Article

Project Governance and Project Performance: The Moderating Role of Top Management Support

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Abstract: Project governance (PG) has been primarily acknowledged as critical by researchers and practitioners in regard to successfully executing projects. However, project governance of public projects has received less attention from researchers. Therefore, in this study, we studied the effects of project governance and top management support (TMS) on project performance (PP) and their interactions in public sector projects. Using the lens of resource dependence theory (RDT), we hypothesize whether TMS moderates the impact of PG on PP. A quantitative deductive approach was employed to examine this relationship. Quantitative data were collected using a structured questionnaire from 346 project managers, team members, and stakeholders. Our results indicated that PG and TMS are positively significantly correlated with project performance. Moreover, we found that TMS acts as a quasi-moderator in the relationship between PG and PP.

Keywords: project performance; project governance; top management support; megaprojects; Belt and Road Initiative (BRI); Pakistan

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1. Introduction

Industry growth and globalization have boosted projects in various fields, including IT, construction, the social sector, and security [1]. Worldwide economic statistics show a substantial and growing practice of project management (PM) systems around the world [2,3]. Corporations that apply PM techniques are required to be more adept at responding to risks or opportunities [3]. Around the world, the investment budget for projects has increased dramatically, which now amounts to billions [4]. These growing numbers indicate the growing need for better, quicker, and more profitable projects, and with this escalating requirement, project execution is getting tougher for project managers [3]. It was noted, that public sector projects did not produce the expected results, even after taking into account recognized project management principles [5,6].

Administrations in low and high-revenue countries invest significant capital in public projects each year [7]. However, the public sector project performance (PP) rate stays low [7,8]. “Public sector project management inefficiency is a serious problem for many countries” [2]. This inefficiency is due to ineffective PG, which is also one of the causes of the poor performance of public projects [9–11]. Researchers have also noted that inefficient public project performance is the consequence of structural complexity [12,13].

Public sector project management ought to enhance “the ability to achieve outcomes” [14]. In the face of futile project performance comprising significant delays, cost overruns, and inadequate economic benefits, governments have started implementing governance frameworks to enhance project performance [15]. Much research has been done on these governance frameworks and their influence on PP [16–18].

Pakistan's governmental divisions are also working at various levels to increase the development of project performances through different mechanisms [19,20]. Nevertheless,

significant developments are needed to attain the anticipated performance indicators [19,20]. Pakistan is a strategic partner in China's "Belt and Road Initiative (BRI)," which has accelerated the flow of direct foreign investment in infrastructure projects in Pakistan [21]. These mega-projects are major economic growth and prosperity factors in the country [22]. One of the causes for unsatisfactory public project performance in Pakistan is project governance (PG) [23]. Pakistan's government policies and planning departments face challenges due to complex public sector processes, lack of skills, resources provision, and an inefficient bureaucratic system [21].

Governance defines the objectives of the project, the ways in which the necessary resources are obtained, and the way in which progress is monitored [24–26]. McGrath and Whitty [27] characterized PG as the system or the organizational governance (OG) of a project by which an organization directs, controls, and takes responsibility for a project. Previous studies on PG have concentrated mainly on fixed organizational procedures and arrangements and left the scope of research on micro-level practices that occur at the project level throughout the project lifecycle [24,28,29].

In the resource dependence theory (RDT), the ultimate success of an organization depends mainly on the organization's skill to manage its internal and external resources [30]. In an appropriate project governance mechanism, the project board and the project owner play essential roles in tackling the problem and by giving core resources [31]. Top management support (TMS) strengthens project manager leadership by fulfilling resources needs [32], communications aid, and empowerment, ultimately contributing to PP [33]. TMS also helps project managers in team motivation, resource allocation, and prioritization of tasks, and TMS helps in smoothing the hurdles in innovation projects [34]. Furthermore, senior management plays a critical role in delivering and generating the conditions for PP [35], two of which can be denoted as 'technology-use-mediation' or 'meta-structuring' [36]. Therefore, this study has the following research questions:

1. How is PG associated with public project performance in Pakistan?
2. Does TMS moderate the relationship between PG and PP of public sector projects in Pakistan?

