

# PUBLIC HEALTH PROCUREMENT PROJECT PERFORMANCE- A POLICY FRAMEWORK FOR HEALTH SUPPLY CHAIN MANAGEMENT

*Original Article*

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## ABSTRACT

**Background:** Public procurement in the healthcare sector is a crucial function that ensures efficient resource utilization while maintaining transparency, accountability, and regulatory compliance. Procurement performance is influenced by various factors, including staff competencies, planning efficiency, and governance structures. Understanding the relationship between procurement practices and project outcomes is essential for improving efficiency in public health supply chains. However, the moderating roles of contract governance and trust in procurement performance remain underexplored. This study evaluates the impact of procurement management practices on public procurement project performance, with a focus on staff competency and procurement planning.

**Objective:** To assess the influence of staff competencies and procurement planning on public procurement project performance and examine the moderating effects of trust and contract governance in the healthcare sector of Pakistan.

**Methods:** A cross-sectional survey was conducted among 200 procurement professionals working in the healthcare sector, with 183 valid responses analyzed. The study employed a structured questionnaire using a five-point Likert scale. Data were analyzed using exploratory factor analysis, reliability testing, multiple linear regression, and moderation analysis. Normality, multicollinearity, and homoscedasticity assumptions were tested. The significance of relationships was determined at  $p < 0.05$ .

**Results:** Staff competency demonstrated a significant but partial positive impact on public procurement project performance ( $\beta = 0.186, p = 0.012$ ), while IT competency showed no significant effect ( $\beta = 0.048, p = 0.404$ ). Procurement planning did not significantly influence performance ( $\beta = 0.092, p = 0.231$ ). Trust negatively moderated the relationship between staff competency and procurement performance ( $\beta = -0.2299, p = 0.0001$ ), reducing the effect of competencies as trust increased. Contract governance did not significantly moderate any relationship. The model explained 40.1% of variance in procurement performance ( $R^2 = 0.401$ ).

**Conclusion:** Staff competency plays a crucial role in procurement performance, but excessive reliance on trust can diminish its effectiveness. Procurement planning requires structural improvements, including budgetary consistency and timely allocation, to enhance its impact. Strengthening training programs and implementing e-procurement systems can improve procurement efficiency in the healthcare sector.

**Keywords:** Contract governance, procurement planning, procurement project performance, public health, staff competency, supply chain, trust.

## INTRODUCTION

Public procurement plays a pivotal role in economic development, serving as a critical mechanism for governments to acquire goods and services essential for public welfare. In Pakistan, nearly 20% of the Gross Domestic Product (GDP) is allocated to public procurement projects spanning various sectors, including health, education, infrastructure, and defense. Despite its significance, the procurement process in the public sector is often hindered by inefficiencies, lack of transparency, and the inadequate competency of procurement professionals. The healthcare sector, in particular, demands an effective procurement framework to ensure the timely and cost-effective acquisition of essential medical supplies, equipment, and services. The increasing complexity of public procurement necessitates a structured approach integrating quality management practices, governance mechanisms, and trust-based collaborations to enhance efficiency and accountability (1,2). The existing literature on public procurement has primarily focused on auction theories and procurement regulations, yet empirical studies exploring the impact of procurement practices on project performance remain scarce. While research has acknowledged the importance of procurement planning, competency, and governance, there remains a limited understanding of how these elements interact to shape procurement outcomes, particularly within the healthcare sector. Effective procurement is dependent on multiple factors, including staff competency, planning procedures, and governance mechanisms. However, public procurement officers often lack adequate training, resulting in suboptimal decision-making and inefficient allocation of resources. The World Bank and other international organizations emphasize the need for procurement reforms and capacity-building initiatives to enhance transparency and reduce transaction costs. Despite these recommendations, a practical framework that integrates procurement management practices with governance structures remains underdeveloped, leaving a significant research gap (3,4).

