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A UNIFIED APPROACH OF CSFS FOR SUCCESSFUL OUTCOMES OF MEGA CONSTRUCTION PROJECT IN PAKISTAN. AN EMPIRICAL INVESTIGATION

M Asghar Mughal[*1], Muhammad Sufyan Ramish[2], Khushnood Khalid[3]

[*1]*Assistant Professor (Project Management), Management Sciences Department, Bahria University Karachi Campus*
[2]*Associate Professor and Program Director, Institute of Business and Health Management, DOW University of Health Sciences, Karachi, Pakistan*
[3]*Senior Lecturer, Management Studies, Bahria University Karachi Campus*

[*1]muhammadasghar.bukc@bahria.edu.pk, [2]smsufyan@gmail.com, [3]khushnoodkhalid.bukc@bahria.edu.pk

Corresponding Author: *
M Asghar Mughal
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ABSTRACT

Purpose

Mega construction projects (MCPs) in developing countries are progressively challenged by cost overruns, delays, and governance failures, often curtailing from fragile accountability and disjointed project management practices. This research proposes and empirically tests a unified methodology that incorporates critical success factors, risk management (RM), stakeholder management (SM), human resource management (HRM), and controlling & feedback (C&F), with accountability (ACC) as a mediating behavioral governance tool to improve project success (PS).

Design/methodology/approach

An arranged quantitative, cross-sectional survey was applied to professionals involved in mega public infrastructure projects in Pakistan. The data were examined using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine both the direct effects of IVs on PS and the mediating role of ACC within the planned conceptual framework.

Findings

Results disclose that all critical success factors significantly influence PS, while ACC partially mediates the HRM and PS relationship. Particularly, the research presents a multi-dimensional construct of ACC which works not as a post-hoc reporting device but as a dynamic, intangible capability to engage uncertainty and align stakeholder benefits. These outcomes propose that accountability functions as a selective, rather than universal, mediating device and should be strategically fixed where its behavioral effect is strongest.

Originality/value

By inserting ACC into essential project functions, the model proposals a context-sensitive, ethically grounded framework capable of directing institutional volatility. This study contributes to both theory and practice by reassuming project governance through a behavioral views, proposing a reform-driven corridor for improving reducing corruption, transparency, and attaining sustainable project consequences in complex settings for developing economies.

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1. INTRODUCTION

Construction all over the world is deliberated as one of the major industries on which any country's progress rests. The construction industry could also be seen as a gauge of a country's economic position (Ejaz et al., 2013). The construction industry is extremely weighty for Pakistan's economic progression and change, as Pakistan is a developing country (Almutairi, 2016). The country's main concentration is on the huge construction project, which books for a budget of over $1 million (Qazi, Asim, & Manzoor, 2021).

Controlling and feedback (C&F) is known as the sensible facility of a project's position and development (schedule, budget, and scope) to all concerned stakeholders, for the tenure of undertaking implementation (Jeffrey K Pinto & Slevin, 1988). Monitoring and evaluation is important for the successful management of projects (Nyonje, Ndunge, & Mulwa, 2012). Decades ago, its practices were determined by placing emphasis on prudent utilization of resources (Rogers & Williams, 2006). However, many organizations and institutions, as well as project managers in the modern era, regard M&F practices as a requirement for success rather than a management tool used for project appraisals, identifying and correcting problems in planning and implementation of projects (Armstrong, 2000). According to R. Turner (2016), project management (PM) was formally recognized as a distinct field in the late 1950s when much emphasis was placed on the C&F of projects as a result of the discontentment of stakeholders.

Construction projects are tricky and difficult in landscape and contain various stakeholders with fluctuating marks of knowledge and involvement (Enshassi, Hamra, & Alkilani, 2018; Gunduz & Önder, 2013; Maqsoom, Wazir, Choudhry, Thaheem, & Zahoor, 2020). External stakeholders can be typified as suppliers, customers, and connected form mechanisms (Institute, 2000). Internal project stakeholders are typically project supportive, dependent bodies with a bond and are known as primary stakeholders. However, external stakeholders are habitually unofficial arrangements and are known as secondary stakeholders. More, stakeholder management (SM) consists of internal and external stakeholders (Aaltonen & Kujala, 2010).

The intentions of project risk management (RM) are to upsurge the likelihood and influence of favorable occasions and decrease the likelihood and control of occasions contrary to the project (Guide, 2001). Sidestepping the risks of the project overall is not appropriate, specifically if these risks can be converted into prospects by proactive identification, risk examination, timely reaction, and operative monitoring. RM is measured as a vital tool in the management of projects (Wood & Ellis, 2003) and is forming a crucial part of the decision making course (Kangari, 1995).

In human resource management (HRM), many models and studies highlight a strong linking between HRM performs and how well an organization executes. Researchers have initiated that, while these practices may include costs, they finally help organizations attain better results. (Datta, Guthrie, & Wright, 2003) . Similarly, Wright, Gardner, and Moynihan (2003) also preached that the achievement of an organization was connected to the obligation of its employees. (Spratt, 1997), in their famed learning based on 740 firms, compiled an index of an organization's HR system telling the degree to which an organization had fitted the high performance work systems (HPWS), and "experiential that those organizations who were high in value on this index had economically and statistically greater levels of firm performance".

According to Mardiasmo. (2012) accountability (ACC) is a requirement to echo and be answerable for the failure or success of the application of the organization's mission in attaining the outcome that has been formerly determined, via media ACC that is prepared frequently. According to Pratama (2013), that ACC is the code that promises that every supremacy motion can be

accounted for openly by the performer to the parties affected by the employment of the rule. According to Hamid (2007), "ACC is the obligation to provide accountability or to answer and explain the performance and actions of the organization's organizers to parties that have the right or obligation to ask for information or ACC". Therefore, the need for ACC is realized during analysis past practices.

A contrast of the former performance displays that through the current decade mega arrangement growths in Pakistan are succeeding. At contemporary, several mega projects are under execution and numerous are under planning (Ejaz et al., 2013). American Society of Civil Engineers entitlements that corruption explanations for a projected $340 billion of worldwide construction total to each year (Sohail & Cavill, 2008). Likewise, as said by the indexing of Transparency International, "construction is one of the most corrupt industries among the various economic sectors" (Kingsford Owusu & Chan, 2019; Le, Shan, Chan, & Hu, 2014b). Notwithstanding the status of public sector arrangement projects in the developing countries, together the public area and the developing world have little consideration from PM scholars (K Khan, Turner, & Maqsood, 2013).

