information system project performance. Therefore, theoretical and managerial consideration of the project manager and client liaison should be limited to the implementation of managerial control, as resource commitment and top management as moderator has inverse relation with managerial control and interaction has negative impact on the performance of information system projects. For future direction, mediator which matches the variables of model should also be proposed.

Keywords: Behavior Control, Outcome Control, Clan Control, Self-Control, Project Performance, Resource Commitment, Top Management Support and Information System Projects.

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CHAPTER 1

INTRODUCTION

1.1 Background

In the information system projects, stakeholders involved at different span of the project phases requisite deliberate, structural and cultural steps in the planning of the project (Mishra & Mishra, 2013), as information project are complex in their nature and have tendency of frequent failure (Yeo, 2002). It is mandatory for information system projects to deliver product as per the understanding of end user and within the estimate budget, schedule and quality to avoid the failure in the project development and installation (Mehmood, Burn, Gemoets & Jacquez, 2000). Project manager and client liaison faces the ultimate risks in the project of information system to provide the senior management and client fulfillment of requirement and success to projects (Liu & Deng, 2014).

In previous discussed literature modes of managerial control are closely associated to the IS projects. Relationship of the managerial modes has eager impacts on the performance of the IS projects whereas uncertain conditions mitigate the positive influence between the managerial control and project performance (Liu & Wang, 2016). Instigating the effects of formal and informal control is obligatory to imply but they are not adequate to handle the effectiveness of IS projects alone (Keil¹, Rail & Liu², 2013) but effects of the supporting role enhance the features of project performance and schedule performance (Aubry, 2015).

Absence of efficiency and effectiveness is observed over years for the information system projects in Pakistan in many sectors. Many obstacles charged the sectors of Pakistan high cost, schedule and strategic mismanagement in information system projects and failure caused strict

consequences. Existing literature has focused on managerial control as close association with IS projects and defined two folds of study, in which one consists of managerial control which is derived from control theory (Tiwana & Keil, 2010) and their second focus was on the prospect of risk which this research work have transformed into positive variables of resource commitment (Lai et al., 2008) and top management support (Ahmed et al., 2016) in this research work. Control of the manager and team on functional ability of the project is thoroughly linked with IS projects (Henderson & Lee. 1992). Managerial control is extracted from control theory which is further subdivided into different modes of control as formal control modes (behavior and outcome control) and informal control modes (clan and self-control) (Eisenthaldt, 1985; Jaworksi, 1988).

Main association of the project survival relies on multidimensional aspects of management's support and resource assistance (Rauniar & Rawski, 2012). The measurement of the IS projects has become unrealized matter for the organization where management get confused without any delivered and obtained benefits and outcome of the IS project (Marnewick, 2016). Organizational adherent provide the organizational and technical facilitation to the IS projects in which technical assistance has more weightage toward the success (Coombs, 2015). Devoted project manager and assistance of the top management provide the authentic definition to the progress of the projects. (Berssaneti & Carvalho, 2015).

In the development of the project, control according to the right mechanism provides the right direction to the project teams and mind set for senior management to establish the straight flow of project activities and control over operational aspects of the projects, this gap leads toward the better performance of the project (Bonner, Rucker & Walker, 2002). As information system project are essential feature in the decision making while handling multi projects in the

environment of the organization, it supports the quality of the project to deal with overloaded information and project overload (Caniels & Bakens, 2012). Therefore the mechanisms for establishment of control in the information system projects are vital for project performance and success. The current research work advocates the literature about modes of managerial control separately as behavior control, outcome control clan control and self-control as done by Liu and Wang in 2016.

In the existing literature, it is observed that failure in the projects of information system occur due to the lack of participation of the user in the project (He & King, 2008), overloaded information (Brodbeck, 2001) and conflict between user and developer (Howcroft & Wilson, 2003) which extends the project failure pressure for project manager. Therefore project manager requires crucial control over the various project determinants to capture the success of information system project (Petter, DeLone & McLean, 2013). In the strict working environment of the Pakistan, chances for the failure of the information system projects are common which require the project manager to create the stream of policies to overcome the gap of failure occurrence in the project (Butt., et al, 2013).

The target groups in the implementation of the information system projects are end user and developer who operate under the assistance of the client liaisons and project manager respectively. Where on one hand existing literature provides the evidences for the eager participation of the user in the development of the information system projects, on the other hand existing literature suggest that individual should not be identified in the prospect of information system projects to avoid the accelerated commitment of resources (Sabherwal, Sein & Marokas, 2003). Main focus has been laid on critical situations and identification as a negative impact on the information system projects or on the participation of user where knowledge commitment

between user and developer is found vital, but few studies suggests that managerial control has covered all the organizational contextual variables on full and partial basis which determine the success and failure of the information system projects (Ein-Dor & Segev, 1978).

Boonstra (2013) designed the research work to investigate the importance of top management involvement in the projects; according to his finding the support of the senior management requires keen and consecutive contribution in the different phases of the project to accomplish the performance of team in more progressive way. Managerial control has significance for the performance of information system projects. As this research study is investigating different modes of managerial control including behavior control, outcome control, clan control and self-control and there separate impact on the performance of the information system projects which is in line with the research work conducted by Liu and Wang (2016) but they also advocated the factors of risks as a negative influence between managerial control modes and project performance, whereas the present research study is suggesting resource commitment and top management support as moderator.

1.2 Problem Statement/ Research Gap

Many research gaps can be tracked from the previous studies as it is a common knowledge that scholars in their previous studies emphasized on the modes of managerial control in order to organize the performance of projects and impact of risks are analyzed in previous studies as a negative effect therefore it generate the gap for future scholars. Firstly current research work provides investigation of link of managerial control modes with project performance (Liu & Wang, 2016) and moderating effect of the resource commitment (Mao, Liu, Zhang & Deng,

2016) and moderating impacts of the top management support to the project team (Ahmed, Mohamad, & Ahmad, 2016) in the Information system projects.

The support of the executives and seniors assist the conflicts by experimental knowledge and solutions where resource commitment is also another incentive for the project team and project manager which also provide the leverage to the client liaison to conceive the understanding of the client according to the determined resource commitment on the project. Planning estimation becomes more strategic due to define support and resource for the project manager to exercise the control on different scenarios of the project life cycle. Therefore, after realizing the need for positive variables in the model, resource commitment and top management support are introduced.

Secondly the impact and implications of the IS projects are high in demand for the development criteria in economy but their failure is also parallel with demand as well with the context of Pakistan. Besides this the end user and project developer are the main attribute of the information system projects who needs the better stream of knowledge sharing by the project manager and client liaison to stress the partnering activity (Hsu, et al., 2011). Therefore there is need to identify the perception of the project manager and client liaison to advocate the modes of managerial control on the performance of the information system projects and there is also need to analyze the positive moderators in the existing model to investigate their impact on the project performance.

Thirdly, authors conducted their research work in specific sectors for the development of information system projects, as Liu and Wang (2016) conducted research on medical information system projects, Lia, Chang, Wen-Shiane, Fan and Wu (2013) conducted research for

educational information system projects, Miller and Doyle (1987) mentioned performance of information system in financial and banking services and Li and Zhu (2013) explained tunnel construction information system projects. These various sectors and particular types of information system projects are discussed by scholars but group of information system projects related to different sectors has received little attention in literature, this research work promises the testing of this model on the various types of information system projects.

1.3 Research Questions

In order to cover the gap in the existing literature, we endeavor to design research question for the research work on this topic described as following,

- 1) What is the relationship between the modes of managerial control and project performance?
- 2) Does resource commitment moderate the relationship between control modes and project performance?
- 3) Does top management support moderates the relationship between control modes and project performance?

1.4 Research Objectives

While considering all the fluctuating scenarios for information system projects in different sector, a model has been proposed in which managerial control has positive influence on the performance of the project (liu & wang, 2016). The proposed relationship between the independent (managerial control), moderating (resource commitment and top management support) and dependent variables (project performance) is shown in the theoretical model of the research study. Specific objective of the study are structured as following in which study aims,

- To investigate the particular positive influence of different control mode (behavior, outcome, clan and self-control) on performance of information system projects in Pakistan.
- To detect the specific relationship of variables (managerial control, resource commitment, top management support and project performance) in contextual settings of Pakistan.
- To develop and test an integrated model of managerial control with moderating aspect of resource commitment and top management support in group of sectors in Pakistan.
- To evaluate the strength of moderating variables (resource commitment and top management support) in the information system projects of Pakistan.

1.5 Significance of the Study

- **Theoretical Significance**

The significance of this study is that existence of the literature on the information projects in Pakistan is very rare; this research work will enhance the features of information system projects in the context of Pakistan specifically. Major work on the modes of managerial control on the project performance is realized with the risk variables in different contexts (Keil et al., 2013) but there is very little literature on the top management support and resource commitment as moderators in the modes of managerial control and project performance model. Investigation of the managerial control on the project performance with the moderation of resource commitment and top management support can help different stakeholder to avoid the barrier which appears during budget estimation and schedule planning. Besides this it will boost the confidence of the project manager and client liaison to adopt the strategy for the IS project more confidently.

Existing literature emphasizes that risk is the crucial element for the managerial control which insignificant or weakens the impact of control on the performance of projects (Liu, 2015)

therefore there is need to investigate the impact of managerial control on the performance of information system projects. Hence, after the realization of recommended research gap moderators, as resource commitment and top management support, are included to investigate the impact of managerial control for the performance of information system projects which will extend the literature for future researches.

- **Methodological Significance**

In addition to this, this research work is considering the group of different sectors to test the model which will also provide insights on more sectors as one compared to just one sector, will elaborate more prospects on the current issue, and will enhance the generalizability of research. Besides this, resource commitment and top management support has never been studied with the reference of managerial control and its impact on project performance; existing literature has contributed the risk factors as negative influence and moderating variable in the model (liu & wang, 2016) but now such moderator (resource commitment and top management support) are proposed which are assumed to strengthen the relationship in the model, between managerial control and project performance.

- **Practical Significance**

For the success construct of the information system projects various determinants decide the progress of the information system projects, such as user satisfaction, system use and system quality, which advocate the behavior of the end user as well (Sabherwal, Jeyaraj & Chowa, 2006). These all construct provide the project manager and client liaison a practical approach to implement the managerial control where resource commitment and top management support also sustain the assistance for the project manager and client liaison to establish the strong managerial

control over client and project team for better performance of the project. Therefore research model has significance for practical implementation for project manager and client liaison to get insight of the managerial control on project performance.

Relevance of the IS project management is mentioned as a achievement of the competency to solve the critical situations by the team if structural prediction of management support is available as back support (Li, Yang, Klein & Chen, 2011). IT practice and knowledge for the user associations also contributed to enhance the behavior control and outcome control of the projects which are the formal modes of managerial control (Liu & Wang, 2014). Resource commitment plays vital role in the achievement of the established benefits for the organization and employee (Richey, 2014; Genchev & Gaughtery, 2005). With the support of existing literature and current research study, practitioners and policy makers in information system projects can clear their view to imply the control mechanism during installation of information system projects.

Pakistan's many sectors and geographical areas are behind other world in the installation and implementation of information system projects specifically northern areas and KPK are deprived of such incentives, which require the delegation of technical team and strict managerial control to enhance the project performance. As it is mentioned that due to deficiency of funds by the authorities such projects are not initiated and if initiated these projects are of very minimal importance and chances of neglecting behavior of the project team is convincing which lead to failure of the projects.

This model will support performance of the project and moderating variables of resource commitment and top management support will enlighten the features of the information system

projects, this model will help the authorities to design new structural pattern for the performance of the projects of information system. This research work also has significance that such model has not been tested in the context of Pakistan, which will increase the incentives for many other scholars and researchers to conduct further efforts in this area of research.

1.6 Supporting Theories

1.6.1 Control Theory

The theoretical underpinning of this research is Control theory (sociology). Travis Hirschi (1969) proposed control theory based on four paradigms; *'attachment, commitment, involvement and belief'*. Control theory consists of social elements which demonstrate the system in which elements revolve. According to the Hirschi theory of control, individual in the strict and predefine system will behave according the expectation of the set of codes, rules, otherwise the behavior will remain irresponsible and deviant (Matsueda, 1982). Wiatrowski, Griswold and Roberts (1981) discussed that four elements of the control theory provide the impression: 'Attachment' induces the bond of understanding and support. 'Commitment' describes the promise of provision of necessities which influence the performance of individual such as resource commitment; 'involvement' induces the acceptability for common values and self-perception such as top management support whereas 'belief' induces the appreciation for the rules and predefined set of policies. According to Travis Hirschi (1969), behaviors are based on the standardization of the benefits at the end, with this concept it can be implemented and investigated that control mechanism can influence the efficiency of the information system projects.

Existing literature has focused on managerial control as close association with IS projects and defined two folds of study, in which one is consist of managerial control which is derived from control theory (Tiwana & keil, 2010; Robert et al., 2013) and their second focus was on the prospects of risk which we have transformed by positive variables of resource commitment (Lai et al., 2008) and top management support (Ahmed, et al., 2016). Control of the manager and teams on the functional ability of the projects is closely associated with the IS projects (Henderson, & Lee, 1992). Managerial control is extracted from the control theory which is further subdivided into different modes of the control as formal control mode (behavior and outcome control) and informal control mode (clan and self-control) (Eisenhardt, 1985; jaworski, 1988). Furthermore, control theory also supports the resource commitment and top management support with the help of two elements of control theory; commitment and involvement, which provide the incentive to resource commitment and top management support to participate as moderator between the relationship of managerial control and performance of information system projects.

1.7 Operational Definition of Variables

1.7.1 Information System Project Success/Performance

“Project success but is unlikely to be able to prevent failure. The most appropriate criteria for success are the project objectives. The degree to which these objectives have been met determines the success or failure of a project. The criteria for success of the project management effort tend to be restricted to cost, time and quality performance”. (De Wit, 1988, p. 164).