The role of procurement professionals has evolved beyond administrative tasks to encompass strategic decision-making, financial management, and supply chain optimization. In this context, two key dimensions emerge: people-related procurement practices, which focus on staff competency and management capabilities, and process-related procurement practices, which emphasize procurement planning and execution. Procurement officers require multidisciplinary competencies, including technical expertise, regulatory knowledge, and strategic leadership skills. Moreover, governance mechanisms such as contract governance and trust-based relationships are instrumental in mitigating risks, ensuring compliance, and fostering inter-organizational cooperation. While contract governance establishes formal structures to regulate procurement activities, trust serves as a relational governance tool that enhances collaboration and reduces opportunistic behavior. The interplay between these governance mechanisms and procurement practices significantly influences procurement performance, yet empirical validation of these relationships remains limited (5,6). Healthcare procurement presents unique challenges due to regulatory constraints, the necessity for specialized procurement procedures, and the critical need for quality assurance. Centralized and decentralized procurement models each have distinct advantages and limitations, with hybrid approaches being increasingly recommended to balance efficiency and flexibility. The application of e-procurement and digital solutions has further transformed procurement processes, enabling greater transparency and efficiency. However, the extent to which digital innovations contribute to procurement performance, particularly in the public healthcare sector, requires further exploration. Procurement project success is contingent on the alignment of procurement practices with overarching policy objectives, necessitating a comprehensive framework that integrates competency development, governance structures, and technological advancements (7,8).

Given the complexity and multifaceted nature of public procurement, this study aims to investigate the impact of procurement management practices on public procurement project performance, specifically within the healthcare sector in Pakistan. It seeks to examine the role of staff competency and procurement planning in enhancing procurement performance and assess the moderating influence of contract governance and trust in shaping these relationships. By providing empirical insights, the study aims to contribute to the ongoing discourse on procurement efficiency and offer practical recommendations for policymakers and procurement professionals. Ultimately, the research endeavors to establish a robust procurement framework that enhances transparency, accountability, and effectiveness in public sector procurement, ensuring optimal utilization of public resources for improved healthcare outcomes (9,10).