1.1 Problem Statement

The works have established chief differences in PM in common and the insight of risk in specific across industries and countries (Hofstede, 2001; Zwikael & Ahn, 2011; Zwikael, Shimizu, & Globerson, 2005). RM is comparatively new to the construction industry of Pakistan, it has hardly been investigated as a topic (Choudhry & Iqbal, 2013). Due to the fast trend of mega construction projects (MCPs), management problems and the challenges in the construction industry are also growing with it (Ejaz et al., 2013). Hence, infrastructure projects and construction of buildings entail long term risk and long term investment. Hence, the projects applied must be correct planned and managed properly in order to be fruitful. Malaysian construction industry is declared to be under attaining (Yong & Mustaffa, 2012),whereby project success (PS) is the main of the challenge or issue in project engagement. In common, unsuccessful projects cover those that did not meet the cost, quality, and time detailed by the end user. PM in the public area is deliberated defied because of increased pressure and insufficient staff to justify the continuation of projects and funding (Smith & Stupak, 1994). Public related projects in developing countries have to contract with matters that are exclusive to that environment including weak procurement systems, a large number of stakeholders, a shortage of skills & resources, bureaucratic red tape, and complex processes (Ahsan & Gunawan, 2010). The owner lost the possible revenue while using the projects and increased the cost of sustaining the agreement (Qazi et al., 2021).

The latent problems related to a construction PS are critically compact if stakeholders are fruitlessly managed. These cover deficient engagement of stakeholders, project managers with indistinct objectives of SM, difficulty in identifying the "invisible" stakeholder, and weak communication with stakeholders (Bourne & Walker, 2005; Loosemore, 2006; Pouloudi & Whitley, 1997; Rowlinson & Cheung, 2008).

There are numerous matters that the construction industry of Pakistan involves, major matter is delay or incomplete of the project. The common of the unsuccessful in the MCPs is time. Delay in the construction project is one of the most vital part in the overall performance of the industry as it consequence in enhance cost of the project (Almutairi, 2016). The majority of projects in Pakistan are confronting a delay due to rise of material prices, improper planning, and corruption (Ejaz et al., 2013), in specific poor accountability and corruption (Lodhia & Burritt, 2004). Furthermore, the complexity of construction project has augmented because of tools, equipment, new technologies, and innovation.

According to Sohu, Jhatial, Ullah, Lakhiar, and Shahzaib (2018), it is rare in Pakistan that construction projects are executed without delay. The most hurtful result is that the construction delays central to a wrong imprint on foreign or international investors, finally follow on in a deteriorating trend relating the country's progress. By the views of Kim and Kwon (2019), a delay is an action that invades a certain period to finish or

execute the task of the contract manifest as additional delays of effort. The subject of delay in the performance of the construction project is known as an international factor. There is a healthy association between project time, scope, and conditions.

Furthermore, Poor PM performance is not merely happening locally but occurs in the rest of the world alike. A PM survey run by KPMG International in New Zealand during the year 2012 exposed that only 35% carried the mentioned deliverables, 33% of projects brought on cost, and 29% met on schedule (Barlow, Woolley, Rutherford, & Conradie, 2013). "A World Bank study of Pakistan Infrastructure Implementation Capacity in 2007 reported that the average public sector project took three times more duration and two times more funds as originally planned" (Bank, 2007).KA Khan (2007) described information from the Planning Commission that displayed 200% to 800% rise in budgets for mega infrastructure projects performed amid 1993 and 2003.

It is critical to find who is accountable for the delay in schedule of the construction project. The time extension is either different the date of finish said in the contract or above the date granted by the parties involved for the delivery of the construction project (Mbala, Aigbavboa, & Aliu, 2019). Also, ACC as reform is a hurdle for corruption as explained by previous researchers. Corruption happens practically in all construction projects, both in developed and developing countries, which strictly depreciates the positive position of the industry (Le, Shan, Chan, & Hu, 2014a; Liu, Zhao, & Li, 2017; Zou, 2006)."Future studies examining these contextual effects will help in developing a rich understanding about the role of accountability arrangements in the management of projects. Also checked it at process accountability" as explained by Mir and Rezania (2023).

The primary aim of this paper is to introduce the unified methodology with reform to rectify the overall outcome of the public bodies as explained by (Sarker & Pathak, 2003). These management techniques and practices could lead the construction industry in a supportable long term manner (Ejaz et al., 2013). Future revisions aim to inspect the submission of the devices of control framework to the management of projects (Mir & Rezania, 2023). One variation in the areas described above might impact the construction project's overall results (Kim & Kwon, 2019). So, this phenomenon requires an apple pie order approach, sometimes called, a unified methodology. Future research may be carried out on developing management strategies to get rid of corruption in construction projects (Khadim & Jaffar, 2021).

Therefore, the current paper helps determine and control possible internal as well as external environments to get PS in the form of process accountability.

Secondly, this reform is helpful in overcoming issues and challenges by managing mega projects via PM methodology with critical success factors (CSFs). This methodology enhances the chances of success. This reform (accountability) and PM methodology along with CSFs facilitates to avoidance of wastage of resources. Also, improve living standards in Pakistan. M. M. Carvalho and Rabechini Jr (2017) suggested a project sustainability/unified model to safeguard the project delivered social reimbursements.

Thirdly, Each RM, HRM, and SM has external and internal aspects. It means C&F facilitates to align it with PS. Furthermore, process ACC will ensure PS. These things enhance the ability to scan and respond to the environment. This whole phenomenon sometimes called unified methodology.

The current section describes research questions and causes for methodology selection.

1.2 Research Questions

RQ1: To identify the conceptual unified methodology to overcome issues and problems for successful mega construction projects in Pakistan.

RQ2: To examine the project success criteria for the conceptual unified methodology.

RQ3: To identify the set of CSFs road map for the conceptual unified methodology.

RQ4: To find reforms to attain predicted outcomes for the conceptual unified methodology.

RQ5: To develop a tool to absorb uncertainty, and respond to the environment for professionals.

This study is the first of its nature in the context of the local construction industry as well as a silver bullet unified methodology. The article contains of five sections. Introduction of work present in Section 1. Section 2 will contain the literature review and hypothesis progress. Section 3 will establish the study methods. Section 4 will intricate on the research outcomes. Finally, section 5 will contains implications, limitations and discussion.