Several researchers and academicians have used the term project governance with various implications and meanings [24,37,38]. In this study, we explore public projects governance, how top management affects project governance and performance, and how governance is conducted in the public sector at the project level. The remainder of the paper is arranged in the following method: the literature review addresses PP, TMS, and PG. The methodology is then delineated, followed by the analysis. The final sections are devoted toward the discussion and conclusions.

2. Literature Review

This study integrates a post-positivist approach within the resource dependence theory framework, presented by Pfeffer and Salancik [39].

2.1. Project Performance

Academics and project management practitioners gradually recognize that the well-known "iron triangle" criteria for success of time, cost, and quality are imperfect [40,41]. Furthermore, Shenhar and Dvir [42] stated that the idea of PP could be more complicated than the two consequences of success and failure. Examples, such as the Hubble Telescope and the Sydney Opera House, reveal that a project may fail in terms of yield efficacy; still, it can be considered a success in investment efficiency [42]. Achieving desired results within quality, budget, and schedule constraints in a project does not always mean a successful investment if it fails to bring the expected outcomes [41].

The concept of "success" and "failure" of a project is debatable in some situations. For instance, canceling a project owing to changing business situations does not essentially mean failure. Due to these reasons, current project success rate estimations may not accurately depict [43]. Performance evaluation in public management has changed from

simple management of inputs and outputs to multiple goals [2], such as “service outputs, satisfaction, outcomes, maintaining trust and legitimacy” [44]. Albert, Balve [45] examined PP in various areas in the literature, and the authors defined that the success criteria were time, performance, and cost, including economic success and quality. Davis [46] created a set of three new dimensions of PP that include stakeholders’ benefits, the customer or specific client concerns, and the standard dimensions of cost, time, and quality.

Several researchers have attempted to better understand the critical success criteria used by different groups [47]; however, this research only covered the public sector to a minimal extent [48]. Likewise, methods for assessing private investment performance have not been applied in the public sector, as public projects produce social benefits that are not traded on the market [2]. Critical aspects of public projects, sustainability, or political influence are generally ignored when public success criteria are mentioned [49]. Whenever the term PP is referred to in this study, it encompasses both the project management success and project success as defined by Cooke-Davies [50].

2.2. PG and PP

PG, described by Project Management Institute (PMI®), is “an oversight function that is aligned with the organization’s governance model and that encompasses the project lifecycle [and provides] a consistent method of controlling the project and ensuring its success by defining and documenting and communicating reliable, repeatable project practices” [51]. Brunet and Aubry [15] advocated that PG supports administrative and managerial activities in public projects and improves stakeholder management. Project governance provides a structured approach to managing project progress, allowing relevant stakeholders to understand and affect the decision-making process throughout the project life cycle [52].

PG is a new paradigm of governance that improves the chances of PP [53]. PG forms a framework of accountability and benefits management that ensures the project realizes the business case [43]. PG offers a formal framework for identifying and resolving risks as they appear during project implementation [54]. PG affects PP directly and moderates the relationship between OG and PP [55].

PG increases project performance by expediting timely and efficient control and risk allocation [56]. PG is a compelling component to benefit and support the requirement for superior management of public sector projects [53]. In contrast, the ineffective governance mechanism has proven to be one of the leading reasons for disasters in many projects [10,57,58]. Lu, Liang [59] studied the relational and the contractual modules of governance and established their positive relationship with the success of the public project. Hence, we have our first hypothesis.

Hypothesis 1 (H1). *PG positively influences PP.*

2.3. TMS and PP

Top management plays a vital role in creating an environment [32] where project managers understand and manage team members’ emotions, motivate them, encourage them, and put forth their utmost efforts to achieve personal and project goals [60,61]. Young and Poon [62] concluded that top management-backed projects are unlikely to fail. Ali, Li [60] claimed that the senior management’s leadership role, interests, comprehensions, and incentives are essential features for a project’s success. A critical aspect of management support is making resources available on time [63]. Several authors have agreed on the need for the TMS as an independent variable for the PP [64,65].