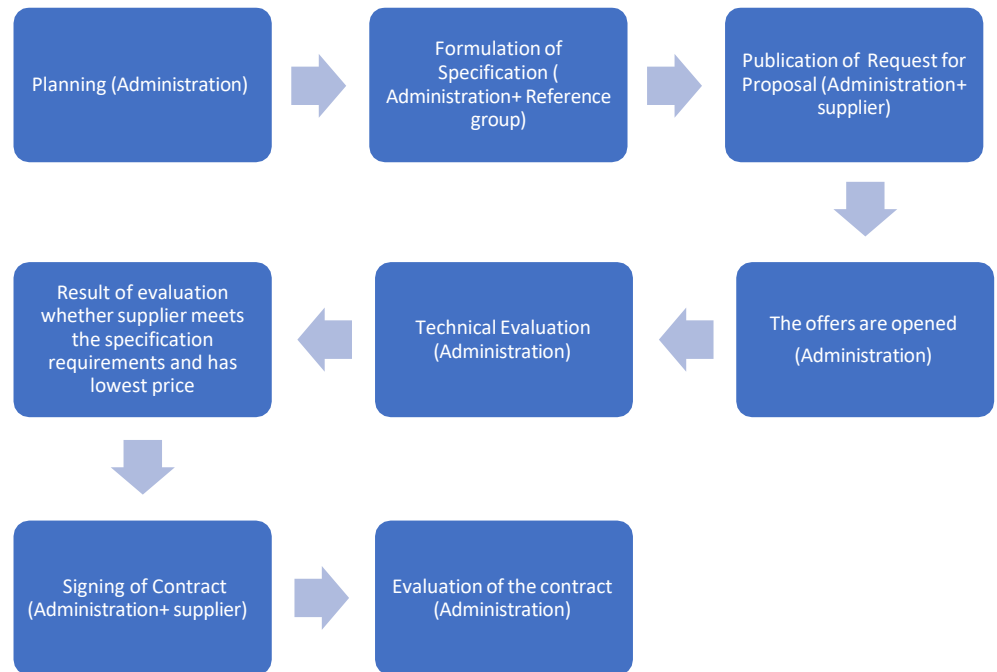


Figure: Procurement Process

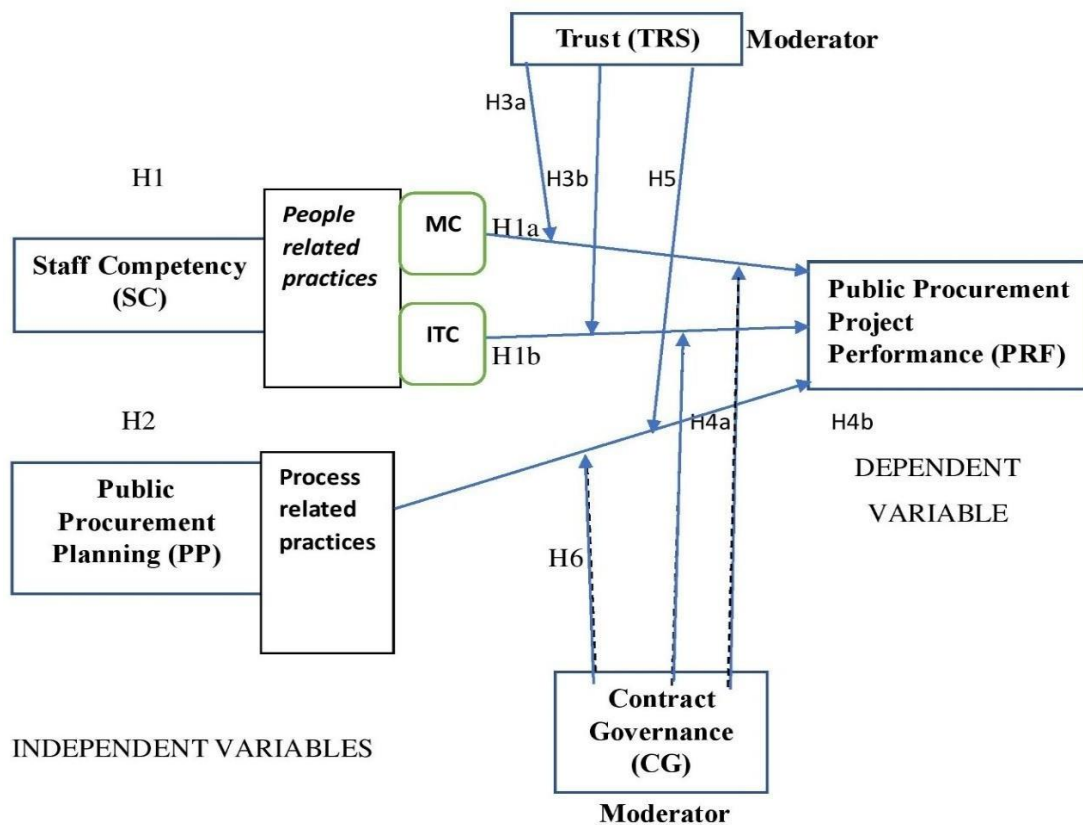
## METHODS

The study employed a quantitative research design to assess the impact of procurement management practices on public procurement project performance within the healthcare sector in Pakistan. A cross-sectional survey approach was adopted to collect data at a single point in time from professionals working in supply chain and procurement management roles across public sector healthcare institutions and pharmaceutical industries engaged in public procurement. The study was designed to test the proposed hypotheses through a deductive approach, aligning with positivist epistemology, which assumes that meaningful reality exists independently and can be objectively measured. The ontological assumption of realism guided the research, positing that procurement processes and performance outcomes exist as objective phenomena that can be empirically assessed (11,12). The target population consisted of procurement and supply chain professionals involved in procurement activities for public healthcare institutions. Respondents were selected from various organizations listed in the Health Information and Service Delivery Unit (HISDU), the Primary and Secondary Healthcare Department (P&SHD) Government of Punjab, and the Pakistan Stock Exchange database. The study focused on professionals from all three management layers—lower, middle, and top management—ensuring that the sample encompassed individuals with direct knowledge and experience in procurement decision-making. Participants were required to have relevant expertise in supply chain and procurement functions, ensuring the reliability of responses. A simple random sampling technique was employed to enhance the generalizability of findings while mitigating selection bias (13,14).