2. Literature Review

2.1 Project Management for Mega Construction Project Success

Since PM is a complex concern and activity with the request of ideas, so therefore "Project Management Body of Knowledge" (PMBOK) divides it into "42 processes" and "5 groups" as printed by Pmi (2008). Capka (2004) told that MCP is becoming more general, because of its capability to attract public attention and politics due to its substantial cost, and effect on the environment and the community. Governments observe MCP as a way to achieve their maintainable development goals (Othman & Ahmed, 2013). MCP effectiveness and success is measured by getting these three variables in a specific tenure, cost and satisfying initial business scenario of the project. Diverse researches led in the preceding five years in Africa, Australia, and Asia have been inclined toward the vital effecting factors representative of the construction project's overtime (Qazi et al., 2021).

2.2 Critical Success Factors

Bullen and Rockart (1981) state that CSFs are the vital areas where fair results will guarantee competitive advantages for the organizations and project teams. Furthermore, Milosevic and Patanakul (2005) enhance that from a PM point of view, CSFs are considered as variables that if managed professionally, can impact the PS. Therefore, the current study describes the following CSFs to cover the unified methodology to get favorable outcomes.

2.2.1 Stakeholder Management

The stakeholder notion was firstly recognized from an academic exploration board in the US in the 1960s. Stakeholders are defined as crowds that have a noteworthy effect on an organization, and deprived of their care, the organization could not endure to function (Li, Ng, & Skitmore, 2013; Stoney & Winstanley, 2001). Yang, Shen, Drew, and Ho (2010) discovered the CSFs for the managerial skills of stakeholders. It was established that a few factors pertaining to the social responsibilities are also essential. Therefore, the working superiority of project managers to contract with the stakeholders is context definite, keeping in view of the kind of project, client, and their organization. Also, it depends on the management setup. These results could be more obliging for project managers to come to be more conscious of their tasks (Ejaz et al., 2013).

To conduct a successful project, it is compulsory to report the desires of the project's stakeholders, well envisaging how the project treats them and how they treat the project. The active management of project stakeholders is regarded to be very important to PS (Chinyio & Olomolaiye, 2009). Conversely, to achieve a more successful project favorite result, the project executive must be capable in the management of the diverse stakeholders during the whole progress of the project as educated by Chinyio and Olomolaiye (2009).

Bourne and Walker (2005) and Jepsen and Eskerod (2009) also spell out the grounds for essential project SM which contains dealing with stakeholders with responsibilities, drawing and stating a clear statement of project missions, framing the right methods to manage stakeholders, figure trust between project top management and the most involved stakeholders in the project, sightseeing stakeholder's desires and constraints in projects, warranting active interface for all project stakeholders, classifying stakeholders, encouraging good connection with stakeholders, considerate the zones of stakeholder's benefits, and rank stakeholders by their influence and power on the project.

H1: Stakeholders Management significantly influences Project Success.

2.2.2 Human Resource Management

The remaining relevant issues connecting any worker in an organization also grasp connection

with the project manager and his team so the significance of these HR performs with PS is obvious. HRM practices have been general for a long time, and their influence on an organization's result has been a vital area of interest for investigators over the years. Inferences strained from these studies normally accord that there is an assenting linking of HR practices with an organization reading (Dyer & Reeves, 1995; Guest, Michie, Sheehan, & Conway, 2000). The viewpoint as respect to HR practices in the project-based organization is comparatively doubtful in contrast to studies of general management because HRM is strongly outlined in the attention of larger organizations (Huemann, Keegan, & Turner, 2007).

Since the application of all these methods entail HR and their consequences of HR practices and PS is consistent in studies. Charge in line with the "Universalistic Perspective" precise set of HR practices can positively impact the organizational success (Tzafrir, 2006), so it grips well for project success as well. Shen and Liu (2003) also recognized CSFs related to management issues. Two vital factors that earlier researchers have not appropriately debated. Firstly, management team coordination (ii) combined efforts by contractors, consultants, and clients, were debated in explaining during their examination. These two wide-ranging groupings of PS obviously have one item in collective that is the all-important need on HR because the former side of success pushes its power from the latter.

H2: HRM significantly influences Project Success.

2.2.3. Risk Management

According to (Flyvbjerg, 2014), a megaproject is a totally different form of project about its degree of stakeholders' involvement, cost, complex boundaries, long planning procedure, and making its growth a far riskier procedure.On the other hand, RM is being proficient in the financial area. A study was conducted by Masood and Choudhry (2010), but its scope was narrow to insights of contractors as risk factors. Though, several project risks are noticed to be measured by a distinct party (Tang, Qiang, Duffield, Young, & Lu, 2007). Risk is a multifaceted portent that has monetary, physical, social dimensions, and culture (Loosemore, Raftery, Reilly, & Higgon, 2012).

Tang, Duffield, and Young (2006) revealed the important role of affiliating in attractive RM and indicated that associating helps members to share extra information through the upgrading of open communication. Such communication enables the best decision making to reduce lost chances when commerce with project risks. It is seeming increasingly vital to agree a mutual risk management strategy by all stakeholders to realize the envisioned project objectives (Loosemore et al., 2012). Inappropriately, stakeholders may have diverse and even opposing project objectives. Mutual risk management will confirm that the objectives of the project are clearer and can be attained in an effectual way (Choudhry & Iqbal, 2013).M. M. D. Carvalho and Rabechini Junior (2015) stated that "in projects, even moderate risk management has an impact on attaining successful project by reducing the negative impact of the risk".

H3: Risk Management significantly influences Project Success.

2.2.4 Controlling and Feedback

It includes assembling regular conferences to distribute project information to stakeholders, distribution outcomes of project assessments with stakeholders, gaging actual growth towards baseline, in addition to monitoring all features of the project to run a mind map of the project's progress (Jeffrey K Pinto & Slevin, 1989). All imperative parts of the project were monitored, plus trials that will offer a complete image of the project's growth (adherence to schedule and budget, equipment and manpower utilization, team confidence, etc.). Consistent meetings to monitor project development and progress the feedback to the project team were shown. The consequences of project evaluations were frequently shared with all project people who influence the schedule and budget (Kuen, Zailani, & Fernando, 2009). Statistical outcomes confirmed that project plan monitoring is not associated with PS. The outcomes do not support previous researcher's judgments (Clarke, 1999; Kerzner, 1998) which expose that promise to initial project planning, execution, and control

over the project powerfully affect the success of a project.