1.7.2 Managerial Control

“Control is viewed broadly, encompassing all attempts to ensure individuals in organizations act in a manner that is consistent with meeting organizational goals and objectives”. (Krisch, 1997).

- **Behavior Control**

“The use of behavior control is influenced by task interdependence, which can be reasonably assumed to affect the need for control and it is influenced by the expertise of the manager”. (Olchi, 1978).

- **Outcome Control**

“Outcome control is a way to evaluate how targets and goals are achieved and a means for controllers to reward the controlee accordingly”. (Krisch et al., 2010; Liu & Wang, 2016).

- **Clan Control**

“Controllers and controlee adopt similar and values employ common methods and approaches and achieve collective goals”. (Krisch et al., 2010; Liu & Wang, 2016).

- **Self-Control**

“Controlees are encouraged to set their own tasks and goals autonomously achieve their goals and reward themselves based on their individual work”. (Krisch, 1996).

1.7.3 Top Management Support

“Top management support creates an environment in which quality management activities are rewarded. These activities are related to quality information systems, process management,

product design, work force management, supplier involvement and customer involvement”.
(Flynn, Schroeder, & Sakakibara, 1994).

1.7.4 Resource Commitment

“Resource commitment is defined as the willingness to provide needed materials and support to achieve the stated goals of the firm. There are two types of resource commitments: managerial and financial”. (Daugherty, Autry & Ellinger , 2001).

Chapter Summary

This chapter reviews the introduction of the research study. This chapter has gained the background, problem statement, research questions, research objectives, significance of the study, underpinning theory and operational definition of defined variables.

CHAPTER 2

LITRATURE REVIEW

The specific area which has been selected for the research work is information system projects. The model which we intended to investigate depends on the impacts of modes of managerial control on the performance of the information system projects. With the reference of managerial control various studies has been studied to capture the research gap from the literature. Besides this, in the chapter the previous research work on the variables will be thoroughly investigated and discussed. Furthermore this chapter will provide the conceptual consideration of the theoretical frame work along with hypothesis generated for the present research.

2.1 Managerial Control

The implementation of the managerial control over the project has been considered very important element for the performance of the project. In the present study the pattern of the managerial control are studied to identify the different mechanisms of the user and developer to provide the incentive for the client liaison and project manager to imply the subtle control over the operational activities of the information system projects. Kirsch (1997) presented the portfolio of the managerial control modes in which he described the managerial control as an effort or strategy which is introduced for the project to make the contribution of the elements of the project in the operational activates and outcomes of IS projects. Which is further divided into formal (behavior control and outcome control) and informal (clan control and self-control) control modes (Kirsch, Sambamurthy, Ko, & Purvis, 2002). Ouchi and Magu (1975) discussed the definition of the managerial control.

Olchi (1978) considered the formal modes of the control in the organization; he presented the cross sectional investigation of the formal control, according to his findings one of the modes; behavior or outcome control, can be applied in the operational structure. Whereas, Eisenhardt (1985) argued that control over the tasks of the information system can be defined by the nature of the organizational and economical encoding devoted to the implication of behavioral and outcome control. Liu and Wang (2014) addressed that the experience and understandability of the user liaison measure the effects of the behavior control and outcome control according to the mechanism of observation and acceptance.

Rustagi, King and Kirsch (2008) discussed the formal control with the prospect of the client, the mechanism which has been applied by the client as a formal control depend on the confidence in vendor and expertise of the client in the IS project . To capture the quality of the project teams' performance and control over continues change demand by the user, project manager requires the hold of control and agile methodology, so that quality of the project can be enhanced (Maruping, Venkatesh & Agarwal, 2009). Managerial control applies the structure and organization to the inspiration of the developer to generate the creativity and discipline in the complex operations of the information system projects (Nidumolu & Subramani, 2003). In the existing literature scholars considered the formal control as a strong element to enhance the performance of the information system project, but informal control also contributed toward the strategy of control, Wiener, Remus, Heumann and Mähring (2015) introduced the dominance of the informal control with the reference of client, the effectiveness and efficiency of the project can be more prominent if client and vendor is establishing proper components of the informal control.

Controller and controlee are the two mechanisms for the development of the project. Where controller applies the control to control the activities and scenarios, controlee is the one upon

who control is exercised in order to modify the behavior and working pattern of the controlee according to the determined results. Control upon the controlee can be dealt within the project operations, not outside the zone, where control on the outside projects is not effective to enhance the performance (Tiwana, & Keil, 2009). The establishment of the control over different controlee and stakeholders, involved in the information system project, requires different approaches of control by the principal controller to induce the desired response in the favor of project (Soh, Chua & Singh, 2011).

Tiwana (2010) discussed the parallel affiliation of the formal and informal control over the information system project. He investigated that involvement of the formal control and informal control might demonstrate the alternative effect on the development mechanism, formal and informal control can also support each other in the system. Information system project varies in its style to imply the control from different angles, so it can acquire the better development process (Cram & Brohman, 2013). Decision making of the development in information system project is made by the type of the control, control dynamics and control style, if control is established during life cycle of the project it get the influence of client and developer's level of understanding and knowledge (Gregory, Beck & Keil, 2013). Managerial control is further divided into the formal and informal control which further provides us definition of different control patterns. The present research work is viewing the effect of different control dynamic individually on the performance of the information system projects. The following paragraph will define the various variables of formal and informal type,

(i) Behavior Control

The universal and most important element in the control mechanism is modifying the behavior of the controlee according to the predefined procedures in order to obtain the desired agreement. Ouchi and Maguire (1975) mentioned that, behavior control is imposed to admin the required diversion of the activities according to the defined values of the organization. The perception of the determined and deliberate behavior extends opportunity for the desired control; perception of the decided attitude attains the accuracy of the control over the operations of humans (Ajzen & Madden, 1986). The administration of the information system project requires the acceptance by the client, where the performance of the developer matters with distinction. Jackson, Chow and Leitch (1997) argued that the acceptance and understanding of the user applies more incentives for the developer to design the project performance according the psychological patterns of the user, but the participation of user behavior according to the situation has negative influence; extrinsic values of the behavior plays vital role for the measurement of the attitude.

Furthermore, the participation of the teams also requires the reform of the behavior in order to set the designed outcomes for the project improved performance. Operational activities of intricate nature require the proactive and skillful behavior of the team member to generate the multi-angled and horizontal work presentation (Griffin, Neal & Parker, 2007). Stressful jobs with complex structure requires the efforts of the staff, Positive behavior by the teams' members or employees has significance for the complexity in the performance of project implementation (Bakker & Schaufeli, 2008). Behavior of the team member can be controlled; the determination of the staff should be preset as a predefined behavior with the help of significant external control in the development of the projects (Yang & Farn, 2009). The task oriented attitude luxuriously

related to the overall behavior which is the indicator of enhanced performance (Harrison, Newman & Roth, 2006).

Project manager and client liaison, as a controller, controls the attitude of the project team, developer and client who act as contree in the progress of the project in order to provide the improved versions of the project. All the stakeholders or involved parties in the project act according to their own interest; to put all the parties on common plat form is a challenging scenario for the controller. Project manager requires more power in hand to utilize the high standard of professionalization to capture the behaviors of involved parties in the project (Beringer, Jonas & Kock, 2013). Huang, Ryan, Zabel and Palmer (2014) suggested that managers are subtle and more behavioral ambitious to adjust the improved performance in the tasks to generate the acceptance for the staff as well. Developer and project teams realizes the pre-determined strategy and performs under those set variables, which is incentive for the project manager to apply the flourished control over the activities to get the desired performance scale in the project.

(ii) Outcome Control

Outcomes are the authentication of the projects needed to be accommodated according the elaborated interest of the management in the projects. Outcomes can be the preferred objectives, motives, goals and achievement in the project. The outcomes of the project has been associated with the iron triangle; cost, quality and time, but other dimensions are also define the outcomes of the project such as benefits of user and team (Atkinson, 1999). Turcotte (1974) pointed out that control is effective if the targeted output of the operational activities is highly and collaboratively considerable and understandable by the manager in the organization.

Outcome control provides the opportunity to person to set the goals oriented performance to achieve the pre-structured targets (Ouchi, 1979; Henderson & Lee, 1992; Kirsch, 1997). Success in the project is interlinked with the defined outcomes or results in the project on the basis of its impact and sustainability. Thomas & Fernández (2008) described that characterization of the measurements for the success in the project are pre mandatory, to obtain the enhanced outcomes and consumption of the funds. Outcome control measure and accomplish the strategy on the determinants of the performance of the both controlee and controller, where the transparency of the objective is priority for the management to set in advance as a concrete scale for both parties' understanding.

(iii) Clan Control

Lack of clear directions in common targets causes the deficiency in the effectiveness of the performance in the projects. Common goals and targets can be achieved if members are motivated by the rewards for their effective participation by shared values. Ouchi (1979) addressed the fact that clan is the unspoken social agreement between the members to adapt common goals and to provide the sense of justice toward the other individuals and performance in the task. Ouchi (1980) discussed that common values or clan gets more importance when there is no existence of transparency and direction for performance and members are deprived of common inspiration.

In the existing literature, scholars has debated that creation of the common values and shared norms has led the management to the success in their motives, it also increased the sense of the socialization between the management and team members as project confront with the fluctuating and various challenging patterns. Hillman and Keim (2001) investigated the

generation of values for the members involved in the performance of the project as a necessary element of the process to accommodate the resources and compatibilities. Kohli and Kettinger (2004) suggested that the creation of the common values to the others can only possible if delivered message is conveyed in such sort that other capture according the mutual understanding and under concrete control, it does not variant the control from the message delivery process.

Clan control is observed as a team based capacity authorized by the keen attention of project manager on the behavior of team members, as a guider of the values, or project manager jointly establish the clan control with team members (Kirsch, Ko & Haney, 2010). Clan control share the sense of mutual values, ethics and cooperation between members to enhance the performance (Chua, Lim & Sia, 2012). Multi types of stakeholders contain various skills and approaches toward the project performance. Chua et al., (2012) presented that project manager is expected to reinforce the common values on the basis of organization and relationships to enhance the performance criteria in the projects by implementing the concept of collective principal.

In the existing literature clan control has been associated with the project managers' joint efforts with team to put all the involved members on the same plate form to enhance the features of the project performance and to promote the sense of proper reliability. According to the Gyawali, Tao and Müller (2013), clan control build a bridge and stream of consideration between the projects various sorts and hold on the project structure, which result in reliability by the project manager, staff better performance and shared sense of reward for joint efforts.

In addition to this, the shared values norms and prestige support the project team to initiate the efficient efforts for the project outside of the oriented characteristics of the performance. Liu,

Borman and Gao (2014) suggested that the amalgamation of the clan control with the contribution and productivity of the projects, produces the better consequences as a joint effort. Project manager contain the responsibility of establish the joint effort to involve the entire stakeholder in the information system project at joint status and levels.

(iv) Self-Control

Performance at individual level has significance for the improved performance in the projects where the devotion and personal commitment of the members provide the supportive behavior to the integration of the project. Brief and Aldag (1981) discussed that organizational attitude is closely interlinked with the self-devotion, self-strengthening organization of employee and self-management of the employee; the participation of such role increase the prestige of the organization. The mechanism of self-inspiration supports the staff to induce the intrinsic norms of the personality to provide the better presentation in the appointed tasks (Manz, 1986).

Kirsch and Cummings (1996) defined the term self-control as integrity of a person to define the instrument of his performance on his own, to scale his performance on his own, to evaluate and compensate himself according to his performance. They also discussed that deliberate consideration of the self-control is extraordinary for the project manager where the project manager is capturing skillful experience in tasks and rise for the standardization in the reform of the tasks within less critical atmosphere.

Self-control elaborates the self-defined achievement and self-structured accomplishments in order to meet the performance goals (Jaworski, 1988; Henderson & Lee, 1992; Kirsch, 1997). Self-control promotes the employee to more prospective scenarios to adopt the features of more integrative patterns for themselves to provoke the self-motivation for the complex operational

activities in the projects. Self-control administrate the self-regulation for the personal opinions and motivation which provokes the psychological acceptance of the difficult situation is the tasks and person operate in the most adoptive patterns which influence the decision making in improved form and survival of the personal failure form complex operations. The personal effectiveness gets failed if the appointed role to the individual is no clear and there is diversion in the directions of tasks (Tubre & Collins, 2000). Intrinsic features and interpersonal revolutions of the person support the conflictive background for the person to devote their selves more deliberately to cope with critical confrontations (Andersen & Chen, 2002).

The influence of the work environment has deep imprints for the team workers, who require the directional inspiration in the challenging environment; employee authorization plays its role for the effort itself (Dwivedula & Bredillet, 2010). Neal, Wood and Drolet (2013) argued that self-control is not effective when people are restricted by their customs and resources are not enough to modify their patterns of practices; personal interest of the individual hinders the efficacy of the targets in tasks.

Self-imposed characteristics evaluate the dimensions of the performance of the individual to construct the behavior supremacy (Schmitt, 2014). Self-control regulates the task orientation for the individual in directional mode, induces the personal commitment toward the strict projects and in the severe environment which also support the team of project and project manager to confront the critical activities with preset and predefine mind set for challenges. The self-control of the project manager delivers the role model inspiration to the project team.