Top management has a critical part in facilitating and supplying the resources necessary for project success [35]. Various researchers have established the significance of TMS for the best success of the information systems project [61,66]; the recommendation in the literature is to secure TMS for the project to ensure a secure path to success [32]. The

literature specifies that there may be differences in the type, level, or nature of support from top management during a project [67].

To implement organizational strategies, projects are used, and TMS is thought to be a crucial element in PP, but the deficiency of TMS can be found in most of the projects [68]. Sometimes high-level planning or assistance is sufficient for the project's success, but TMS is nearly always vital for the project's success [62]. Project results depend on TMS, and it has been repeatedly found that TMS contributes significantly to the project's success [69–71]. Therefore, our second hypothesis is

Hypothesis 2 (H2). *TMS positively influences PP.*

2.4. The Moderating Role of TMS

RDT proposes that organizational success hinges on the organization's capability to manage interdependent internal and external resources [30,39,72] and provides valued understandings of prioritization and allocation, and facilitation of organizational resources [73]. A company's resource base provides critical points of contact when organizations participate in transactions and exchanges and, consequently, plays an imperative role in accomplishing organizational success [39]. The diversity of available resources can be exclusive to an organization and thus can influence its OG structure [74].

In an appropriate project governance mechanism, the project board and the project owner play a major role in resolving the issues by supplying TMS, including core resources [31]. TMS strengthens project managers' leadership by fulfilling resources needs, communications aid, and empowerment, ultimately contributing to project success [33]. TMS helps the project manager in team motivation, resource allocation, and prioritization of tasks; TMS also helps smooth the hurdles in innovation projects [34]. Senior management impacts projects in various ways, appointing project managers, building a culture of cooperation, strategic planning, assigning project resources, and executing project processes [61]. Top management also has an essential job of furnishing the desired resources and supporting the project manager for its success [75]. After this discussion, we hypothesize

Hypothesis 3 (H3). *TMS moderates the relationship between PG and PP, such that TMS strengthens the relationship between PG and PP.*

The preceding discussion leads us to the explanatory paradigm and the hypotheses proposed in the conceptual model (Figure 1). PG and TMS are proposed to have an impact on PP. Moreover, TMS moderates the relationship between PG and PP.

Figure 1. Conceptual model.

3. Research Methodology

To observe the theoretical model, this research uses a post-positivism philosophical lens. Post-positivism “assumes that the world is mainly driven by generalizable (natural) laws, but their application and results are often situational dependent. Postpositivist researchers therefore identify trends; that is, theories which hold in certain situations, but

cannot be generalized” [76]. The post-positivist approach suits well with social science research, and it has appeared as the central philosophy of quantitative research in the social sciences [77]. To collect quantitative data, we used a cross-sectional survey design.

3.1. Sample and Procedure

A time-lagged methodology was used to collect data from multiple sources (team members, project managers, stakeholders) for this study to shun common source bias (CSB) [78]. Pakistan Manpower Institute, Islamabad, imparts training to Pakistan’s public officers employed on public projects. Contact details were obtained from Pakistan Manpower Institute. At T1, we sent emails and letters with 600 printed questionnaires to project teams working on various projects all around the country. We requested them to provide our survey data from project managers, team members, and stakeholders. We guaranteed anonymity and confidentiality. Respondents were requested to rate TMS and PG. We received 481 completed questionnaires. The same 481 respondents were contacted to rate PP at T2. A total of 346 completed questionnaires were returned, with an overall response rate of 69.2%, which is adequate according to Pesämaa, Zwikael [79].

Data were collected in about three months. Harmon’s single factor (HSF) was applied to calculate the common method bias (CMB). According to recent studies [79], it is a pretty effective method. A single factor appears from the factor analysis in the HSF test and, if this single factor shows more than 50% of the variance, this may confirm that there may be a CMB [80]. Our results confirmed that CMB is not a concern for our study. Furthermore, “One form of endogeneity is omitted variable bias. By including relevant (and only relevant) control variables, we come much closer to the truth” [79]. Therefore, we have used gender, age, education, and experience as control variables. These variables are associated with PP, and researchers have suggested these as control variables [81]. We also used *t*-test to check the responses from different groups as recommended by Müller, Turner [82]. The demographics are displayed in Table 1.