A structured questionnaire was utilized as the primary data collection instrument, consisting of pre-validated scales adopted from previous studies to measure staff competency, public procurement planning, trust, contract governance, and public procurement project performance. The questionnaire comprised 38 items measured on a five-point Likert scale, ranging from “strongly disagree” to “strongly agree,” ensuring standardized responses. Given the constraints posed by the COVID-19 pandemic, data collection was conducted exclusively through digital means, using Google Forms, emails, and WhatsApp to distribute the questionnaire to targeted respondents. A total of 400 questionnaires were disseminated, yielding a response rate of 55%. After removing incomplete, duplicate, and unengaged responses (defined as those with a standard deviation below 0.4), a final dataset of 183 valid responses was retained for analysis (15,16). Pilot testing was conducted prior to the full-scale survey to refine the instrument's validity and clarity. A preliminary sample of 20 responses was gathered from procurement professionals to assess the consistency of survey items. Additional qualitative feedback was sought from two public procurement experts regarding the language, readability, and relevance of the questionnaire. Reliability was evaluated using Cronbach's Alpha, with all variables exceeding the acceptable threshold of 0.70, confirming sufficient internal consistency. No modifications were deemed necessary after the pilot test, and the questionnaire was subsequently administered to the full sample (17,18).

To ensure validity, three forms of validity—content validity, discriminant validity, and convergent validity—were assessed. Harman's single-factor test was conducted to examine common method bias, with exploratory factor analysis confirming that a single factor accounted for only 42.14% of variance, below the 50% threshold, indicating that common method variance was not a significant concern. Additionally, bivariate correlation analysis was performed, confirming that no variables were highly correlated beyond 0.9, further mitigating concerns of bias (19,20). Ethical considerations were strictly adhered to throughout the study. Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. The study was reviewed and approved by an institutional ethical review board, ensuring compliance with ethical research standards. Confidentiality and anonymity of participants were maintained, with no personally identifiable information collected or disclosed (21,22).

Data were analyzed using statistical software, employing descriptive analysis, reliability assessment, and hypothesis testing. The impact of staff competency and procurement planning on procurement performance was evaluated, with contract governance and trust tested as moderating variables. The study aimed to provide empirical insights into procurement management practices within the healthcare sector, contributing to improved governance, efficiency, and accountability in public procurement (23).



**Fig.2. Proposed Research Model**

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## RESULTS

The dataset comprised 183 valid responses after the removal of duplicate and unengaged responses, ensuring data integrity. The data was examined for missing values, and no missing entries were detected. Standard deviation tests were applied to identify unengaged responses, leading to the removal of 36 responses. The final dataset underwent multivariate assumption testing, including normality, linearity, multicollinearity, and homoscedasticity, to validate its suitability for regression analysis. Normality assessment was conducted using skewness and kurtosis statistics, with all values within the acceptable limits of  $\pm 2$  and  $\pm 7$ , respectively. The normal P-P plot of standardized residuals confirmed that the residual distribution closely followed a normal distribution, validating the assumption of normality. Linearity was examined through scatter plots, which demonstrated a strong linear relationship between independent and dependent variables, supporting the assumption of linearity.

Multicollinearity was assessed using the variance inflation factor (VIF), where all values remained below the threshold of 10, indicating no concerns regarding multicollinearity. The highest VIF value was recorded for public procurement planning (2.658), which remained within acceptable limits. Homoscedasticity was confirmed, as the variance of the dependent variable remained consistent across values of the independent variables, indicating that heteroscedasticity was not an issue. Exploratory factor analysis (EFA) was performed, yielding a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.937 and a significant Bartlett's test of sphericity ( $p < 0.001$ ), indicating the appropriateness of factor analysis. Factor loadings above 0.50 were retained, and cross-loading items were eliminated. Principal component analysis (PCA) was employed for factor extraction, confirming that six latent constructs were suitable for further analysis. Staff competency was divided into two sub-constructs: management competency and IT competency, based on factor loadings. Reliability analysis revealed that all retained variables exhibited high internal consistency, with Cronbach's alpha values exceeding 0.70. Convergent validity was confirmed, as all retained variables demonstrated factor loadings above 0.70. Discriminant validity was ensured by examining cross-loadings, and all constructs showed significant correlations while maintaining distinctiveness. Multiple linear regression analysis was conducted to assess the impact of management competency, IT competency, and public procurement planning on public procurement project performance. The model explained 40.1% of the variance in public procurement project performance ( $R^2 = 0.401$ ,  $p < 0.001$ ). Management competency demonstrated a statistically significant positive effect ( $\beta = 0.186$ ,  $p = 0.012$ ), supporting the hypothesis that management competency positively influences public procurement project performance. However, IT competency ( $\beta = 0.048$ ,  $p = 0.404$ ) and public procurement planning ( $\beta = 0.092$ ,  $p = 0.231$ ) did not exhibit statistically significant relationships with public procurement project performance.