2.2 The Success/Performance of Information System Projects

The success in the installation and implementation of the information system project has been remained in investigation for forever by the scholars and practitioners and various scenarios have been studied to achieve success in the information system projects. As large amount of the investment and time has been devoted to the information system projects to achieve the strategic strength for the organization, management wants to organize the efficiency to administrate the control over the performance to ensure the success in the information system projects. Ein-Dor and Segev (1978) tested the success and failure of the management of information system on the bases of organizational context; variables of different categories react to the performance of the information system which might be based on uncontrollable, partial controllable, controllable and theoretical structures. Debrabander and Edström (1977) discussed that dynamics for the flow of the communication and interaction plays situational role for the user and developer where the strategy design by the management for both sided communication is more concrete for success. Whereas Robey and Farrow (1982) argued that involvement of the user cause conflict in the development of the information system but this conflict leads toward the resolution on the different stages of development; initiation, design and implementation in the project.

The debate on the participation of the user is convincingly related to the success of the information system in the previous literature, Ives and Olson (1984) described that literature has provided us with great deal of investigation on the user involvement related to the project success, some of the literature support the participation of the user, other tested the mix importance as few argue the insignificant effect of the user involvement in the success of the information system projects. Hartwick and Barki (1994) emphasized on the fact that's user

involvement in the system use has beneficial aspects if user involvement is measured by the attitude, behavior, willingness to use, nature and norms for the use of information system.

Few research studies elaborate the evaluation of beneficial side of the coin for the implementation and installation of the information system project for the organization. Rainer and Watson (1995) associated the link of successful information system development with the executive information system, the keen attention of the executive in the development and running activities boost up the probability of the success. Saarinen (1996) discussed the evaluation of the success in the information system projects as subsidiary association with user information satisfaction, utilization procedure and worth of the IS products, but direct lead toward the investment involvement and resource consumption in the development process of information system projects.

Besides this, scholars also evaluate and view the success of the information system project by proposed models of benefit realization, Ward, Taylor and Bond (1996) discussed that success of the information system can be measured on pre-investment and post-investment basis, if management realize benefits of the investment in the project fully. In the previous decade the arguments of the scholars have captured many dimensions to associate, measure and evaluate the success of the information system projects. Management considers the pre and post benefits that might be announce as the success of the project before making investment in the complex nature of IS projects.

In addition to this, success in the information system project is also investigated with the reference of context of countries, developing countries are discussed as a critical factor for the success of the IS project. Heeks (2002) presented that there is a gap between the design and

actual use by the local people in the developing countries which restrict the success of the IS projects. He demonstrated the understanding of the flaws a developing country contain with reference to the development of the IS projects. Projects are not designed according the user's lack of awareness which lead to gap and failures. Therefore, we introduce effects of various variables on information system projects with the context of developing country as Pakistan.

Behavioral and productivity outcome are competing component for the project manager, user impact on the behavior outcome are strong then impact on the productivity outcome, project manager needs to measure the involvement according the achievement of the outcome, if acceptance is the final goal then manager should consider the enhanced involvement of the user for success of the information system projects (He & King, 2008). In the progress of the information system project, stream of common values sharing by the team to the project manager creates the loss control over the operational activities involved in the project success (Narayanaswamy, Grover & Henry, 2013), information flow provide the project manager incentive to achieve the strategic decision making in preparation, establishing and controlling of the project (Raymond & Bergeron, 2008).

Furthermore, the prospect for the whole design of the information system projects also requires the keen consideration to eradicate the vigorous failure in the project. Stewart (2008) discussed the three segments of frame at the different stages of the project; choice of the IT, installation of IT and assessment of the IT, to cover the involvement of the risk and failure in the life cycle of the information system projects. But Skulmoski and Hartman (2010) suggested that each phase of the life cycle of the information system projects requires the core competency of the project manager and capability to deliver and control the challenges on different stages of project; beginning, formation, execution, and completion, competency of the project manager on the

basis of individual, specialized, communication, compromise, collective abilities, leadership and project management are necessary to capture the strength on each level of the project.

Many other scholars described the different aspects of the information system and related various features of accountability for the performance of the information system projects in which Liang, Wu, Jiang and Klein (2012) pointed out the value diversity is the difficult for project manager as it generate conflict between team members of information system projects. Park and Lee (2014) discriminate their work by emphasizing that independence and trust as an attribute of common cooperation among team members in the information system projects is a key to performance enhancement. Huang (2014) argued that, the impact of contradicting user hazards in the information system projects where user is required to associate with the developer and developers' common norms also has its significance for the performance of the project.

2.2.1 Relationship between managerial control and performance of IS projects

This study has intended to investigate the impact of the managerial control mode separately on the information system project. The theoretical underpinning of this research is Control theory (sociology). Control theory is based on the social bond in which explanation of strong system has been advocated, it deliberately communicate that weak system result in deviant behaviors. According to Travis Hirschi (1969), behaviors are based on the standardization of the benefits at the end. He identified four elements of social bonds which are attachment, commitment, involvement, and belief which support the elements of proposed model. Managerial control is studied and investigated with the reference of IS project very thoroughly over years. This research work is detecting the associated features of managerial control on project performance in the context of Pakistan's IS projects.

It has been witnessed that the behavior control has become effective under the control of project manager and outcome control has become efficient under the team member control (Ouchi & Maguire, 1975; Henderson & Lee, 1992; Jackson, et al, 1997). Behavioral control significantly induces the ability of the team in combine efforts for the operations (Piccoli & Ives, 2003). Software firms requires the implementation of the behavior control and outcome control by predefined benchmarking in order to create the medium of control for the software development (Nidumolu & Subramani, 2003). Behavior control and outcome control as informal control operates directly and positively for the capacity building of the employees and organization performance (Wai Yu & Wai Ming, 2008).

Many scholars have advocated the concept of the managerial control on different criteria; few investigated the relation of managerial control with the perspective of client and client liaison although many other tested the concept of managerial control as an affiliation with project manager and project team. With the perspective of the client, formal control according to its various types; behavior control and outcome control, generate the significant interaction for the performance of vendor in information system projects (Srivastava & Teo, 2012). Liu and Wang (2014) pointed out that the client liaison with expertise has significant outcome control on the performance of information system project, although behavior control of the client liaison is not effective on the performance. However, in the previous literature, support and criticism for the formal control has been debated for long time, on the basis of positive impact following hypothesis has been generated,

H1: Behavior control is positively related with performance of IS Projects.

H2: Outcome control is positively related with performance of IS Projects.

Control theory integrates the performance of the team members in order to react toward the requirements of the client in order to enhance the features of software projects (Maruping, Venkatesh & Agarwal, 2009). The informal control; clan control and self-control, has been observed more proficient with the point of view of client liaison, also linked with the character of stakeholders involved (Keil, Rai & Liu, 2013). Beside this, basic common acquaintance between the user and developer boost the chances for the information system project success (Tesch, Sobol, Klein & Jiang, 2009). Albeit the fact that, formal control has been investigated as an individual mechanism for the information project for some time, but informal control has also been associated as significant appliance with the formal control. Di Tullio and Staples (2013) argued that, the efficacy of the outcome control, behavior control, clan control and self-control cannot be utilized for the improved performance of the software development if regulatory mechanism is not available to imply.

Henry, Narayanaswamy and Purvis (2015) presented the significance of the association between the formal and informal control demonstrate the positive relation; formal and clan control has most strengthening impact, self-control diverse its association with behavior control, outcome control and clan control. The interlinked affiliation of the managerial control as formal and informal control is observed very unlikely and fluctuation upon the performance of the information system project, managerial control after the impact of different moderating and mediating variables has changed its influence on the capacity and performance of the IS projects.

Furthermore, Tiwana (2010) presented the significance of the outcome control and clan control, which operates in opposite direction, whereas behavior control and clan control significantly move in parallel direction for the effectiveness in the performance of system. Information system project obtain the effects of behavior control, outcome control, clan control and self-control

significantly; the influence of the behavior control and self-control decline for performance in complex situations whereas the impact of outcome control and clan control induces on performance (Liu, 2015). While the observation of the previous literature and control theory, the following hypothesis based on positive relation between informal control and performance of the IS project has been designed,

H3: Clan control is positively related with performance of IS Project.

H4: Self-Control is positive related with performance of IS Projects.

The next paragraph will explain the moderators in the research study,

2.3 Resource Commitment

The dynamics which have been followed by many scholars and practitioners also endeavor to address the significance of the resource commitment and viewed as an essential element in the success and improved performance of the projects. The reliability of resource provision in right quantity at right time has been deliberately observed as an unavoidable feature for the success of the project. Resource based views support the organization to align the structural decision making for the applied strategy with available proficiencies of the organization (Mahoney & Pandian, 1992). The endowment of the resources indicates the strength of the organization to initiate the major strategies of the projects at crowning level without the concern of failure. Resource commitment measures the opportunities in the project according to the acquiescence of the management to invest in the complex and challenging phase of the project to provide the survival in critical scenarios of the project. Resource commitment determines the project competency to avail the more developing features in the implementation.

Isobe, Makino and Montgomery (2000) discussed in their research work, that influence of the resource commitment is more than the consideration of the management, the result of the investment in the technology become more proficient with the promising delivery of resources in the establishments. They pointed out that, the strength of the strategies and methodology becomes the evident success for the technology adoption with the willing monitor of the resources in the process. IT resources are addressed as administrative skills of the employees and organization (Bharadway, 2000). Every project which is initiated generates its own distinguishing challenges and opportunities for the management, release of the resources and commitment of the resources is designed according to the necessity of the projects.

Luo (2004) argued that the features of the environment varies with discrimination in different culture of the operations, highly doubtful market decline the encouragement for the resource commitment, vigorously fluctuating industry operates contradictory to the resource commitment characteristics. He also argued that only stable situation of the industry can associate with the resource commitment. Resource commitment can increase the possibility of the cost overrun if management concern for the control mechanism is not considerate in the planning phase of the project.

Ravichandran and Lertwongsatien (2005) discussed that information system employed many features in the organization according to the capabilities of the system, to develop the information system at successive level and at continuous integrated level, organization issues the resources to meet the core proficiencies of the information system, which interlaced the relation between the resources, information system ability and performance of the project. All the resources are considered before implication to match the competency of the resource with the requirement of the system in the project.

Jiang, Tao and Santoro (2010) emphasized in their research study that the availability of the diverse nature of operations in firm will require the increased flow of the resources but it will also gain the maximization of the resources in return at many stages of the operations, which will provide the association of the firm performance with the resource consumption and utilization. Resource commitment promises the highly innovative environment for the projects. Hung and Chou (2013) investigated the relationship between the firm multiplicity, performance and resource commitment, he advocated the fact that extravagant utilization of the resource for highly tech staff brings its incentive for the diverse projects, who provide the diverse expertise for challenging scenarios in the firm, but still there is need to make the decision of the utilization of the resources with the efficiency of the firm requirements.

Complex projects get maximum effect of the environmental factors and financial influences for the critical operations of the project. Li (2014) pointed out that resource commitment possess the moderating effect for the innovation of the procedures, investment involved in the activities of conservation and finding of new methodologies from the existing culture and values will | boost up due to increased participation of the resources or will decline with bottle neck involvement of the resources. The effect will diversify with the amount of resource commitment in the procedure. Gemünden (2015) described the resource commitment as an integrative and influential element in the implementation of the unique projects by reviewing the work of many other scholars. Resource commitment speed up the procedure of goal orientation and achievement in the IS based projects, flow of resources straighten the operational activities of the projects and support the technical ability of the team and project performance.

2.3.1 The Moderating Role of Resource Commitment.

Enlightening the fact that resource commitment is a crucial factor for the performance of IS projects, existing literature has been viewed to comprise all the previous comments of the scholars in order to generate the hypothesis containing specific novelty. Resources contributed in the projects are of various kinds, it can be human resource, technical resource, training based resources and agile resource. Practicing the control mechanism on human resources capture the significant impact for the behavior and output control in the performance; behavior control with less apparent impact of control by executives (Snell, 1992). Powell and Dent-Micallef (1997) argued against the conception presented by opponent for resource commitment that involvement of the complementary resource commitment promises the high outcome for the IT business and indicate the significant effects. Ulmer (2000) pointed out that resource distribution and commitment apply the hold of control on the individual and influence him to play role under controlled atmosphere, delivery of each resource varies with the distinguish features of the individual. Ripollés, Blesa and Monferrer (2012) suggested that resource commitment significantly affect the decision for high resource utilization to development efficiency of management success. Heavy investments are applied in the IT projects in order to achieve the desired strength in the IT project, increases the necessity of control over the different managerial dimensions of project. Richey, Musgrove, Gillison and Gabler (2014) argued that the outcome and performance measure of the firm cannot be obtained without the steady flow of the resources where the managerial decisions also become less effective for the outcomes, resource commitment establish the weak bond as a moderator for the performance. Control theory advocates the concept that commitment of future resource and reward availability support the behavioral aspects of the human and they perform in the designed control mechanism. With the

support of previous literature and control theory this research study has generated the following hypothesis,

H5a: Resource commitment moderates the relation between behavior control and performance of IS Projects, such that resource commitment enhances the relation.

H5b: Resource commitment moderates the relation between outcome control and performance of IS Projects, such that resource commitment enhances the relation.

Neelankavil and Alaganar (2003) investigated that interlinked strategic management of the resources with various parameters contribute to the IT corporations. Li, Evans, Chen and Wood (2011) discussed that personal resource commitment has optimistic importance which impact the performance, where preparation commitment has low impact for performance. Silver and Ulmer (2012) debated that perception of the incentives for future loses the self-control of the individual, but where the reward in sense of resource is surety for the individual it help him to gather motivation for self-control as a commitment predictor. Resource commitment enhances the significant relation as a moderator on the information system projects and influences the versatility of IT social resource and source commitment accordingly (Mao, Liu, Zhang & Deng, 2016). According to control theory to capture the common value and self-motivation, resource commitment with the prospect of future surety help the individual to gather on single platform and accept the control for performance. There are few hypothesis designed as following,

H5c: Resource commitment moderates the relation between clan control and performance of IS Projects, such that resource commitment enhances the relation.