A learning by Prabhakar (2008) and Gould and Joyce (2003) told that C&F was one of the factor foremost to PS. Similarly Papke-Shields, Beise, and Quan (2010) also famous that the likelihood of attaining PS looked to be improved among other factors, by continually monitoring the evolution of the project. According to their study, monitoring and controlling was related to the management of project scope, cost, time, quality, HR, in agreement, risk, and communication. Hwang and Lim (2013) also recognized that monitoring and evaluating, quality performance, budget performance, and schedule performance could guide PS. Ika (2012) approved a regression investigation that showed that there was an empirically positive and significant association between monitoring and control and PS. Therefore, Ika (2012) ranks monitoring and evaluation highly as one of the key CSFs.

H4: Controlling and feedback significantly influences Project Success.

2.2.5 Accountability

ACC is reform to enhance the chances of PS. ACC of a project manager is reflected in the reporting relationship whereby stakeholders demand "reasons of conduct" from the project manager (Roberts & Scapens, 1985), Therefore, ACC arrangements dictate the availability of information and how reporting happens (Bovens, 2007) and guides behavior of managers (Tetlock, 1985). In project-based organizations, the organization's ACC arrangements dictate when and what is reported (J Rodney Turner, 2004). These arrangements have a direct impact on the information use and availability within the project management practices, and the individual project execution strategies, and therefore can impact the style of use of information within projects.

ACC arrangements are categorized into two types: process ACC vs outcome ACC. Tetlock, Vieider, Patil, and Grant (2013) define these two types in more detail. (a) Outcome accountability: Under these systems, employees are evaluated on their ability to obtain bottom-line results (e.g., profits in business; other bottom-line indicators in other pursuits), but are not evaluated on the processes, procedures or means they used to obtain these bottom-line results. (b) Process accountability: Under these systems, employees are evaluated on the processes, procedures or means they used to obtain bottom-line results (e.g. adopting best practices), but are not evaluated on whether they actually achieve the bottom-line results. The accountability arrangements have the potential to act as effective vehicles for learning from projects due to their inherent characteristics including monitoring, feedback, rewards and punishment, and behavior correction based on these rewards or punishments (Becker, Klein, & Wetzels, 2012; Bovens, 2007; Laughlin, 2000).This study applies process ACC.

Pakistan is placed among the greatest corrupt countries in the world. By the view of Corruption Perception Index 2018 showed by Transparency International (2018), Pakistan is placed 117 out of 180 states with a mark of 33, where 100 indicates the smallest corrupt. Another pointer associated to corruption, called "Dealing with Construction Permits" from the World Bank, presented parallel results. Pakistan is placed 166 with a score of 53.99 (where 100 is the top mark). Corruption in Pakistan is surrounded in the structure to such a level that an unprincipled manner by government directors is not stated by most witnesses (F. Khan, 2016). Similarly, some current occurrences in Pakistan and inquiry pointed out by the National Accountability Bureau (NAB) released many mega-corruption disgraces in public infrastructure projects. This controlled to a countrywide alertness movement against corruption made by the Government of Pakistan (Khadim & Jaffar, 2021).

H5: Accountability significantly influences Project Success (Baron, Kenny, & psychology, 1986).

H6: Mediating effect of accountability between IVs and Project Success.

2.2.6 Project Success

PS can be controlled in forms of management and technical desires. Davis (2017) found noteworthy variances in views of project success among project core team, senior management, and project beneficiary stakeholder people, emphasizing the necessity for an extra involved approach based on teamwork among the stakeholders participating in

influential a project's failure or success. The Success Criteria (SC) and CSFs are broadly known as two essential modules of PS in common. The SC are utilized to assess PS and to offer either standards or principles for refereeing PS (Alashwal, Fareed, & Al-Obaidi, 2017) , whilst the CSFs may donate to attaining project success in a diversity of ways (Ika, 2009; Lim & Mohamed, 1999; Müller & Jugdev, 2012; John Rodney Turner, 2009).

The stress located on the key project criteria, like time, cost, safety, performance, or quality, can reason project SC to fluctuate (Lamprou & Vagiona, 2022). Though numerous lessons can be established in the research on SC, (Castro, Bahli, Farias Filho, & Barcaui, 2019) said that there is still a gap in how to gauge PS for some proposed gauges have either not been verified in trustworthy empirical research or have been tried in a particular sector or industry but not in a broad sense. Nelson (2008) favors that the appraisal of PS should contain particular criteria linking to the process (time, product, cost) and the outcome (use, value, learning) of a project. Chan and Chan (2004) suggest a framework for the calculation of construction project's success which contains of the succeeding simple criteria: time, value and profit, cost, environmental performance, health and safety, quality, user expectation, functionality, and satisfaction, and participant's satisfaction.

John Rodney Turner (2009) depicts the focused list of SC, resulting from prior work of Müller and Turner (2006), as follows: supplier pleasure, end-user pleasure, other stakeholder's pleasure, team pleasure, meeting user desires, concert in terms of time, cost, quality, the project accomplishes purpose, customer pleasure, and reoccurring business. Jeffrey K Pinto and Slevin (1988) existing an accurate and complete model of project success estimation that divides the SC into two parts: the project (time, performance, cost), and the buyer (use, effectiveness, satisfaction). So this study derived criteria of PS of Jeffrey K Pinto and Slevin (1988).

Holistically, PS is defined by understanding business scripts and making the services or products (Cooke-Davies, 2002) getting the planned drives (Jugdev & Müller, 2005). Furthermore, the PM success recommends the success of the actions throughout the project lifecycle (PLC) (Jugdev & Müller, 2005; Silva, Warnakulasuriya, & Arachchige, 2016). Beside the above said PS and projects management success (PMS) criteria. Müller and Turner (2007) lectured additional trials, like, execution of the results to customer's request, by reaching this the clients view project fruitful.

PS is the dependent variable in study of (Jeffrey Keith Pinto, 1986). A number of factors have been anticipated as funders to PS. Badewi (2016) suggested a blend of benefits RM and PM pays to PS. Chih and Zwikael (2015) qualified PS to organizational performance. Customer satisfaction has also appeared from the continuing research in PS as an amount of PS (Urbański, Haque, & Oino, 2019). Researchers defined PS along several dimensions. Projects deliver products and services, so it is not surprising that a PS measurement is the delivery of the products or services promised by the projects (Varajão, Dominguez, Ribeiro, & Paiva, 2014).

2.3 Pakistan

Concerning Pakistani situations and conditions in opinion, the position of project based organizations cannot be ignored. Stimulatingly, HRM roles in the evolving economy of Pakistan drive back to the early sixties when the government focused on the formal development. Numerous difficulties have been confronted by the country through this development and consequently the pace of upgrading as regards the development of successful governments has been confidently sluggish (Hashim, 2010). There are numerous issues that Pakistan's construction industry experiences, one of the most considerable ones is delays in finishing the project. The common of the disappointments in the construction project are due to time overrun (Qazi et al., 2021).Therefore, Conceptual framework displays in Figure 1.