Contract governance and trust were tested as moderating variables. Contract governance showed a strong positive effect on public procurement project performance ( $\beta = 0.347$ ,  $p < 0.001$ ), while trust also demonstrated a significant positive impact ( $\beta = 0.268$ ,  $p < 0.001$ ). Trust was found to moderate the relationship between management competency and public procurement project performance negatively ( $\beta = -0.2299$ ,  $p < 0.001$ ), indicating that higher levels of trust weakened this relationship. Similarly, trust negatively moderated the relationship between IT competency and public procurement project performance ( $\beta = -0.2269$ ,  $p = 0.0002$ ), reducing the significance of IT competency as trust levels increased. However, trust did not moderate the relationship between public procurement planning and public procurement project performance ( $p = 0.1457$ ), and neither contract governance nor trust demonstrated a moderating effect on public procurement planning. The findings highlight the critical role of management competency and contract governance in enhancing procurement project performance. While trust was expected to enhance procurement efficiency, its negative moderating effect on competency-based relationships suggests that excessive reliance on trust may reduce the significance of structured competencies in procurement management. The lack of a significant relationship between IT competency and procurement performance may indicate a gap in the effective utilization of digital tools in public sector procurement. Similarly, the non-significant impact of public procurement planning on procurement performance suggests that planning mechanisms require further refinement to yield measurable improvements in project outcomes.

Subgroup analysis revealed that variations in organization size, procurement value, and management level influenced public procurement project performance. The regression analysis demonstrated that small-sized organizations had a statistically significant negative impact on procurement performance ( $\beta = -0.5943$ ,  $p = 0.029$ ), suggesting that larger organizations may have better procurement governance structures. IT competency exhibited a significant negative effect ( $\beta = -0.2347$ ,  $p = 0.003$ ), indicating that reliance on IT systems without appropriate managerial oversight may not enhance procurement efficiency. Public procurement planning, contract governance, and trust did not show statistically significant variations across different subgroups. These findings suggest that procurement outcomes are more influenced by organizational structure and size rather than procurement planning processes alone. Further investigation is needed to explore whether specific procurement mechanisms, such as centralized vs. decentralized procurement models, contribute to performance differentials across varying organization sizes and management structures.

**Table Skewness and Kurtosis**

	<b>N</b>	<b>MEAN</b>	<b>STD. DEVIATION</b>	<b>SKEWNESS</b>	<b>KURTOSIS</b>		
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SC1	183	3.716	1.0515	-.670	.180	-.124	.357
SC2	183	3.738	1.0255	-.536	.180	-.201	.357
SC3	183	3.596	1.0946	-.616	.180	.027	.357
CC1	183	3.481	1.1036	-.546	.180	-.260	.357
CC2	183	3.596	1.0273	-.507	.180	-.232	.357
CC3	183	3.508	.9600	-.306	.180	-.443	.357
ITC1	183	3.546	1.0622	-.484	.180	-.391	.357
ITC2	183	3.481	1.1036	-.348	.180	-.706	.357
ITC3	183	3.503	1.0684	-.321	.180	-.604	.357
PP1	183	3.798	.9362	-.641	.180	.165	.357
PP2	183	3.628	1.0963	-.585	.180	-.420	.357
PP3	183	3.721	1.0608	-.679	.180	-.162	.357
PP4	183	3.585	1.0012	-.385	.180	-.269	.357
PP5	183	3.525	1.0885	-.438	.180	-.568	.357
PP6	183	3.825	1.0174	-.750	.180	.128	.357
PP7	183	3.705	1.0111	-.444	.180	-.475	.357
CG1	183	4.191	.8396	-1.219	.180	2.183	.357
CG2	183	4.186	.8947	-1.166	.180	1.252	.357
CG3	183	4.153	.8948	-.958	.180	.467	.357
CG4	183	3.978	.9662	-.658	.180	-.365	.357
CG5	183	3.623	1.0403	-.466	.180	-.408	.357
CG6	183	3.869	.8735	-.592	.180	.056	.357
CG7	183	4.055	.8753	-.753	.180	-.019	.357
TRS1	183	3.885	.9036	-.675	.180	.239	.357
TRS2	183	3.798	.9303	-.414	.180	-.461	.357
TRS3	183	3.765	.9519	-.711	.180	.299	.357
TRS4	183	3.803	1.0134	-.685	.180	.058	.357
TRS5	183	3.814	.9712	-.892	.180	.759	.357
TRS6	183	3.803	1.0714	-.711	.180	-.122	.357