H5d: Resource commitment moderates the relation between self-control and performance of IS Projects, such that resource commitment enhances the relation.

2.4 Top Management Support

The support of the top management is considered as a hard nut to crack for the development of the critical projects, as in result project team starts to rely on the sustenance of the top management and do not use their personal perception for the promotion of project. In the existing literature, argument on the top management support has been presented by White and Leifer (1986), stated that project team in the development of the information system is concern with the structural and technical aspects of the project where the involvement of the top management and clients are not mandatory for the project team. It has been analyzed that the concern and involvement of the top management is very rare but they find development of the IT projects compulsory. But in contrast, Jarvenpaa and Ives (1991) pointed out that the attitude of the authoritative body on the task is directly interlinked with the attitude and perception of the upper management body.

The effective performance of the project manager relay vigorously on the top management support as a critical factor for the success in the project and as an appreciation for the ability of the project manager (Belassi & Tukel, 1996). Pervious literature assist the variable of the top management support as a crucial and attentive factor for the perspective of the project manager, project manager communicate directly with the executives to solve the barriers and disturbing factors in the project therefore concern of the project manager for top management contribution is considerable. Swink (2000) advocated the fact that in the installation of the highly technological product, top management involvement is a proven effective factor for the success in schedule, feature and performance of project, but top management support diverts in inefficient factor where the financial assistance is required in highly technological culture.

Akkerman and Van Helden (2002) also advocated the fact in their search work that involvement of the top management at each step of the project stages provides the close association of the projects with success factors and achievement of the targeted objectives. Sharma and Yetton (2003) investigated that flexibility in the constraints of the operational activities rely upon the top management provision, task interdependence weaken the flow of tasks in the success of project. They also mentioned that the encouragement of the top management in the implementation of the project guarantee the weak relation of activity dependence, which cause the failure to the success. The implementation and development of the information system projects requires the crucial decision making at many stages, project manager find it relaxing to have the recommendation of the top management in the complex scenarios.

Young and Jordan (2008) pointed out that the requirement of the top management support and influence is more significant than the perception of the top management, the direction and alignment of targets should be the focus of the top management to adopt the better scale for after success factors in the information system projects. It has been discussed and argued by many scholars that top management support has dynamic implication on the development of the project but what sort of support is required is addressed by Dong, Neufeld and Higgins (2009). They observed that the establishment of the resource, association for team and client trainings and putting the team on same platform by sharing the common values, are the acquisitions for the top management support in the project success.

Boonstra, A. (2013) discussed that attitude and objectives of the top management varies for different dimensions in the information system project, which behavior ensures the support is identified by the delivery of the financial and resource assistance, strategic organization, extend of efforts to employee expertise and communication. On few occasion, executives believe in

with holding the support to avoid the escalation of the resource and non-serious behavior by the team and project manager. Young and Poon (2013) described in their research work that top management support has deep rooted effect on the progress of the projects and beleaguered goals cannot be measured as a prediction if top management is not associating. Projects are established but mutual operations which require the effective support of the top management if projects are not getting assistance then the success of the projects is doubtful.

Unger, Kock, Gemünden and Jonas (2012) presented in their research work both side of the top management involvement impact, on one hand author investigated the highly recommended involvement in the group of project whereas on the other hand authors argued that involvement more than limitation leads toward the slow progression of the projects and revolting decision making by the top management. Elbanna (2013) has supported the concept of top management support in IS projects with detailed study in which investigation on the uniformity and validity of top management support is made, according to the author top management support is the main element which backbone the strength of IS projects.

Top management support provides the crystal sense of the project dynamics and well transformed communication between the streams of operation in the projects (Hermano & Martín-Cruz, 2016). The importance of top management involvement in the projects; according to previous finding, the support of the senior management requires eager and consecutive involvement in the different phases of the project to accomplish the performance of team in more progressive way. The identification of the top management support can be based on the mechanism designed for the project progress in different scenarios with the resource commitment or delivery of the strategic fit for the project manager.

2.4.1 The Moderating Role of Top Management Support.

The moderating role of the top management support between managerial control and project performance has been neglected in the previous literature. Many scholars have advocated the importance of the top management support for the performance of project. This study investigates the moderating effect between the managerial control and performance of project through the concept of control theory. Thong, Yap and Raman (1996) supported the fact that development and implementation of the information system projects is crucial for small businesses, where scarcity of resources and uncertainty adverse behavior exists, there scenario of top management support is significant for the project. Deliberate behavior of the seniors to follow some specific pattern also effect the behavior of the subordinates in the same direction, junior find their selves following the same behavior as by seniors in order to create the control chain of that behavior (Foshee & Bauman, 1992).

Bonner, Ruekert and Walker (2002) Investigated that top management involvement in different phases of project, according to their finding they indicated that top management involvement is significant when team is at planning phase, whereas the control based involvement of top management in project adversely affect the performance of project, top management requires control mechanism at right phase of the project. In addition to this, De, Boonstra and Wortmann (2010) presented the involvement of senior management and user's interest is highly recommended in the IT projects. The elements of control theory 'attachment, involvement and belief' encompass the variable of the top management support to create the impact between managerial control and performance of project. Therefore this research study has generated the hypothesis on the moderating role of top management support discussed as below,

H6a: Top management support moderates the relation between behavior control and performance of IS Projects, such that Top management support enhances the relation.

H6b: Top management support moderates the relation between outcome control and performance of IS Projects, such that Top management support enhances the relation.

Top management is the basic source for the provision of resources, assistance and control over the establishment of the projects, which provide positive and significant effects on the usefulness of the system installation projects (Hwang & Schmidt, 2011). Berssaneti and Carvalho (2015) proposed research enlightening the fact that top management support significantly moderate efficiency of the project. In addition, Jones, Lynam and Piquero (2015) described the fact that mechanism of control measures its strength by the worth of reward in the process; self-control is based on self-perception which should be transformed with common bond, reward by seniors will flourish the commonalities of the bonding between individuals. Even, Ahmed, Mohamad and Ahmad (2016) has confirmed in their research work that top management support has multi angle impact on the success of project, provision of resource and delivery of power sort of angles have most significant impact on the success of project. Thus, self-control theory in control theory and existing literature emphasis the generation of the following hypothesis,

H6c: Top management support moderates the relation between clan control and performance of IS Projects, such that Top management support enhances the relation.

H6d: Top management support moderates the relation between self-control and performance of IS Projects, such that Top management support enhances the relation.

1. Theoretical Framework

Proposed model depicting the relationship of managerial control on depicting performance in information system projects with moderating effect of resource commitment and top management support as indicated in figure 1,

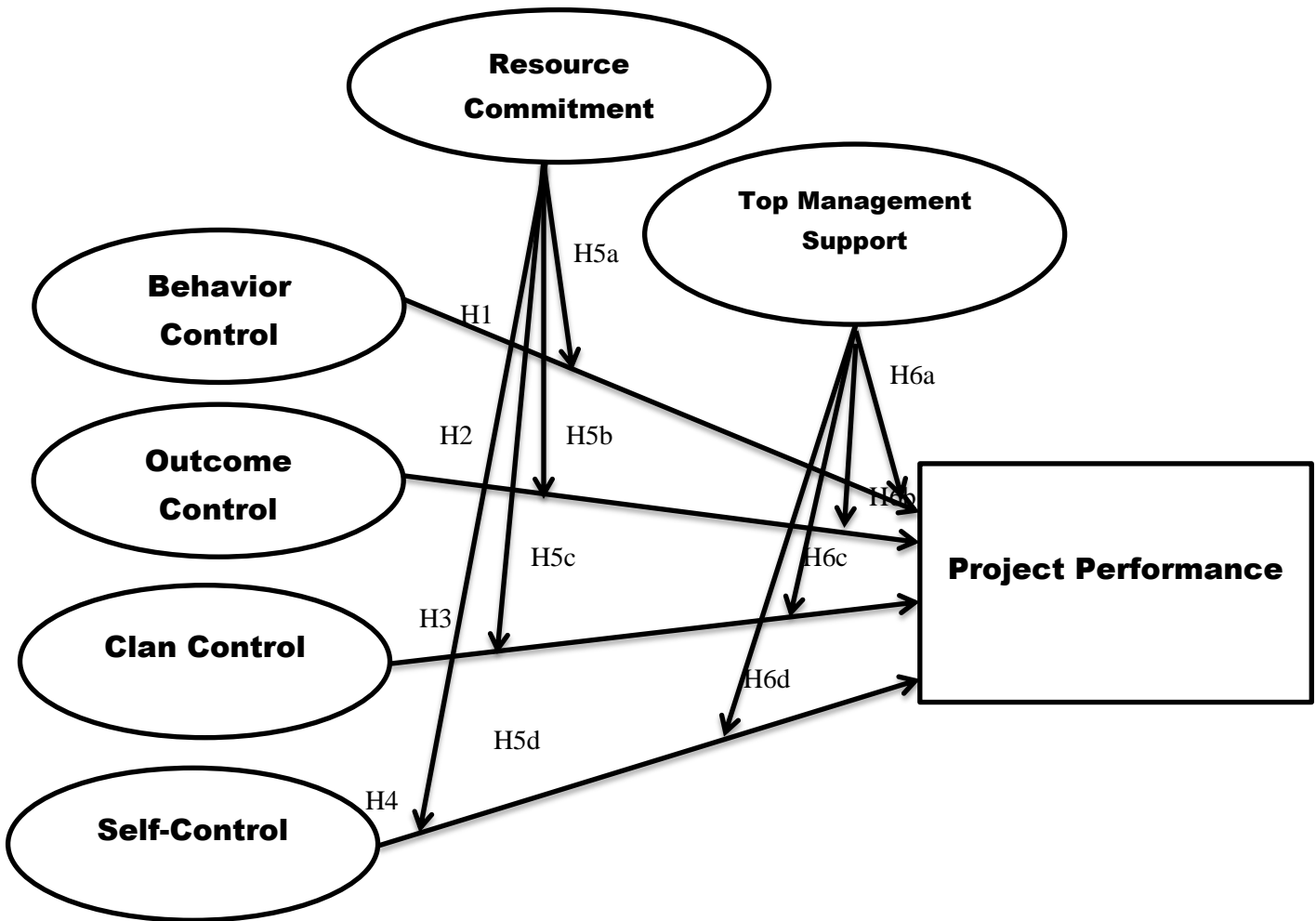


Figure 1: Theoretical Frame work.

Chapter Summary

This chapter of the research work explained and defined the variables individually. And discuss the variables with point of view of different scholars. Furthermore theoretical framework has been explained and defined and the link between theory and literature has been designed which result in the generation of different hypothesis. At end chapter has presented the theoretical model of the research work.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

The research design of the research study has been explained well in order to conduct well defined results which is explained below,

3.1.1 Purpose of Study

The purpose of the research study is,

- To investigate the positive relation between managerial control and performance of IS projects.
- To investigate the moderating role of resource commitment between managerial control and performance of IS project.
- To check the moderating role of top management support between managerial control and performance of IS project.
- To evaluate the results of the research work in the context of information system projects of Pakistan.

3.1.2 Research Philosophy

Research philosophy of the research work contains the circle of knowledge in which all paradigms of research elements exists. There are four types of the research philosophy; Pragmatism, Positivism, Realism and Interpretivism (Saunders, Lewis & Thornhill, 2012). This research study is of **positivism nature**.

3.1.3 Type of Study

This is a **quantitative** field research. Data was collected from client liaison and developer, project manager and team members on group of projects of the information system through survey based methodology.

3.1.4 Unit of Analysis

The unit of analysis was of group nature included as unit of analysis (Project manager of the project and in the institute on that specific project, consultants of information system projects, developer of the information system and project team members in the four cities of Pakistan). We found the sectors with large information system project; we contacted them to meet the project manager of the project, further we requested the firm to accommodate us with the information of consultants who was hired for the project. With this technique we obtain many contacts and respondents to fill the questionnaire.

3.1.5 Time Horizon

Saunders, Lewis and Thornhill (2012) defined time horizon according to two dimensions; Longitudinal and Cross-sectional. Longitudinal research studies can be frequent over long time period but cross-sectional research studies has time boundaries and can be conducted in that specific horizon. The nature of this research work is of **cross-sectional** in which data has been checked in one time lag within two months to reduce common method bias.

3.2 Population and Sample

3.2.1 Population

The population of interest of current research study encompassed different categories of respondents including the project managers of the IS projects or governing authority hired for specific IS projects beside that team members involved in the IS projects were also included. Client liaison and developer of the IS systems are also consulted as an important factor of population from group of different sectors in four cities of Pakistan as described in following table,

Table 3.1: Survey Distribution

S.no	Target Respondents	Project Manager	Client Liaison
1	Islamabad	75	75
2	Lahore	75	75
3	Sialkot	75	75
4	Sargodha	75	75

Equal distribution of the survey is made in four cities of Pakistan and different sectors are contacted to get survey filled.

3.2.2 Sample

The perceptions of managerial control may vary across different sectors with information system management. Therefore to capture maximum variance, information system from group of sectors, located in the capital city Islamabad, Lahore, Sargodha and Sialkot, were targeted for data collection. The study was based on sampling technique of **Snowball sampling**. Respondents were approached through professional contacts. The exclusion criterion for respondents included (a) Respondents experience with the respective organization for less than 5 years; (b) have age less than 26 years (to guarantee that they could effortlessly comprehend and fill a questionnaire

in English). In order to avoid common method variance (Lindell & Whitney, 2001; Podsakoff et al., 2003), the respondent's institutes were approached to collect data on managerial control, project performance, resource commitment, top management support and demographics were collected from project manager and client liaison. Data collection was self-administered and consultants were requested to support in data collection from the contacts with other consultants and developers.