Table 1. Demographic data.

Characteristics	Category	Frequency	Cumulative Percent
Gender	Male	278	80.3
	Female	68	100.0
Education	Less than 16 years	8	2.0
	16 years (BS)	234	69.7
	18 years (MS)	78	92.2
	Above 18 years (PhD)	27	100.0
Age Group	25–30	102	29.5
	31–35	52	44.5
	36–40	45	57.5
	41–45	77	79.8
	46–50	25	87.0
	51–55	34	96.8
	56–60	2	97.4
	61 and above	9	100.0
Experience	1–5	148	42.8
	6–10	20	48.6
	11–15	20	54.3
	16–20	42	66.5
	21–25	89	92.2
	26–30	23	98.8
	31 and above	4	100.0

3.2. Measures

This study involved one independent variable, one moderator, and one dependent variable (conceptual model is displayed in Figure 1). The independent variable is PG, TMS

is the moderator, and the dependent variable is PP. We adopted previous studies measures for all variables. Respondents rated the variables on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

The measurement instruments for each of the variables are described below.

3.2.1. Independent Variables

We used Haq, Liang [83] scales to measure PG. This scale has eight items. Scott-Young and Samson [84] scales were used to measure TMS. This scale consists of five items.

3.2.2. Dependent Variables

Aga, Noorderhaven [81] scales were applied to assess PP. The scale constructs are time, budget, client use, satisfaction, effectiveness, and performance. This scale has 13 items. These scales are validated, reliable, and consistent with previous studies [69,85–87].

3.3. Reliability and Validity

Internal consistency is usually used to check the scale reliability. Churchill [88] endorsed the Cronbach's alpha (α) usage for verifying the scale's quality. Anderson and Gerbing [89] suggested that the Cronbach's alpha (α) values should be 0.7 or above. For our study, values of Cronbach's alpha (α) for all constructs are greater than 0.7. To verify the constructs' validity, we first used exploratory factor analysis. Data analysis results confirmed that all of the constructs showed eigenvalues greater than 1, and the factor loadings were higher than 0.5 for all the respective constructs. Furthermore, as indorsed by Hair, Black [90], Bartlett's test of sphericity must be significant ($p < 0.001$), KMO's value must be greater than 0.60, and correlation among variables must be higher than 0.30 (as displayed in Table 2).

Table 2. KMO.

Variable	KMO	Bartlett's Test of Sphericity	DF	p-Value	Cronbach's α
PG	0.81	1057.13	36	0.000	0.83
TMS	0.87	414.72	10	0.000	0.80
PP	0.75	1537.82	78	0.000	0.82

To validate the analytical data, the Anderson and Gerbing [89] CFA model was applied. Indices of model fitness were adequate as advised by Hair, Black [90], RMSEA values should be in the range (0.03–0.08), and CFI and TLI values should be greater than 0.90. Our results exhibit a good fit to the data (as demonstrated in Table 3).

Table 3. Model Fit.

CMIN/Df	TLI	GFI	CFI	RMSEA
1.99	0.95	0.95	0.96	0.04

We also used composite reliability (CR) and average variance extracted (AVE) values to check the discriminatory and convergent validities [91]. The AVE values should be greater than or equal to 0.50 for convergent validity. Simultaneously, CR values should be greater than 0.60 [92]. The square root of the AVE of a construct should exceed the correlation of that construct with other constructs in the model for discriminant validity. Our results proved the convergent and discriminator validities.

4. Data Analysis and Results

AMOS-21 and SPSS-21 software were used for statistical assessment. We have examined hypotheses using correlation and hierarchical regression analysis (HRA). Data were meticulously checked for missing data, normality, outliers, and multi-collinearity before

the statistical assessment. We checked multi-collinearity by variance inflation factor (VIF). All values of VIF for our study were below 3. Likewise, kurtosis and skewness were in the acceptable range.

4.1. Descriptive Statistics and Correlation

All constructs presented stable constancy. The project performance, top management support, and project governance verified a significant correlation among the variables. After analytical calculations, our results (Table 4) were in the acceptable range and were significant statistically ($p < 0.05$).