Research Model and Hypotheses

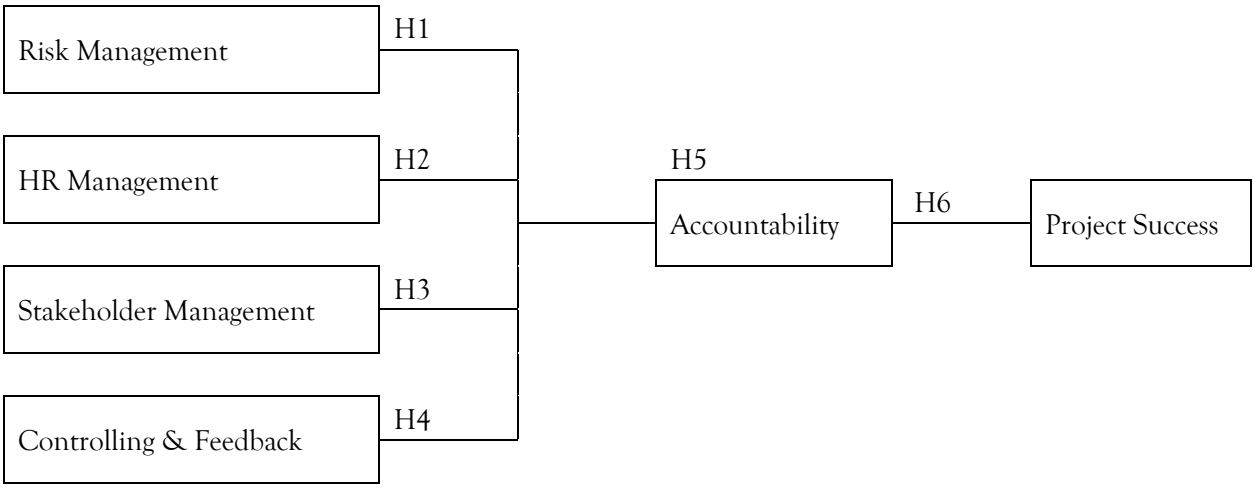


Figure 1. Conceptual Framewrok

This research model offers a novel method by unifying CSFs drawn from prior lessons while encircling both external and internal dimensions of PM practices. It unambiguously statements the multifaceted landscape of MCPs in Pakistan, which need a comprehensive considerate of various interconnected factors. The model not only forms on recognized research but also assimilates a broad variety of origins, ranging from behavioral to contingency-based, strategic to operational. This unified method is accurately explained in the introduction section, which places the basis for the novel contribution of the investigation by synthesizing these different perspectives into a unified framework.

What sets this model apart is its emphasis on integrating strategic, tactical, behavioral, and contingency components, each playing a critical role in the successful execution of MCPs. The strategic level confirms arrangement with long-term aims and stakeholder hopes, while the tactical dimension emphases on the practical execution of project procedures. The behavioral feature books for the human forces at work, diagnosing that the achievement of any project is basically dependent on how well communicate, teams collaborate, and succeed interpersonal encounters. The contingency aspect improves tractability, tolerating the project to adjust to unexpected situations, which is a common encounter in large-scale building projects. This universal recipe for PM not only increases decision-making methods but also warrants that both operational and structural components are effectively lectured.

A important feature of this model is its capability to facilitate operational and structural processes inside MCPs. Structurally, the model offers a blueprint for how diverse project modules should be prearranged, certifying that each characteristic of the PM cycle (from planning and resource distribution to control and execution) is accurately planned and executed. Operationally, it directs the day-to-day administration of the project, concentrating on the practical presentation of techniques, tools, and performs that are critical for continuing project momentum and warranting timely accomplishment. By integrating both operational and structural, the model deals a comprehensive framework that can be functioned to MCPs with varying external pressures and complex demands.

Dominant to the success of model is the character of ACC, which roles as a mediator. ACC confirms that tasks are visibly apportioned, and teams or individuals are believed liable for their influences to the project's success. More than impartial a tool for applying correction, ACC serves as the catalyst

that generates synergy amongst the several PM dimensions. By promoting transparency and clear, ACC aids to integrate CSFs like SM, RM, and HRM. These are critical pillars in any project, and when well integrated, they effort together to improve project consequences. ACC not only certifies that these pillars utility in coherence but also magnifies their risk mitigation, leading to better coordination, collective control, and workforce placement.

The integration of C&F supplementary strengthens the model by offering continuing monitoring and real-time feedback devices that aid support project performance with predictive success criteria. C&F actions as a changing and firming agent, supporting the integration between RM, SM, and HRM by confirming that fluctuation from the project plan are acknowledged and talked promptly. This feedback round is necessary in large construction projects, where complexity and the scale can frequently lead to unforeseen problems. By keeping continuous oversight and giving sensible feedback, C&F confirms that the project halts on course, both operationally and strategically. It also enables remedial actions where essential, guaranteeing that the project not only achieves its instant goals but also supports with the larger success criteria. So C&F acts as a catalyst.

Finally, the model is planned to improve the attainment of PS by unifying key PM practices under a logical framework. By explaining the manifold environment of MCPs, the model confirms that PS is assessed not only by classical metrics such as quality, time, and cost but also by the long-term value generated for stakeholders. This wider definition of success is important in the context of large-scale projects in Pakistan, where external factors like cultural considerations, regulatory challenges, and stakeholder prospects can have a deep influence on project conclusions.

The synergistic character of ACC, united with the integration of SM, RM, HRM, and C&F, offers a well-rounded method that discourses both the soft and hard aspects of PM. This method not only enables well decision-making but also endorses a more responsible and agile project environment, where encounters are managed and anticipated proactively. Concluded this model, the study offers an adaptable and practical framework that can be realistic to MCPs, particularly in the environment of Pakistan, offering valuable understandings into how multifaceted projects can be accomplished more effectively through an integrated and unified approach.