The data was collected in two sections from project manager, project team members and client liaison, developer of the system. 300 questionnaires are distributed to project manager, client liaison and team members, 270 usable responses are received in which 262 are usable and complete responses (87%), 8% are from production sector, 5% are from defense sector, 12% are from construction sector , 10% are from pharmaceutical firms, 9% are from banking sectors, 15% are filled from medical sector, 16% are filled from education sector, 6% are filled from geoscientists firm, 10% are filled from telecommunication sector and 7% are from automobile sector.

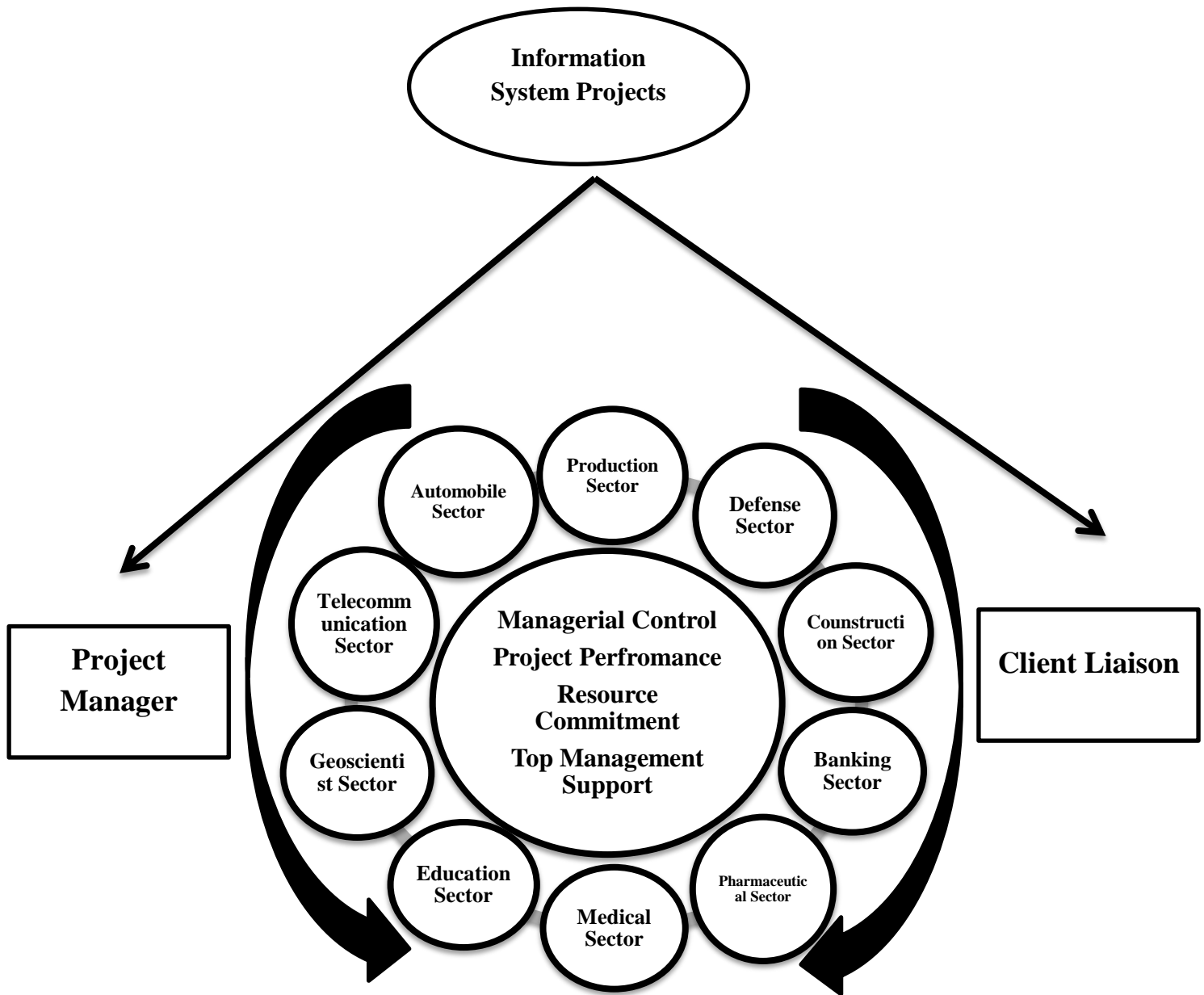


Figure 2: Sampling Method

3.2.3 Procedure

Questionnaire is assembled with the constructs of behavior control, outcome control, clan control and self-control, performance of project, resource commitment and top management support which is filled by project manager and project team members, client liaison and developers of the information system. To get the valid response two procedures has been adopted, one is **electronic mail** and other is **hard copies** and **printed form** of questionnaire. By utilizing the snowball sampling technique few consultants were contacted and they also referred more consultants and developers beside that different sector and institutions were visited and requested for reference of consultants and developers, to get filled the survey by client liaison and developers electronic email procedure has been utilized. To get filled the survey self-visit has been made in the institutions and sectors to get questionnaire filled by project manager and project team for this purpose hard copy of questionnaire has been utilized.

3.2.4 Ethical Consideration

The Participation confidentiality was kept. Questionnaires were escorted by an introductory letter describing the study aims and significance, with the promise that the responses and identity of the participants would be kept severely reserved and results would purely be employed for the academic purpose.

3.3 Instrumentation

The included instrument scales for all the variables adopted from previous research and are designed in such nature where project manager and client liaison rated each item keeping in mind the involvement of managerial control, resource commitment, top management support and performance of information system projects. All the items of the variables are designed

according to the 5-points likert-scale from 1(strongly disagree) to 5(strongly agree). Therefore, respondents were asked to rate each item on a 5-point likert scale ranging from “1 = strongly disagree” to “5 = strongly agree.”

3.3.1 Managerial Control

Instrument developed by Kirsch et al., (2002) was used to measure Managerial control in four control modes which are described as behavior control, outcome control, clan control and self-control. Total scale consists of 14 items which is subdivided between control modes. Total scale which is included for behavior control consists of 3 items “1= the client expected the development team to follow an understandable written sequence of steps toward the accomplishment of project goals”, outcome control contains 3 items “1= the client placed significant weight upon timely project completion”, clan control having 4 items “1= The client actively participated in project meetings to understand the goals, values, and norms of the development team” and self-control consists of 3 items “1= The development team autonomously set specific goals for this project without the involvement of the client “. This portion of survey is filled by client liaison (A client liaison acts as an intermediary between the company or agency and the client to meet the client’s need for information, support, assistance, reports and training. The liaison helps the company understand the customer’s needs, expectations or difficulties) and developer of the information system projects.

3.3.2 Project Performance

Project performance is measured using scale presented by Wallace, et al (2004); Jiang and Klein (2004) which consists of 6 items. The sample items include “1= the client was satisfied with this project” and “2= the project goals were met”. This portion of survey is handed over to project manager to be filled.

3.3.3 Resource Commitment

Resource commitment is measured utilizing the scale developed by Lai et al. (2008) which consist of 3 items. The sample items include “1= my organization exerts considerable effort in improving information systems”. This portion of survey is handed over to project manager to be filled.

3.3.4 Top Management Support

Top management support is measured by the scale which is presented by Ahmed, et al (2016) as TMSQ (top management support questionnaire) consist of 6 items. The sample item includes “1= Top managers of the company are aware of the methodology used for managing projects”. This portion of survey is handed over to project manager to be filled.

3.3.5 Sampling Frequency

Frequency provides the measure of observation of the data set and groups in data set. Frequency represents the percent proportion of the sample data. Frequency of the demographic represents gender, in which 79% are male and 21% are female. Then age is indicating that 34-41 year of age group is having highest value of 32% whereas 50 and above year age group has lowest value of 14% of total data set. Furthermore, experience of the respondents indicate that 5-10 year experience group is having the highest value of 71% but the experience group of 36 and above year is containing 0% of total sample. Medical and education sectors are maintaining the highest values of 14% and 16% respectively in the total sample of research work in Table 3.2,

Table 3.2: Frequency Table

Items	GENDER	AGE	EXPERIENCE	SECTOR	Frequency	Cumulative Percent
MALE	79.40%				208	79.40%
FEMALE	20.60%				54	100%
26-33 Y		22.90%			60	22.90%
34-41 Y		32.10%			84	55.00%
42-49 Y		30.90%			81	85.90%
50 and above Y		14.10%			37	100%
5-10 Y			71.40%		187	71.40%
11-16 Y			24.80%		65	96.20%
17-22 Y			1.50%		4	97.70%
23-28 Y			1.90%		5	99.60%
29-35 Y			0.40%		1	100%
36 and above Y			0%			
Production				8%	21	8%
Defense				5%	13	13%
Construction				12.20%	32	25.20%
Banking				11.10%	29	36.30%
Pharmacy				9.50%	25	45.80%
Medical				14.50%	38	60.30%
Education				16.40%	43	76.70%
Geoscientist				5.70%	15	82.40%
Telecommunication				10.30%	27	92.70%
Automobile				7.30%	19	100%
Sample Size					262	

3.4 Instrument Pilot Test

The primary focus of this research work is the development and authentication of reviewed scales which has been used for this research study as well. To test the relevancy, consistency and reliability of the items selected from scale and scale itself, Cronbach's alpha reliabilities were used to evaluate internal consistency. Pilot study was concluded on 50

responses on both section of questionnaire by client liaison and project manager. The internal consistency of each variable was obtained as indicated in table 3,

Table 3.3: Reliability Statistics

S. no	Variables	Source	Cronbach's Alpha	No of Items
1	Behavior Control	kirsch et al., (2002)	0.807	3
2	Outcome Control	kirsch et al., (2002)	0.817	4
3	Clan Control	kirsch et al., (2002)	0.776	4
4	Self-Control	kirsch et al., (2002)	0.835	3
5	Project Performance	Wallace, et all (2004); Jiang & Klein (2004)	0.854	5
6	Resource Commitment	Lai et al. (2008)	0.851	3
7	Top Management Support	Ahmed, et al (2016)	0.862	6

The scale of each variable is demonstrating the reasonably high α coefficient (i.e > 0.5) with the value of 0.7 and 0.8 approximately based on responses collected in 2016 from project manager and client liaison. Cronbach's alpha indicated good “**internal consistency reliability**”, the high reliability of overall factors is not unusual. Earlier studies have reported even higher reliabilities. For example, Ferris, Douglas, Joseph, and Lian (2008) reported alpha reliability of 0.96.

The scales which has been adapted from the previous literature are closely linked with the topic and justifying the variables and there strength of measure. Each construct which has been adapted is complimenting the research work and reliable to utilize in different types of context. Beside this, by keen observation it has been analyzed that each construct is related to the nature of IS project. Furthermore the reliability statistics has proven the consistency of the each construct showing the high relevancy and relation between scale of variables and validated the measure for this research work as the scale of managerial control by kirsch et al., (2002), Project

performance by Wallace, et al (2004), Jiang and Klein (2004), Resource commitment by Lai et al. (2008) and Top management support by Ahmed, et al (2016) as TMSQ (top management support questionnaire)

3.6 Data Analysis Techniques

Data is analyzed using SPSS 20 and following procedures/tests were carried out:

- Reliability analysis
- Frequency distribution
- Descriptive statistics
- Correlation analysis
- Regression analysis
- Moderation analysis

Chapter Summary

This chapter has explained the population of interest, sample and sampling technique that were employed. In addition, the procedures which were adopted for data collection, the scales which were used to measure the study variables and the data analysis techniques which were applied to find results have been mentioned. Beside this pilot study has also been conducted in this chapter to check the reliability of the scale construct.

CHAPTER 4: RESULTS

4.1 Descriptive Statistics

Descriptive data maintains the summary of the sample data in form of different statistics which indicate statistical observation of the sample data.

Table 4.1: Descriptive Statistics

	N	Mean	Median	Mode	St. d	Maximum	Minimum
Behavior							
Control	262	3.1908	3.3333	3.67	0.8788	5	1
Outcome							
Control	262	3.6861	4	4	0.89457	5	1
Clan Control	262	3.1069	3	3.5	0.84731	5	1
Self-Control	262	3.2201	3.3333	3.67	0.95376	5	1
Project							
Performance	262	3.6771	3.8	3.67	0.81538	5	1.2
Resource							
Commitment	262	3.5445	3.6667	3.67	0.82501	5	1.33
Top							
Management							
Support	262	3.5986	3.6667	4	0.78806	5	1.67

Note: For Sector type, 1, “production sector”; 2, “defense sector”;3,” construction sector;”; 4,” pharmaceutical firms”; 5,” banking sectors”; 6,” medical sector”;7,”education sector”;8,” geoscientists firm”;9,” telecommunication sector”;10,” automobile sector”. For gender, 1,“male”; 2, “female.” For experience, 1, “experience equivalent 5 to 10 years”; 2, “11 to 16 years”; 3, “17 to 22 years”; 4, “23 to 28”;5,”29 to 35”;6,”36 and above. For age, 1, “age equivalent 26 to 33 years”; 2, “34 to 41 years”; 3, “42 to 49 years”;5,”50 and above”.

Descriptive statistics summarize and arrange the sample data in well-formed structured which provide the understanding of the sample size, mean, median, mode, std. deviation, variance, maximum and minimum. Table 4.1 provides the descriptive statistics of research variables under this research work. Mean of the sample data indicates the average of the sample. The statistics shows that in demographic sector is containing the highest mean of 5.59 whereas in variable outcome control has highest mean of 3.68. Besides this, the median of the moderating variables (resource commitment and top management support) is showing the high value of 3.66. Mode of the sample represents the value which occurs often in the sample. In the current statistics, mode of BC, OC, CC, SC, PP, RC and TMS are 3.67, 4, 3.5, 3.67, 3.67, 3.67 and 4 respectively indicating the occurrence frequency in the sample. Furthermore, std. deviation demonstrates the dispersion of the sample. The std. deviation of BC is 0.87; OC is 0.89, CC is 0.84, SC is 0.95, PP is 0.81, RC is 0.82 and TMS is 0.78 respectively. Moreover maximum and minimum values are calculated in the descriptive statistics, indicating that sectors in demographics have maximum value of 10 whereas all variables are representing the maximum value of 5. All the independent variables are having minimum value of 1 where the minimum value of project performance as dependent variable is 1.2, resource commitment as moderator has minimum value of 1.33 along with top management support which is also a moderator contains minimum value of 1.67. All the descriptive statistics indicate the average and frequency of data investigated.