Table 4. Descriptive statistics.

Variable	Mean	SD	1	2	3	4	5	6	7
Gender	1.19	0.39	1						
Age	3.07	1.86	0.14 **	1					
Education	2.36	0.65	−0.01	0.042	1				
Experience	2.96	1.92	0.06	−0.02	0.011	1			
PG	3.20	0.78	0.08	0.01	0.035	0.02	1		
TMS	3.49	0.90	0.01	0.08	0.055	0.04	0.37 **	1	
PP	3.61	0.69	0.11 *	0.02	0.007	0.06	0.50 **	0.47 **	1

** Correlation is significant at the 0.01 level. * Correlation is significant at the 0.05 level.

4.2. Moderation Analysis

Moderation analysis is used to determine whether the affiliation between PG and PP depends on the TMS. We employed a process developed by Sharma, Richard [93] to know the type of moderator. There are two types of moderator variables in literature: pure and quasi-moderators [94]. The moderation analysis is essentially a multiple regression equation with interactive elements. Hierarchical regression analysis is used to test perceived interaction as proposed by Sharma, Richard [93]. Table 5 displays the results of moderation analysis. The results (Table 5) showed that TMS is significant in model 1 and model 2. The interaction term in model 3 is also significant. This indicates that TMS acts as a quasi-moderator in the relationship between PG and PP.

Table 5. Moderation Analysis.

Model	Variable	Beta	T Values	Sig.	R ²	F Value
1	Age	0.02	0.69	0.488	0.50	68.54
	Gender	0.05	1.32	0.185		
	Education	−0.01	−0.46	0.641		
	Experience	0.04	1.18	0.237		
	PG	0.69	18.17	0.000		
2	Age	−0.00	−0.11	0.908	0.61	88.48
	Gender	0.06	1.76	0.078		
	Education	−0.03	−0.90	0.369		
	Experience	0.03	0.93	0.350		
	PG	0.46	11.25	0.000		
	TMS	0.40	9.70	0.000		
3	Age	−0.00	−0.11	0.907	0.71	76.05
	Gender	0.06	1.74	0.081		
	Education	−0.03	−0.94	0.346		
	Experience	0.02	0.78	0.435		
	PG	0.32	2.27	0.000		
	TMS	0.26	2.10	0.000		
	(PG × TMS)	0.26	2.09	0.000		

5. Discussion

5.1. Hypothesis Testing

H1: “PG positively influences PP” is accepted. The beta value ($\beta = 0.475$) confirms the relationship between PG and PP, which is aligned with previous studies [21,83,95,96].

H2: “TMS positively influences PP” is also accepted. The value of $\beta = 0.401$ validates our hypothesis. The research findings are aligned with the previous studies [62,66,67,97].

H3: “TMS moderates the relationship between PG and PP, such that TMS strengthens the relationship between PG and PP” is accepted. The values in Table 5 confirm that TMS acts as a quasi-moderator. The interaction effect is exhibited in Figure 2.

Figure 2. Moderation Analysis.

5.2. Theoretical Implications

The research aims to observe the effect of PG on PP with the TMS moderating effect. The results show that TMS strengthens the relationship between PG and PP (as illustrated in Figure 2). This study has numerous significant contributions to the current body of knowledge about PG and PP. First, the public projects in developing countries struggle due to limited resources, governance, political influences, and bureaucratic systems. However, very few studies in the literature have engrossed the public sector projects of a developing country, such as Pakistan. As per the authors’ knowledge, this is the first study providing insights into PG and the performance of public projects in the context of TMS. Prior research has investigated the relationship between PG and PP; however, this has not been specific enough to guide practitioners in top management. Moreover, this study was imperative as recent studies have indicated that top management is often loath to take an active role during the project life cycle because they view projects as operational concerns rather than strategic tools [98].

Furthermore, this study delivered context and culture-specific findings of Pakistan’s public sector and addressed the aforementioned contextual and theoretical gap. Secondly, this study’s results will support extending the literature to developing countries by furnishing groundbreaking empirical evidence from Pakistan. As noted earlier, most of the research is conducted in the Western context [99]. Thirdly, we found that PG and TMS interact with each other to engender project performance. Hence, given appropriate TMS, the PG will enhance the chances of PP. These results reveal that although governance of public projects is important, the driver for sustained superior performance is a combination of the PG in the organization and supportive top management. Finally, these findings will contribute to the governance school of PM.