This research is covered in the resource based view (RBV) and behavioral governance theory**.** RBV suggests that corporations attain sustained competitive advantage by developing and deploying internal resources that are valuable, inimitable, rare, and non-substitutable (Barney, 1991; Wernerfelt, 1984). In this context, project capabilities such as SM, RM, HRM, and particularly ACC are conceptualized as intangible strategic resources that effect PS. By positioning ACC as a behavioral resource inserted within project systems, the work extends RBV into the area of government infrastructure project governance. Complementarily, behavioral governance theory (Aguilera et al., 2008; Pepper & Gore, 2015) delivers a lens for considerate how ACC (particularly its process and outcome dimensions) shapes alignment, transparency, and decision-making. Composed, these theories notify a unified PM framework that integrates behavioral and technical governance tools to improve performance in complex, high-risk settings.

Therefore, this research model is novel due to unified method and collection of CSFs from previous researches with a view of internal and external aspects. Detailed in Introduction section for MCPs in Pakistan. This unified recipe also contains strategic, tactic, and behavioral parts of PM practices. It also facilitates structural and operational process. Mediator ACC acts as catalyst resulting creates synergy .It facilitator is to integrate SM, RM and HRM. More, C&F helpful firm integration and align it with criteria of PS. This operationalization framework intentions to provide a strong foundation for enhancing and assessing the success of MCPs in Pakistan by integrating both and intangible (accountability, stakeholder satisfaction) and tangible (cost, quality, time) factors.

3. Research Methodology

3.1 Research Design

The aim of the research design is to provide an adequate framework for the study. A highly

essential decision in the research design procedure is the decision to be taken regarding the research approach since it identifies how adequate data for the research would be acquired; nevertheless, the process of research design includes several interrelated decisions. This is a deductive, primary, empirical, survey based, and exploratory study. The first stage of this research activity involved studying and understanding of the topic area, and to identify scope and objective of research.

3.2 Data Collection Process

This study has employed the survey method by using questionnaires. In order to evaluate and analyze the project success factors in mega construction projects, a large range of professionals involved in the construction industry of Pakistan was targeted. The benefits of using survey research are the data obtained is from real-world observation and large amount of data could be achieved in shorter time at lower cost (Kelley, Clark, Brown, & Sitzia, 2003). In second stage, collected data was analyzed by SPSS and Smart PLS-SEM software. In the light of hypotheses test, discussion and conclusion will be extracted accordingly.

3.3 Research Target Population, Sample, and Sample Size

The target population covers professionals who were randomly selected from the Pakistan Engineering Council (PEC) website. Feedback and interviews were conducted with a number of those personals. Contractors registered from the Pakistan Engineering Council (PEC) were contacted for the research. Pakistan Engineering Council told, all contractors in the lists are distributed into six categories. The category C1 associated the largest contractor with a contract size of no limit. According to PEC statistical data, up to August 2024 number of registered mega construction contractors reached to 391. 250 questionnaires were randomly distributed to the contractors of construction companies who working on various projects in different cities of Pakistan. Out of 140, one hundred and thirty-seven were fit for statistics and 3 were rejected.

3.4 Questionnaire Development

The questionnaire contains two sections. The first section is about general information of company. Respondents rating of factors affecting success were used to get the perspective of construction industry. Pilot survey was also and found fit for survey. The questionnaires were distributed to each of project managers, quality surveyor, architect, consultants, and contractors making a sum of two hundred and fifty. Likerts scale is used for 1 to 5 from strong disagree to strong agree. Table1. Describes organization of questionnaire.

Table 1. Questionnaire Organization

Sr.	Variable Name	Code	Type	Items	Sources
1	Risk Management	RM	Independent	15	(Javani & Rwelamila, 2016)
2	HR Management	HRM	Independent	5	(Jeffrey K Pinto & Slevin, 1992)
3	Stakeholder Management	SM	Independent	16	(Fummey, 2016)
4	Controlling & Feedback	C&F	Independent	5	(Jeffrey K Pinto & Slevin, 1992)
5	Accountability	ACC	Mediator	5	(Jeffrey K Pinto & Slevin, 1992)
6	Project Success	PS	Dependent	13	(Jeffrey K Pinto & Slevin, 1992)

In this study, the method of primary data collection is utilized as the survey is carried out. The sample of respondents have been asked paper and pencil for the responses in a questionnaire.

The random sampling technique would be applied in the research; random sampling is amongst the sampling method in which the sample acquires an equal possibility of being selected. A sample was

chosen on random grounds and is considered as the unprejudiced representation of the entire population.

4. Results and Discussion

4.1 Descriptive Analysis

The data accessible in Table 2. offers a summary of the participant's demographic .

Table 2. General Information

Gender	Male	118	**Job Role**	Architect	13
	Female	19		Building Contractor	18
Age (Years)	Below 29	34		Project Manager	62
	30-39	31		Quality Surveyor	22
	40-49	49		Consultant	22
	Above 50	23	**Experience**	0-5	14
Qualification	HSSC	23		6-10	83
	Bachelor	41		11-15	16
	Master	54		16-20	13
	MS	14		Above 20	11
	Ph.D.	5	**Project**	Civil Work	64
Client	Government	56		Building Work	73
	Estate Developers	23			
	Investors	39			
	Own Occupiers	19			

4.2 Model Measurement

The suggested hypotheses described in the conceptual model have been certified by using (Statistical Social Science System version 22) SPSS v.22 and (Partial Least Square version 4) Smart PLS v.4 were utilized for the work. SEM (Structural Equation Modeling) has been applied to check Smart-PLS reading theories. SEM is a practice applied precisely in the social sciences to execute the data exploration. SEM is usually applied for the resolve of the relationship between various variables. This is normally used in the social sciences subsequently it is used constantly to form numerous variables to construe the results. SEM contributions in measuring the associations between the diverse variables.

4.3 Reliability and Validity Analysis

Table 3. exhibited the Cronbach Alpha assessment of this collected survey. Reliability of whole the variables is deliberate to form their internal consistency via Cronbach's alpha assessment that would be more than 0.7. More, Table 3 displays the Average Value Extracted (AVE), which expressions the validity of the construct and to evaluate the level to which the items are explanation the variables. The excise value for this study is 0.5, the items would have value more than this.