4.2 Correlation Analysis

Correlation represents the evaluation of the relationship between many variables. The coefficient of the correlation remains between the range of -1.00 and +1.00. The value of -1.00 is indication of sturdy negative relation between variables and +1 presents the strong positive relation (Bluman, 1995). The value less than zero indicate nonexistence of the relationship. Main

correlation is considered Pearson correlation also named as linear correlation. Correlation between variables are given in Table 4.2,

Table 4.2: Correlation Analysis

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1										
2. Age	-.467**	1									
3. Experience	-.277**	.534**	1								
4. Sector	.294**	-.267**	-.288**	1							
5. BC	-0.025	.143*	0.028	.187**	1						
6. OC	-0.082	0.081	0.045	-0.053	.370**	1					
7. CC	-0.003	.136*	.149*	-.143*	.293**	.439**	1				
8. SC	-0.101	0.072	-0.033	0.043	.255**	.224**	.301**	1			
9. PP	-0.027	0.075	0.073	.141*	.419**	.477**	.383**	.304**	1		
10. RC	-0.085	0.117	.135*	-0.097	.260**	.499**	.398**	.181**	.481**	1	
11. TMS	-0.062	0.063	0.064	0.074	.385**	.543**	.317**	.162**	.575**	.656**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed);
^a n = 262; BC = Behavior Control; OC = Outcome Control; CC = Clan Control; SC = Self Control; PP = Project Performance; RC = Resource Commitment; TMS = Top Management Support

Result represented in table 2 support the correlation between variables, the variable of behavior control and performance of project has positive correlation with the strong significant value of .419**. It indicates that if behavior control is enhancing then performance of the project is also enhancing along the behavior control. According to H1, behavior control is positively related with performance of IS projects.

Moreover the result in the table 4.2 indicates that the value of correlation between outcome control and performance of project is .477**. This shows that if outcome control rises then there

will be rise in the performance of the project. According to H2, outcome control is positively related with performance of IS projects. Beside this, table 4.2 shows the result that correlation between clan control and performance of the project has close association with the value of .383**. It indicates that there is strong positive relation between clan control and performance of project. According to H3, clan control is positively related with performance of IS projects.

The results in table 4.2, represent the correlation between self-control and performance of project with positive correlation of .304** value. It indicates positive significant relation between self-control and performance of project. Therefore, according to H4, self-control is positively related with performance of project. Furthermore, results show correlation value between behavior control and resource commitment, which indicate there is positive significant correlation between behavior control and resource commitment with the value of .260**. Results also show correlation between outcome control and resource commitment with the positive significant value of .499**. Results indicate that there is correlation between clan control and resource commitment with positive significant value of .398**. Results also show that there is correlation between self-control and resource commitment with positive significant value of .181**. Results also provide the value of correlation between resource commitment and performance of project with positive significant value of .481**. It represents that if resource commitment increases there will be increase in behavior control, outcome control, clan control, self-control and performance of project.

Results in table 4.2 show that there is correlation between top management support and behavior control with positive significant value of .385**. Results also indicate that there is correlation between outcome control and top management support with positive significant value of .543**. Other results show that top management support and clan control has positive significant

correlation with the value of .317**. Results also present the correlation between self-control and performance of project with positive significant value of .162**. Table 4.2 also provide the value of .575** which indicate the positive significant correlation between project performance and top management support. It represent that it top management support enhances there will be increment in behavior control, outcome control, clan control, self-control and performance of project.

4.3 Regression Analysis

To investigate the relationship of independent and dependent variable regression analysis is obtained. Regression analysis represents the uniqueness of dependent variable which changes with any of varying independent variable, while other independent variables remain constant. Results of regression analysis are given in Table 4.3,

Table 4.3: Hierarchical Regression Analysis

Predictors	Project Performance	
	R ²	ΔR ²
1. Step 1		
Control Variables	.039	.024**
Step 2		
Behavior Control	.187	.171***
2. Step 1		
Control Variable	.039	.024**
Step 2		
Outcome Control	.267	.253***
3. Step 1		
Control Variable	.039	.024**
Step 2		
Clan Control	.197	.182***
4. Step 1		
Variable Control	.039	.024**
Step 2		
Self-Control	.125	.108***

Note: ^a n = 262; * p < .05; ** p < .01; *** p < .001;

Hierarchical Multiple Regression is carried out to discover empirical evidence for the hypothesis. The result in table 4.3 indicates that all variables are strong predictor of project performance. Control variables are gender, age and experience with R^2 value of .039 with 3.9% variation. On individual basis, each variable has association with performance of project. Results suggests that behavior control has ($P < .001$) close significant association with project performance and variation notes by value of R^2 .187 indicates that behavior control generate 18.7% variation in project performance. Outcome control also has ($P < .001$) significant relation with project performance whereas R^2 value of .267 shows that 26.7% variation in project performance is caused by outcome control. Clan control indicates ($P < .001$) significant close association with project performance whereas R^2 value of .197 show that 19.7% variation in project performance is caused by clan control. Self-control has ($P < .001$) signification relationship with project performance. The value of R^2 indicates value of .125 which represents that 12.5% variation in project performance is because of self-control.

4.4 Moderation Analysis

According to Preacher, Rucker and Hayes (2007) discussed that moderator explain the relationship between dependent and independent variables. Confidence band is more appropriate for measuring the significance between the variables. Simple moderation between variables provides the interaction term to be shown on simple slope to estimate the regression of independent variable on dependent variable. In table 4.4, interaction terms of variables (behavior control, outcome control, clan control and self-control) are measured according to their sets with moderator (resource commitment and top management support) on dependent variable (project performance).

Beside this, according to Hayes (2012) interval level of the moderator and independent variable on dependent variable clarify the relationship. Conditional effects are visualized in moderation measure by ‘Hayes’ proposed methodology. In the current research work, model 1 is utilized to measure the moderation by Hayes (2013) process. Table 4.4 represents the statistics measured to specify the relationship between independent and dependent variable with the effect of moderator’s involvement, as indicated below,

Table 4.4: Moderation Analysis

Predictors	<u>Project Performance</u>		<u>Bootstrap results for indirect effects</u>	
	R ²	ΔR ²	β	LLCI / ULCI
Model 1a				
Total Effect	0.3749			
RC			0.9475***	0.6391 / 1.2559
BC			0.9424***	0.5617 / 1.3231
BC × RC		0.0325**	-0.1877**	-0.2894 / -0.0861
Model 1b				
Total Effect	0.3735			
RC			0.8179***	0.4960 / 1.1399
OC			0.7514***	0.4479 / 1.0550
OC × RC		0.0252**	-0.143**	-0.2311 / -0.0549
Model 1c				
Total Effect	0.3638			
RC			0.9808***	0.6618 / 1.2998
CC			0.9753***	0.5895 / 1.3611
CC × RC		0.0377***	-0.2144***	-0.3234 / -0.1055
Model 1d				
Total Effect	0.3583			
RC			1.0009***	0.7131 / 1.2887
SC			0.8599***	0.5199 / 1.1999
SC × RC		0.0416***	-0.1925***	-0.2859 / -0.0991
Model 1e				
Total Effect	0.3951			
TMS			0.8769***	0.5215 / 1.2323

BC		0.6605**	0.2360 / 1.0851
BC × TMS	0.0115*	-0.1269*	-0.2405 / -0.0133
Model 1f			
Total Effect	0.3911		
TMS		0.5613**	0.1659 / 0.9567
OC		0.3353	-0.0086 / 0.6792
OC × TMS	0.001	-0.0347	-0.1403 / 0.0709
Model 1g			
Total Effect	0.4227		
TMS		1.0457***	0.6997 / 1.3954
CC		0.891***	0.4852 / 1.2968
CC × TMS	0.0243**	-0.1901**	-0.3046 / -0.0756
Model 1h			
Total Effect	0.4118		
TMS		0.9834***	0.6769 / 1.2899
SC		0.7156**	0.3550 / 1.0761
CC × TMS	0.0206*	-0.1436*	-0.2386 / -0.0487

Note: ^a n = 262; * $p < .05$; ** $p < .01$; *** $p < .001$;

The moderating role of resource commitment and top management support is measured at 5000 bootstrap re-sample and results are estimated at 95% confidence interval. Gender, age, experience and sectors are control variables. Table 4.4 indicates the results of H5a, H5b, H5c, H5d, H6a, H6b, H6c and H6d; in the statistics the value of beta can be 1 or more than one which is not a challenging situation, as according to the Hayse (2013) terminologies it is acceptable term for beta. Table 4.4 indicates that interaction term of resource commitment and behavior control has ($\beta = -0.1877$, $p < .01$) strongly significant but negative impact on project performance. The bootstrap also indicates the significant relation as it does not contain zero (-0.2894, -0.0861). Further, the interaction term between resource commitment and outcome control is ($\beta = -0.143$, $p < .01$) also observed strong significant relation with negative impact. It also represents the significant relation as it contains no zero (-0.2311, -0.0549). Moreover, the interaction term indicating the relation of resource commitment and clan control demonstrates

($\beta = -0.2144$, $p < .001$) strongly significant but negative impact relationship on project performance. The relationship is also significant as it has no zero (-0.3234, -0.1055). The interaction term which is observed with relationship between resource commitment and self-control is ($\beta = -0.1925$, $p < .001$) strongly significant with negative impact on project performance. The relationship is also significant as it has no zero (-0.2859, -0.0991)

Similarly the other moderator, top management support is also tested with independent variables to identify the relationship and impact on project performance. Table 4.4 demonstrates the interaction term between top management support and behavior control present ($\beta = -0.1269$, $p < .05$) significant relation with negative impact. The bootstrap also indicates the significant relation as it does not contain zero (-0.2405, -0.0133). The interaction term between Top management support and outcome control is ($\beta = -0.0347$, $p > 0.05$) not significant relation with negative impact. It also represents no significant relation as it contains zero (-0.1403, 0.0709). The interaction term between Top management support and clan control is ($\beta = -0.1901$, $p < 0.01$) significant relation with negative impact. It also represents significant relation as it contains no zero (-0.3046, -0.0756). The interaction term which is observed with relationship between top management support and self-control is ($\beta = -0.1436$, $p < .05$) significant with negative impact on project performance. The relationship is also significant as it has no zero (-0.2386, -0.0487).

4.5 Interaction Graphs

To investigate the resource commitment further, whether it strengthens the relationship of independent and dependent variable, SD value above and below the mean value are plotted on graph. Project performance as dependent variable is plotted on Y-axis, behavior control, outcome control, clan control and self-control is plotted on X-axis with high and low value. The significance of relationship can be seen between behavior control and project performance, it

indicate as behavior control rises, project performance rises (indicated by upward and steep slope). However, it is observed that there is positive significant relation between behavior control and project performance where high resource commitment is raising the project performance. But the interaction of the behavior control and resource commitment is not influencing the project performance. Therefore, resource commitment has negative impact on the relationship of behavior control and project performance under this scenario hypothesis H1 is accepted but H5a is rejected.

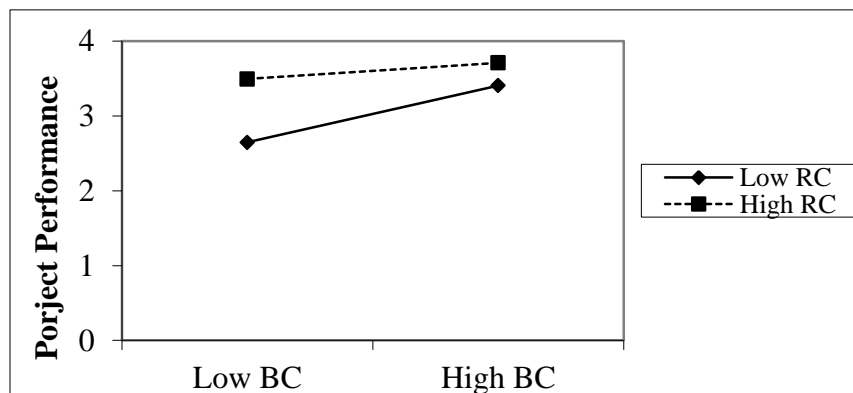


Figure 1: Interaction of resource commitment and behavior control on project performance. High and low level of resource commitment and behavior control with one standard deviation above and below mean respectively.

Furthermore in Figure 2, the relationship between outcome control and project performance is significant which indicate if there is rise in behavior control, project performance will rises (indicated by upward and steep slope). However, the interaction of the outcome control and resource commitment is indicating no association for project performance it also has negative impact. Therefore hypothesis of H2 is accepted but H5b is rejected as moderation has negative impact on project performance.