5.3. Practical Implications

The resource dependency theory considers resources as the main drivers of an organization's governance structure. Therefore, this theory of governance can assist in understanding the significance of prioritizing and allocating the various resources that are frequently shared between programs and project portfolios. Moreover, TMS has crucial importance in the public sector. In light of the empirical evidence, the study proposes that the percentage of successful projects can be increased by providing resources on time, making structural changes to facilitate systemic changes, communicating with team members to stimulate and selling projects to all project stakeholders, and sharing knowledge and experience, using the formal system. Different PG and TMS constructs suggest that employees can avoid perceived risks associated with projects and complete the project successfully with authority to resolve project disputes, introduce innovative working methods, while adhering to institutional standards as suggested in earlier studies [100].

Moreover, our study also proposes that top management must deliver training to the project team before the project starts. The team should be aware of the stakeholder management and the final product they require from the employees as endorsed in earlier research [21]. Our findings suggest management must effectively define the project for project teams. Furthermore, this research has the following managerial implications, based on our study findings:

- a. PG should confer substantial consideration to improving the performance of public projects. Generally, the public sector has well-structured governance frameworks [101], assisted by control mechanisms, appropriate approaches, and resources applied during all project phases. However, in light of empirical evidence, the study recommends that top management improve the resource management system and ensure resource availability before and during the project execution as governments contest to fulfil public requirements within limited budgets.
- b. Our findings, aligned with previous research, also suggest that top management should give considerable attention to the project environment, as it is crucial for team performance [35], and should regularly communicate with the project team and other stakeholders [21].
- c. In consultation with project managers for risk management, the top manager (or project sponsor) should estimate the resources necessary for comprehensive project planning during project execution, and judiciously define project milestones.
- d. Public project managers should have the capability to be given resources and authority by top management to make the right decisions. Top management can also positively influence projects by hiring competent project managers [61].
- e. Lastly, top management or its delegated agents should continuously appraise ongoing projects. Public project evaluations should focus on sustainability's triple bottom line concept, which includes economics, environmental, and social impacts [102]. Our findings also endorse earlier research that accountability can be improved by assigning a project sponsor to every project [103].

6. Limitations and Future Research

We recognize some limitations to our study. First, this research was conducted in one country and the public sector setting. Although respondents were from different departments and working on different types of projects. Our findings may have inadequate generalizability. These results may differ in different settings. However, the same model can be used to observe the relationship between PG and PP in different settings, such as non-profit organizations or the private sector. Second, we used a time-lagged methodology and collected data from multiple sources. We also used relevant control variables. However, reverse causality and omitted variables are significant concerns in cross-sectional research design [104]. Lastly, another study limitation is also caused by quantitative research design, limiting its capability to dictum the complex relationships between the concepts under study. Future research can use qualitative designs to further investigate how TMS affects

the relationship between PG and PP and how these two concepts affect the performance of projects.

7. Conclusions

The research's primary objectives were to observe the effects of PG on PP with the TMS moderating effect. The current study took a post-positivist perspective to analyze the relationships among PG, TMS, and PP. Our results have revealed positive relationships among PG, TMS, and PP, with TMS as a quasi-moderator, which has never been investigated before. Our findings align with prior research suggesting that public sector organizations should understand the significance of PG, as it offers decision-making models, project management tools, and a framework for organizational processes, which benefit the successful implementation of portfolios, programs, and projects [100]. Our findings also suggest that PG increases project and organizational performance by risk mitigation and management and improves transparency by regular reporting and clearly defining roles and responsibilities of project managers and sponsors, which are imperative features of public projects. Moreover, TMS can strengthen the PG and PP relationship by effectively providing and managing resources, creating a work environment, sharing organizational objectives, delegating authority, and communicating with stakeholders. The study's contribution to knowledge is in its investigation of top management's role in the governance of projects. It has taken us a step forward in developing project governance and performance knowledge.

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