Table 3. Construct reliability and validity

Constructs	Items	Loadings	Cronbach's Alpha	rho-A	Composite Reliability	Average Variance Extracted (AVE)
ACC	ACC1	0.861				
	ACC2	0.864				
	ACC3	0.842				
	ACC4	0.846				
	ACC5	0.817	0.901	0.902	0.926	0.716
C&F	C&F1	0.663				
	C&F2	0.752				
	C&F3	0.646				
	C&F4	0.774				
	C&F5	0.792	0.790	0.845	0.848	0.530
HRM	HRM1	0.881				
	HRM2	0.891				
	HRM3	0.880				
	HRM4	0.881				
	HRM5	0.890	0.930	0.931	0.947	0.782
PS	PS1	0.713				
	PS2	0.693				
	PS3	0.766				
	PS4	0.789				
	PS5	0.750				
	PS6	0.751				
	PS7	0.665				
	PS8	0.757				
	PS9	0.790				
	PS10	0.722				
	PS11	0.802				
	PS12	0.842				
	PS13	0.763	0.937	0.940	0.945	0.571
RM	RM1	0.912				
	RM2	0.860				
	RM3	0.871				
	RM5	0.966				
	RM7	0.969				
	RM8	0.918				
	RM9	0.929				
	RM10	0.936				

	RM11	0.816					
	RM12	0.960					
	RM13	0.929					
	RM14	0.805					
	RM15	0.973	0.983		0.987	0.985	0.833
SM	SM1	0.872					
	SM4	0.870					
	SM5	0.822					
	SM7	0.874					
	SM8	0.904					
	SM9	0.913					
	SM10	0.885					
	SM11	0.924					
	SM12	0.921					
	SM13	0.835					
	SM14	0.811					
	SM15	0.802					
	SM16	0.907	0.974		0.975	0.977	0.762

4.4 Discriminant Validity

Discriminant validity is named as a state when more than two independently various ideas are not correlated/related to each other (Lambert & Larcker, 1987). Discriminant validity is displayed in Table 4. for the Fornell-Larcker criterion. Table 5 also shows Heterotrait–Monotrait Ratio (HTMT).

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Table 4. Fornell-Larcker criterion

	ACC	C&F	HRM	PS	RM	SM
ACC	**0.846**					
C&F	0.115	**0.728**				
HRM	0.466	0.373	**0.885**			
PS	0.564	0.482	0.669	**0.756**		
RM	0.242	0.185	0.177	0.402	**0.913**	
SM	0.463	0.469	0.540	0.750	0.234	**0.873**

Table 5. Heterotrait-monotrait ratio (HTMT) - Matrix

	ACC	C&F	HRM	PS	RM	SM
ACC						
C&F	0.151					
HRM	0.509	0.382				
PS	0.615	0.499	0.710			
RM	0.255	0.238	0.183	0.414		
SM	0.492	0.495	0.567	0.776	0.236	

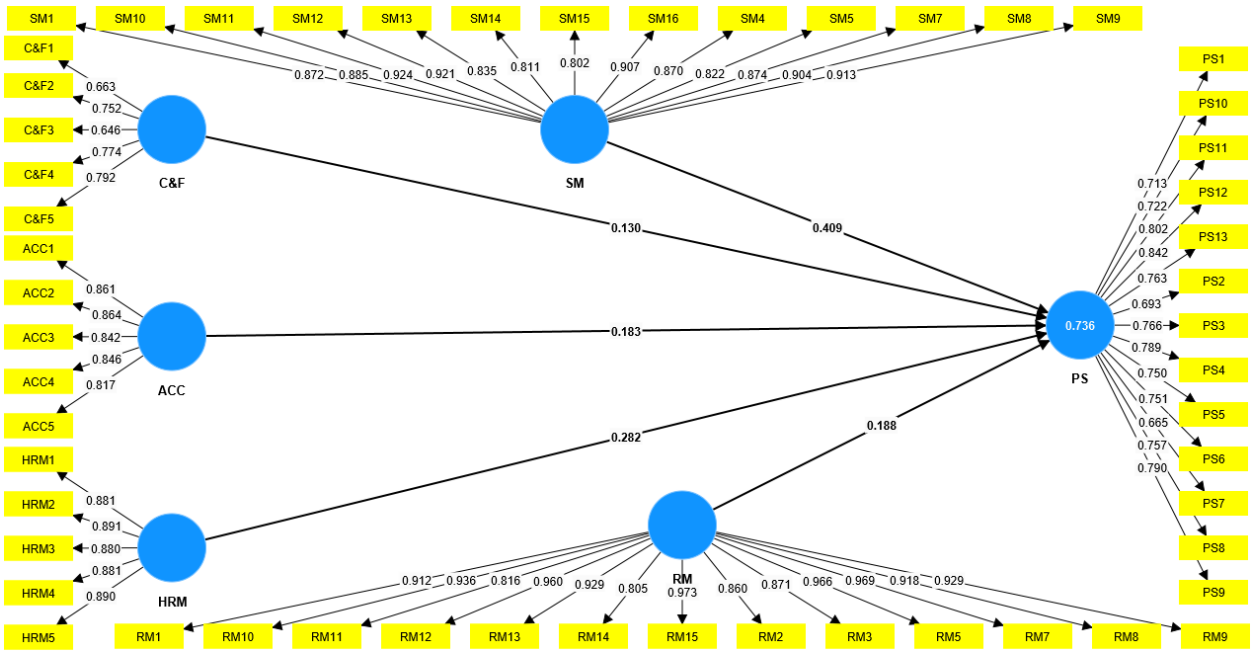


Figure 2.Structural Model for Direct Effects for Full Sample

4.5 Structural Model

For testing hypotheses, this work is two-tail with 95% confidence level. PLS path modeling multiple regression method was chosen to test the main effects along with the mediating effects was tested applying PLS's bootstrapping technique. The path modelling in this research was conducted using PLS bootstrapping techniques, using 137 cases and 5000 bootstrapped samples in checking the hypotheses of this research.

4.6 Analysis of Effects

All hypotheses are assessed by greater value (1.960) of T-Satistics and less value (0.05) of p in Table 6. and Figure 3.