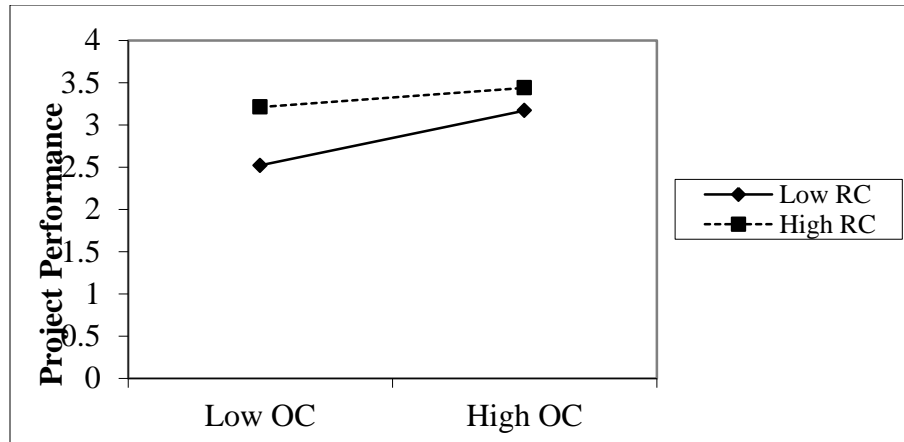


Figure 2: Interaction of resource commitment and outcome control on project performance. High and low level of resource commitment and Outcome control with one standard deviation above and below mean respectively.

Moreover, Figure 3 indicates that there is positive significant relation between clan control and project performance, but there is no interaction of clan control and resource commitment, it is also observed that high resource commitment rises the project performance but interaction has negative impact on the relationship of behavior control and project performance. Therefore H3 hypothesis is accepted and H5c is rejected.

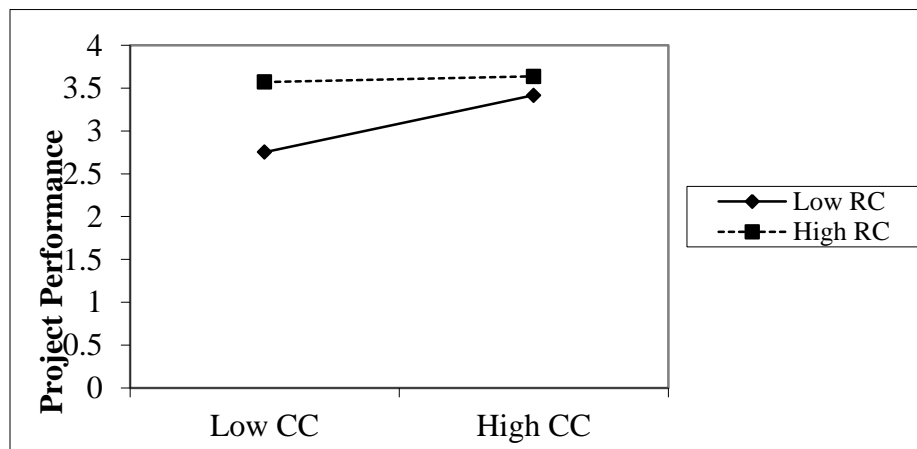


Figure 3: Interaction of resource commitment and clan control on project performance. High and low level of resource commitment and clan control with one standard deviation above and below mean respectively.

Figure 4 provides the results of the hypothesis, the high resource commitment is raising the project performance but the interaction of the self-control and resource commitment is indicating no association for project performance. Individually self-control is indicating positive relation with project performance. Therefore H4 is accepted and H5d is rejected with negative impact.

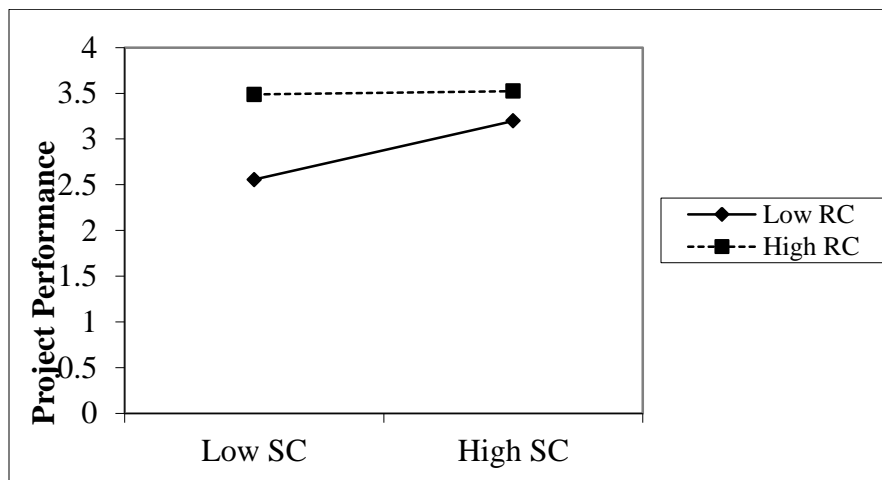


Figure 4: Interaction of resource commitment and self-control on project performance. High and low level of resource commitment and self-control with one standard deviation above and below mean respectively.

Figure 5 indicate that top management support is weakening the relationship of behavior control and project performance as behavior control and project performance relation is positively significant but top management support is not moderating the relation of behavior control and project performance therefore hypothesis of H61 id rejected in this research work.

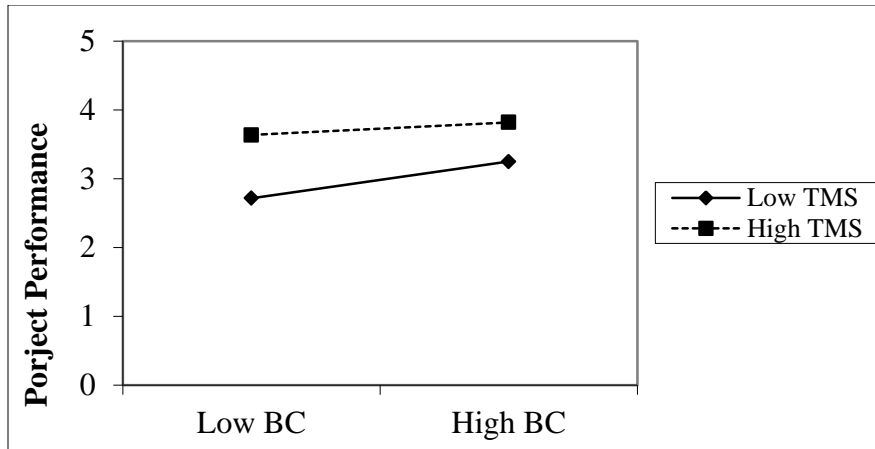


Figure 5: Interaction of top management support and behavior control on project performance. High and low level of top management support and behavior control with one standard deviation above and below mean respectively.

Figure 6 demonstrates the positive significant relation between outcome control and top management support, but the moderating effect of top management support is not significant for outcome control and project performance. Therefore H62 is rejected in this research work.

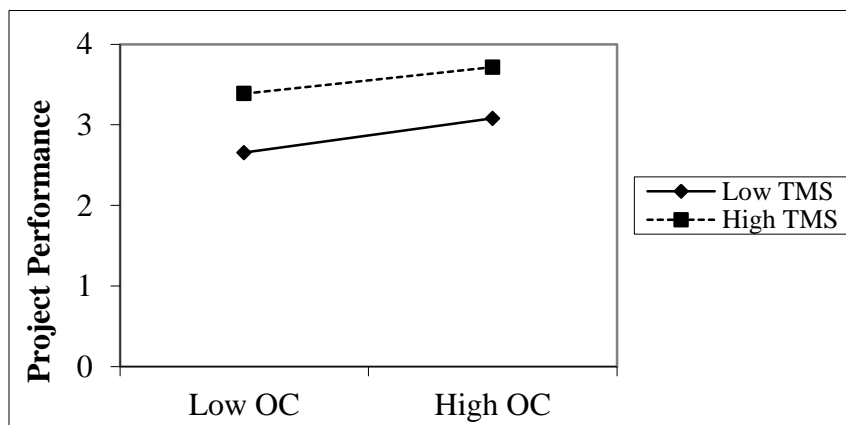


Figure 6: Interaction of top management support and outcome control on project performance. High and low level of top management support and outcome control with one standard deviation above and below mean respectively.

Figure 7 indicates that the relationship of the clan control and project performance is stronger on low level of top management support. The interaction term of the clan control and top

management support is not significant for project performance. Therefore H6c is rejected in this research work.

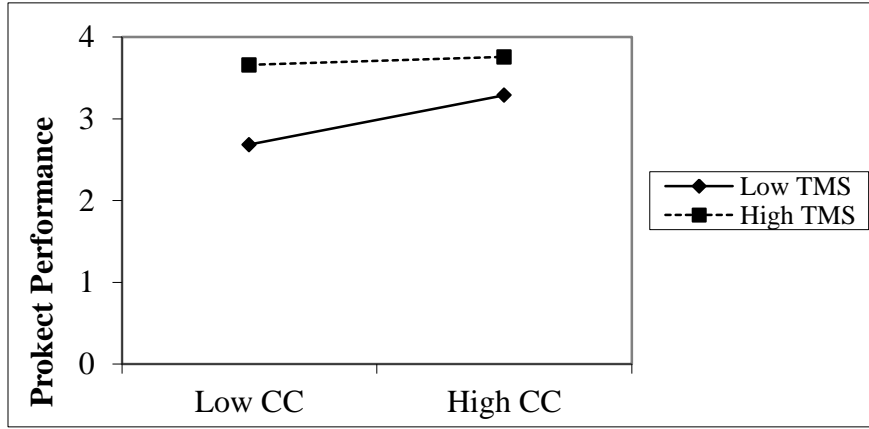


Figure 7: Interaction of top management support and clan control on project performance. High and low level of top management support and clan control with one standard deviation above and below mean respectively.

Figure 8 indicate that relationship between self-control and project performance is higher with low level of top management support and lower with high top management support. The negative impact is inducing insignificance of the moderation for self-control and project performance. Therefore the results indicate that there is negative impact of top management support in the relationship of self-control and project performance on this basis H6d is rejected for this research work.

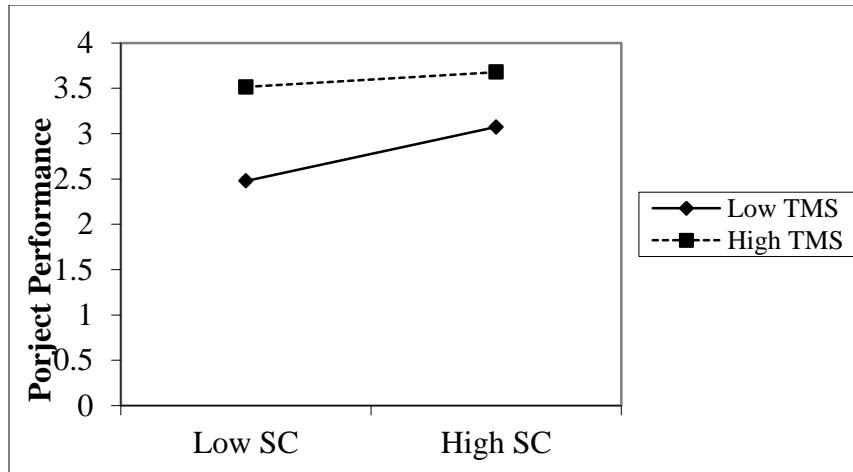


Figure 8: Interaction of top management support and self-control on project performance. High and low level of top management support and self-control with one standard deviation above and below mean respectively.

4.6 Result Summary

Hypothesis	Statement	Result
H1	Behavior control is positively related with performance of IS projects.	Accepted
H2	Outcome control is positively related with performance of IS projects.	Accepted
H3	Clan control is positively related with performance of IS projects.	Accepted
H4	Self-Control is positive related with performance of IS projects.	Accepted
H5a	Resource commitment moderates the relation between behavior control and performance of IS projects, such that resource commitment enhance the relation.	Rejected
H5b	Resource commitment moderates the relation between outcome control and performance of IS projects, such that resource commitment enhance the relation.	Rejected
H5c	Resource commitment moderates the relation between clan control and performance of IS projects, such that resource commitment enhance the relation.	Rejected
H5d	Resource commitment moderates the relation between self-control and performance of IS projects, such that resource commitment enhance the relation.	Rejected
H6a	Top management support moderates the relation between behavior control and performance of IS projects, such that Top management support enhance the relation.	Rejected
H6b	Top management support moderates the relation between outcome control and performance of IS projects, such that Top management support enhance the relation.	Rejected
H6c	Top management support moderates the relation between clan control and performance of IS projects, such that Top management support enhance the relation.	Rejected
H6d	Top management support moderates the relation between self-control and performance of IS projects, such that Top management support enhance the relation.	Rejected

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Theoretical Contribution

This research work indicates the relationship of different modes of managerial control and performance of information system projects. Current research work also examine the effect of the resource commitment and top management support as moderator on the relationship of managerial control and information system projects performance. Current research work contribute theoretically in existing literature by enlightening new facts investigated in developing economy like Pakistan. Present research work addresses the following questions.

- **Research Question 1: What is the relationship between modes of managerial control and project performance?**

After empirical investigation of the results and impact of research work on managerial control and information system project performance, it is concluded that hypothesis H1, H2, H3 and H4 is accepted. With the perspective of literature contribution this research work provides the fact, firstly that behavior control has positive relation with information system project performance. This relation is also advocated in existing literature, that control mechanism impact the project with joint efforts where behavior control, outcome control, clan control and self-control has positive effect for project (Henry, Narayanaswamy & Purvis, 2015). Ouchi and Maguire (1975) investigated in their research work that behavior control has significant impact for operational perspective, the higher capability of the supervisor provide more regularity in the behavior of the subordinates. From existing finding and with the support of the current study it is estimated that predefined set of rules regulate the team and client in their decision making and they act

according to pre organized structure (liu & wang, 2016). In the economy of the Pakistan, believe of the project manager and client liaison is observed that project needs preset rules and policies to capture the desired attitude of the project team and client.