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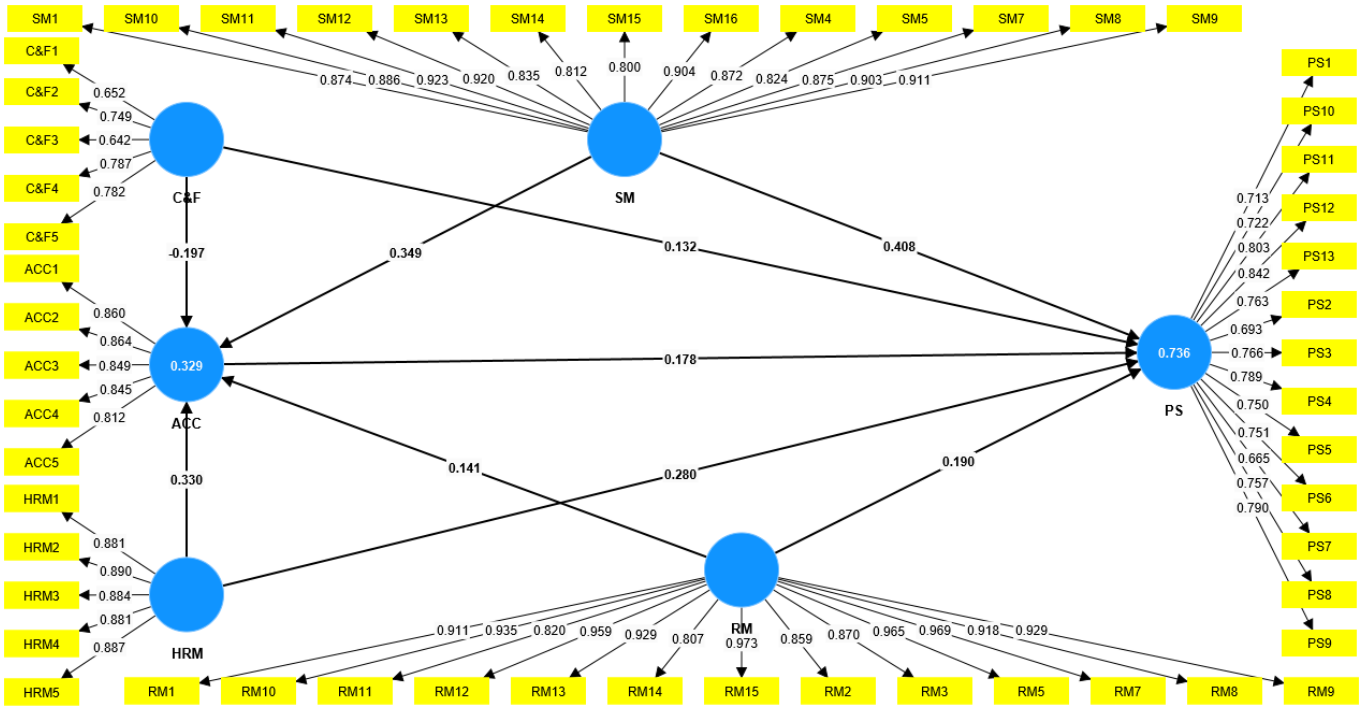


Figure 3.Structural Model for Indirect Effects for Full Sample

Table 6. Results of Direct Effects for Full Sample and Indirect Effects Analysis

Hypothesis	Relationship	Path Coefficient (β)	T statistics	P values	Decision	f-square
H1	SM -> PS	0.409	5.249	0.000	Supported	0.351
H2	HRM -> PS	0.282	3.803	0.000	Supported	0.187
H3	RM -> PS	0.188	3.393	0.001	Supported	0.122
H4	C&F -> PS	0.130	1.979	0.048	Supported	0.046
H5	ACC -> PS	0.183	3.120	0.002	Supported	0.085
H6a	C&F -> ACC -> PS	-0.035	1.722	0.085	Not Supported	
H6b	HRM -> ACC -> PS	0.059	1.986	0.047	Supported	
H6c	RM -> ACC -> PS	0.025	1.241	0.215	Not Supported	
H6d	SM -> ACC -> PS	0.062	1.813	0.070	Not Supported	

Table 7. Coefficient of determination (R2)

	R-square	R-square adjusted
PS	0.736	0.726

5. Discussion

This research contributes to PM theory by reframing ACC as a strategic, intangible capability that mediates the effects of CSFs (SM, RM, HRM, and C & F) on PS in Pakistan's MCPs. Moving beyond classical views of ACC as ordinary compliance, it is theorized here as a behavioral governance mechanism, incorporating both process and result dimensions to stakeholder alignment, improve transparency, and institutional responsiveness. Empirical analysis exposes a significant mediating role of ACC in the HRM and PS link, while its effect in other pathways appears contextually constrained, highlighting the need for strategic deployment. Placed within the under-explored domain of public infrastructure in the Global South, the research proposes a unified project governance methodology that blends behavioral and technical dimensions to tackle inefficiencies, corruption, and environmental volatility. Grounded in local realities yet theoretically scalable, this framework offerings ACC as a lever for project resilience and institutional renewable, thereby broadening the scope of project governance in high-risk, complex settings.

5.1 Theoretical and Practical Implications

Theoretically, this work extends the PM literature by positioning ACC as a dynamic mediating construct that bridges behavioral governance and CSFs within complex project settings. It encounters classical tool- and task-oriented models by introducing a dual-layered ACC framework (process and outcome accountability) as central to improving ethical alignment and project resilience. This redefinition contributes to developing scholarship on capability-based project governance and intangible capabilities, particularly in institutionally weak environment. Practically, the work deals a unified methodology that equips project managers, policymakers, and stakeholders with a behavioral lens to navigate mitigate corruption, uncertainty, and align internal practices with strategic project consequences. By embedding ACC into RM, HRM, and stakeholder processes, the model delivers a scalable approach for improving stakeholder trust, transparency, and long-term performance in MCPs, especially in developing economies where governance gaps persevere.

5.3 Future Research and Limitations

Future research should investigate how the proposed unified methodology can be applied to different sectors beyond construction to determine its wider applicability. Additionally, more studies are needed to explore the role of teaming factors similarly team cohesion, trust, and leadership in PM contexts, especially in high-investment, high-risk environments. Further researches can also attention on making tools for measuring and assessing the success of accountability reorganizations in real-time during the PLC.

Exploratory the effectiveness of ACC mechanisms in alleviating corruption in numerous cultural contexts will add to the growing body of literature on ethics and governance in PM. Moreover, future research could application on the digitization of C&F tools, applying advanced technologies such as blockchain and AI to and reduce corruption and improve transparency in construction projects. The influence of accountability reforms on environmental sustainability in construction is also a serious area for further investigation.

5.4 Conclusion

This research advances the understanding of PS in MCPs by presenting a unified, behaviorally anchored methodology arranged on ACC as a strategic mediating capability. By empirically validating the selective mediating role of ACC, particularly in the HRM and PS pathway, and contextualizing its application within Pakistan's public infrastructure industry, the study bridges a critical gap between ethical governance and technical project controls. The planned

framework not only improves performance through alignment and transparency but also discourses systemic issues like stakeholder fragmentation, corruption, and institutional inefficiency. Finally, this research proposals a theoretically grounded and practically actionable model for changing PM in complex, resource-constrained environments, placing the foundation for more accountable, responsive, and sustainable public infrastructure delivery in the Global South.

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