Secondly, outcome control is targeted in current research work as effective tool for performance of information system projects which is also proven as positively significant relation. Outcome control performs the significant role for information system project performance to reform the required step necessary for project success (Liu & Wang, 2014). Outcome control is considered a platform for project where the budget remain in defined cost circle, project meet the deadline without any extension and quality of the project is according to preset parameters, all scenarios are considered important element which can be obtained by outcome control in information system projects. (Nidumolu & Subramani, 2003). Tiwana and Keil (2010) also advocated the fact that outcome control provide significance for project to enhance the attributes and feature. Outcome control in information system projects put all the sharp edges of the project at one place for controlee, and define parameters boost the controlee to implement the limitations for project which provide the progress for project performance.

Thirdly, participation of clan control is also estimated in current research work where positive association of clan control is perceived with information system project performance. Interests and values of each individual vary according to their tastes, which also influence their working patterns and decision making. The believe of project manager and client liaison support the existence of clan control, so that client and project team as controlee can be gathered on one station to encourage the mutual qualities for decision making. Wiener, Remus, Heumann and Mähring (2015) also conducted research work on control instruments and concluded that clan control has positive association with project performance which associates the client in more

formal methods with project. Keil, Rai & Liu (2013) stated that clan control induces the improved results of the performance and generate positive relation with operational activities. As clan control encourages the mutual and shared importance of the performance therefore it has significance to polish the activities in more ordered manners.

Fourth, self-control define the considerations for one's self to implement in regulating manner in tasks therefore current research work support the assumption that self-control has positively significant relationship with information system projects. Each and every individual is considered responsible for his responsibilities therefore perception of project manager and client liaison support the fact that there should be existence of self-control for client and project team members. Liu (2015) also supported and concluded in his research work that self-control has positive and accepted affiliation with the performance of the information system projects. Tiwana and Keil (2009) examined their research work that self-control provides the inducing and positive support for control mechanism on information system project performance.

Existing literature and current research work supports the involvement of the all managerial control in information system projects performance. Results indicated that outcome control has more impact on performance, whereas behavior control and clan control are equally effecting the outstanding of project performance but self-control has low impact on the performance of information system projects, which indicates that measurement of self-control is difficult to achieve as each and every person is regulating and presetting goals and targets for themselves. The self-regularity system is complex procedure to meet the benchmarks which is also result of the cultural impact, where motivation and encouragement for self-regulations is low; in the context of Pakistan people are inspired at low level individually which result in low self-control and self-regulation therefore self-control is low in impact on project performance.

➤ **Research Question 2: Does top management support moderate the relationship between modes of managerial control and project performance?**

Conducted research work provided with the result that top management support as a moderator in the model is not supporting the performance of information system projects when it join with managerial control. Therefore, all hypotheses proposing the moderation of top management support are negatively significant for performance. This indicates that project manager and client liaison does not require top management support which will cause indulgent situation for them to relay on top management support and their attitude toward the implementation of control mechanism will be weaken. To conduct the proper hold on set of rules they require pressure of responsibility without assistance of top management in implementation of information system project.

In the existing literature, it is also observed that top management support as association with client's prospects does not have significant impact on projects (Berssaneti & Carvalho, 2015). Beside this, the correlation of the control and top management advocates the negative impact on the performance of project, the involvement of the top authorities low the criteria of the procedures required for project performance (Bonner, Ruckert & Walker, 2002). All the interactions of independent variables (behavior control, outcome control, clan control and self-control) with top management support delegate the negative emphasis on the performance of information system project. This negative effect can be due to another reason that data is collected from many sectors and every sector contains its own attribute, because of such reason overall result of interaction of top management support and managerial control is negative on the performance of information system project

➤ **Research Question 3: Does resource commitment moderate the relationship between modes of managerial control and project performance?**

Other variable as moderator, resource commitment, is detected in current research work. Resource commitment, according to control theory, provides the logic that a person will be more determined if he is obtaining the availability of resources. But current study suggests the fact that resource commitment has negative influence between managerial control and performance of information system projects. Information system projects are considered complex with the prospect of success, therefore in existing literature it is debated that resource commitment should not exceed some specific limit until the successful features can be anticipated, it is considered irrational behavior if follow of resources remain similar between different phases of projects (Sabherwal, Sein & Marakas, 2003).

Moreover, the explanation behind the rejection of moderation of resource commitment is cultural context, environmental behavior of investor, in the developing economy where the scarcity of resources exist, control is implemented to keep the budget and cost limited therefore resource commitment variable is not supported by project managers and client liaison in the context of Pakistan. In such scenario resource will negatively affect, where fluctuation in context is a conjoint norm (Luo, 2004).

Li, Evans, Chen and Wood (2011) also supported by their research work that resource commitment has negative influence on different dimensions of the performance, which fluctuate at different phases. The justification for the negative impact of resource commitment merely relates with managerial control on the performance of information system projects, otherwise results provided the positive impact of resource commitment as a factor on project performance.

5.2 Managerial Implication

Current research work has deep rooted managerial implication for project manager and client liaison, as estimated by results it's a fact that managerial control can be practiced in the operation of information system project performance.

The implementation of the information system project is complex in there nature, as information system contain large amount of important database of the organization therefore active attitude of all involved parties in information system implementation and development is required. This study found that behavior control, outcome control, clan control and self-control enhance the performance of the information system project during implementation phases. With this regard the responsibility of the project manager and client liaison also enhances.

Managerial control has psychological features in which project manager and client liaison describe preset set of rules in order to control the behavior and outcome of project team and client in the favor of project performance (Kirsch, Sambamurthy, Ko & Purvis, 2002). Self-control is estimated with low influence, it is also observed in existing literature that with the perspective of client, self-control and clan control are complex procedure to apply for the performance of project (Wiener, Remus, Heumann, & Mähring, 2015). Influencing client and project team to adopt the common and self-regulated policies is a complex procedure therefore current research work provides the deliberate enlightenment for project manager to conduct the sessions and trainings for project team to promote the encouraging scenarios for project teams, it also recommends the client liaison to conduct meetings and get involve with client on regular basis to grasps specification of client for project implementation and performance. All the mode of the managerial control support the responsibility of the project manager and client liaison in

ordered manner and can assist them to estimate the value if they impose the managerial control in projects.

The project manager and client liaison in the economy of Pakistan does not support the facilities of resource commitment and top management support. The control mechanism will not be preset if higher resource commitment is promised and top management support is available for project manager then he will not bother to implement control in project as there will be no need to apply predesigned rules when all incentives are available for project manager and client liaison all the time during project phases. Control can be implemented when budget is preset, schedule is predefined and quality parameters are explained but if there is variation in the set of policies due to follow of resource and intervention of top management support then control mechanism will have low impact on project performance. Therefore, current study convey the fact to project manager and client liaison that interaction of managerial control, resource control and top management support will cause negative affect on project performance in information system project so they have to be careful in order to avoid cost overrun and delay in schedule.

Beside this, another fact is observed that managerial control; resource commitment and top management support has individual impact on the performance of information system project, separately if variable are imposed on project performance then it cause positive significant impact on project performance. Therefore, current research work provides the incentive to project manager and client liaison to impose all variable at individual level without generating interaction and involvement of resource commitment and top management support.

5.2 Conclusion

Current research work state many deliberate consideration as contribution in the research wok. Firstly, current research work investigated the patterns of behavior control, outcome control, clan control and self-control on the performance of information system projects as positive relationship between variables. This indicates that managerial control has high significance on information system project in the various sectors in context of Pakistan. It is also observed that all managerial control are impacting performance but not on equal basis there is variation of impact for each managerial control.

Secondly, present research work found that resource commitment and top management support as moderator does not moderate the relationship of managerial control and project performance. Moreover the interaction of the resource commitment and managerial control causes the negative impact on the performance of project, similarly interaction of top management support and managerial control has negative effect on the performance of information system projects. Resource commitment and top management support is not validating the status of moderator for the relation of managerial control and performance of information system projects.

Thirdly, it is observed from the results that separate effect of the moderator (resource commitment and top management support) and independent variable (behavior control, outcome control, clan control and self-control) are positively significant on the performance of information system projects. Which concludes that, where the moderation of resource commitment and top management support is gathered with managerial control then it low the project performance as it provide the lenient situation for client and project team to not focus on the control mechanism.

5.3 Limitations and Future Directions

5.3.1 Limitations

During the conduction of the research work various limitations are observed as a challenge for the research work. Firstly, the data is gathered from a group of the sectors without any distinction of the effects of specific information system in specific sector. The group is not presenting the uniqueness of behaviors in different sectors, as the performance of information system will vary with the different nature of sectors as few information system maintain large amount of database whereas other information system maintain small amount of database as compared with large database maintain information system. Secondly, the bias behavior toward responses is problematic to detect and cannot be measured, the bias behavior of the respondents can be another limitation in study. Yüksel, A. (2017) presented that instrument representing the feedback of the respondents has the power to modify the results of the research, therefore keeping in check the bias behavior of the response require the attention of the researcher as a vital element of the research work.

Thirdly, data is collected in Pakistan, which is a developing economy, presents the distinguish features in its culture and trends, there is need to implement the research work in more countries and culture to investigate the tested model in other cultures according to these attributes. Fourth, another limitation of the research work is that moderators were investigated in research work, however, there is still lack of mediator in the model which needs exploration by other authors as the impact of moderator and mediator are different beside positive relation has been estimated there is need to examine the negative effects of moderators to check the versatility of the model. Fifth, the sample size of the research work is moderate not very large there is also need to induce

efforts for larger sample size to capture the perspective of responded to capture high variance and investigation on model by other researchers and authors.

5.3.2 Future Directions

Many scenarios have been observed during the present study, which are assumed to be further directions for other researcher in future. Firstly, in future studies some mediating variable in the relationship of managerial control and information system project performance require the investigation (e.g leadership of controller over controlee). The positive and negative significance of moderator is tested by authors, the influence of the mediators is also attracting feature for model to be investigated. Secondly, many sectors and the information system project in sectors are addressed without their distinguishing feature; there is also scope for future research to conduct comparative research between different sectors to investigate the distinctive attributes of information system projects in specific sector as the qualities of the information system varies for all sectors.

Thirdly, unilateral approach has been utilized in the research work where the involvement of the project manager, development team and client liaison is measured but the prospect of the client is still missing from the research work, there is direction for future authors to investigate the prospect of the client on managerial control implication in information system projects performance. However, perceptions of the clients will also introduce new aspects of managerial control in information system projects. Fourthly, relationship of managerial control and information system projects performance requires to be investigated in other contexts and cultures also. This research work is conduct in developing economy where the scarcity of resources is common issue for the economy and the support of the top management is not

moderate scenario for many sectors and information system projects performance therefore there is direction for future authors to investigate the same model in other countries and contexts.

Chapter Summary

This chapter explained and justifies the discussion of the results of the study. Furthermore, conclusion of the research work is mentioned in this chapter. Observed limitations and future directions are described in this chapter to provide inside of the overall research work. Also implications of this study were discussed in detail.

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Appendix

Capital University of Science and Technology

Department of Management Sciences

Questionnaire

Dear Participant,

I am student of MS Project Management at Capital University of Science and Technology. I am administrating a research on the topic of “Managerial Control to enhance the Performance of Information System Projects with Moderating Aspects in Pakistan”. Your cooperation and support to provide the insight by filling the attached Questionnaire will be appreciable. I guarantee the factors of confidentiality of your response and I assure you that your response will be used only for educational purposes.

Sincerely,

Narmeen Kanwal

Please tick the relevant Choice: **1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree**

Section-I (client liaison)						
1. Control Modes						
1.1 Behavior Control						
		1	2	3	4	5
1	The client expected the development team to follow an understandable written sequence of steps toward the accomplishment of project goals					
2	The client expected the development team to follow articulated written implementation rules toward the accomplishment of project goals					
3	The client assessed the extent to which existing written procedures and practices were followed during the implementation process					
1.2 Outcome Control						
		1	2	3	4	5
1	The client placed significant weight upon timely project completion					

2	The client placed significant weight upon project completion within budgeted costs					
3	The client placed significant weight upon project completion to the satisfaction					
4	The client used pre-established targets as benchmarks for the performance evaluations on the development team					
1.3 Clan Control						
		1	2	3	4	5
1	The client actively participated in project meetings to understand the goals, values, and norms of the development team					
2	The client attempted to be a “regular” member of the development team					
3	The client attempted to understand the goals, norms, and values of the development team					
4	The client placed a significant weight on understanding the goals, values and norms of the development team					
1.4 Self-Control						
		1	2	3	4	5
1	The development team autonomously set specific goals for this project without the involvement of the client					
2	The development team autonomously defined specific procedures for the activities without the involvement of the client					
3	The development team autonomously set specific timelines for this project without the involvement of the client					
Section- II (Project Manager)						
2. Resource Commitment						
		1	2	3	4	5
1	My organization exerts considerable effort in improving information systems					
2	My organization exerts considerable effort in improving IT and its application to business operations					
3	My organization exerts considerable effort in improving the IT skills of employees through training					

3. Top Management Support						
		1	2	3	4	5
4	Top managers of the company are aware of the methodology used for managing projects.					
5	Top managers of the company decide the projects that have to be developed.					
6	Top managers of the company have an active role when defining success criteria of projects.					
7	Top managers of the company are responsible for establishing the project management methodology.					
8	Top managers of the company are frequently informed about the progress of projects.					
9	Top managers of the company are involved in the monitoring and controlling phase of programs and portfolios.					
4. Project Performance						
		1	2	3	4	5
1	The client was satisfied with this project					
2	The project goals were met					
3	The overall quality of the developed application was high					
4	The project was completed within schedule					
5	The project was completed within budget					

Please Provide Following Information

	1	2
Gender	Male	Female

	1	2	3	4
Age	26-33	34-41	42-49	50 and above

	1	2	3	4	5	6
Experience	5 - 10	11 - 16	17-22	23 - 28	29 - 35	36 and above

Sector