PRF1	183	3.727	1.1053	-.527	.180	-.693	.357
PRF2	183	3.705	1.0057	-.461	.180	-.436	.357
PRF3	183	3.814	1.0046	-.539	.180	-.471	.357
PRF4	183	3.869	.9802	-.689	.180	-.155	.357
PRF5	183	3.995	.8612	-.981	.180	1.414	.357
PRF6	183	3.913	.8852	-.548	.180	-.113	.357
PRF7	183	4.049	.9215	-1.035	.180	1.024	.357
PRF8	183	3.798	.9479	-.720	.180	.364	.357
PRF9	183	3.956	1.0368	-.839	.180	-.061	.357
<b>VALID N</b>	<b>183</b>						

**(LISTWISE)**

**Table Multicollinearity-Collinearity statistics**

VARIABLES	VIF
MC	2.588
ITC	2.016
PP	2.658
CG	1.842
<b>TRS</b>	<b>1.773</b>

Dependent Variable: PRF

**Table KMO and Bartlett's**

KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY.		.937
	Approx. Chi-Square	4756.527
Bartlett's Test of Sphericity	df	703
	<b>SIG.</b>	<b>.000</b>

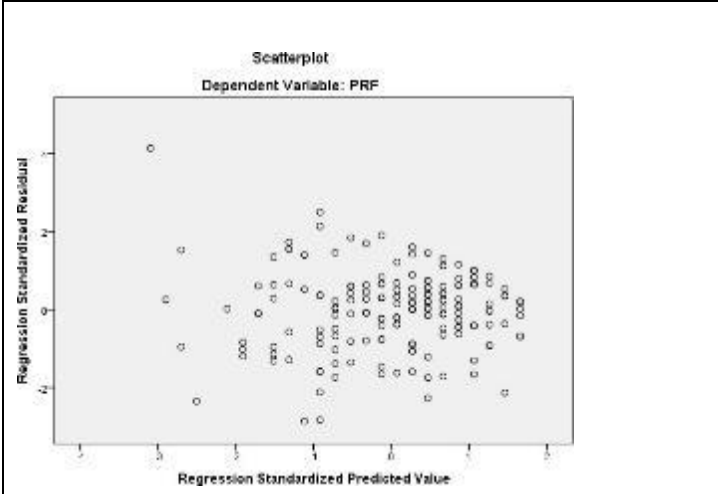


Figure 4a: PRF vs: MC

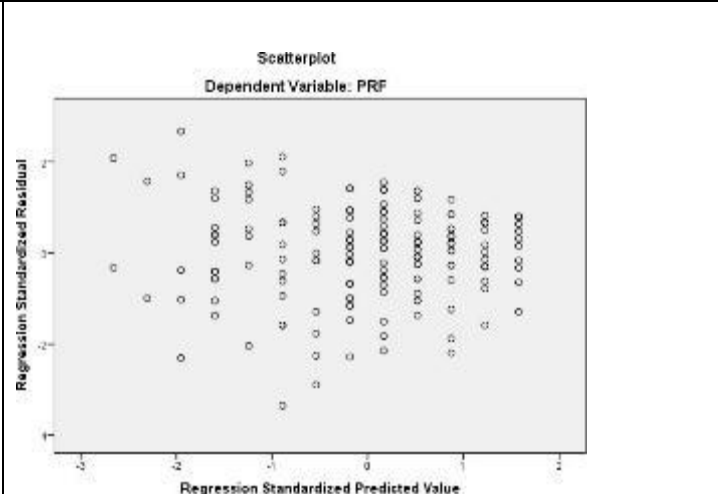


Figure 4b: PRF vs: ITC

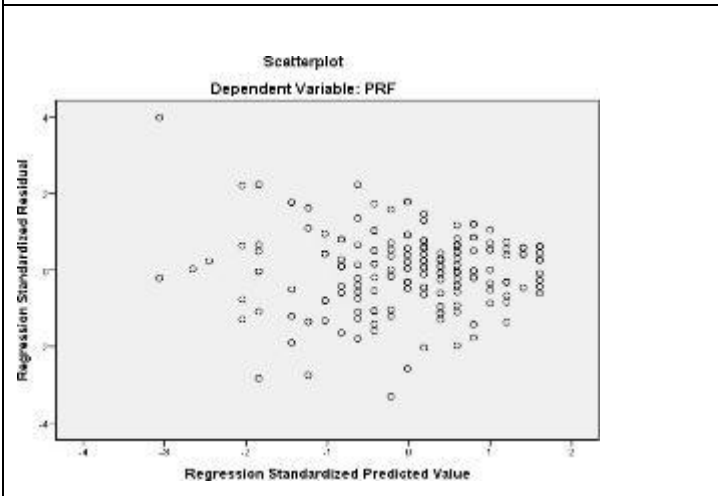


Figure 4c: PRF vs: PP

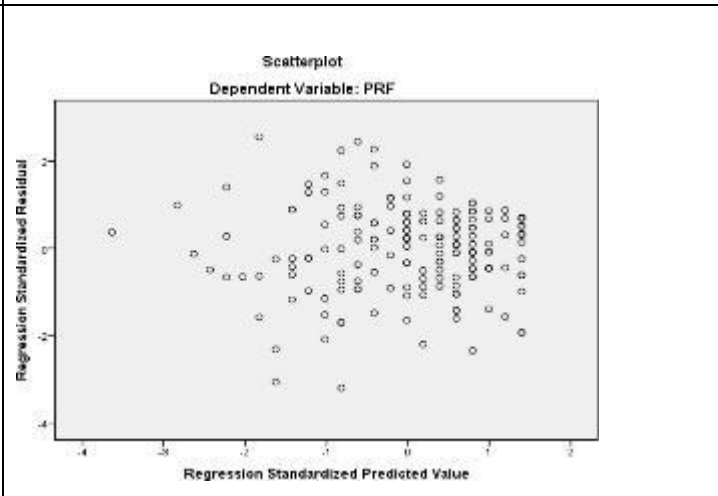


Figure 4d: PRF vs: CG

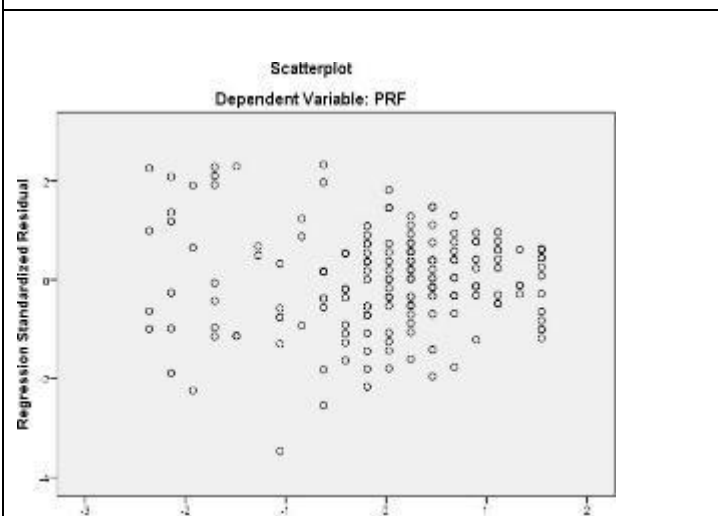


Figure 4e: PRF vs: TRS

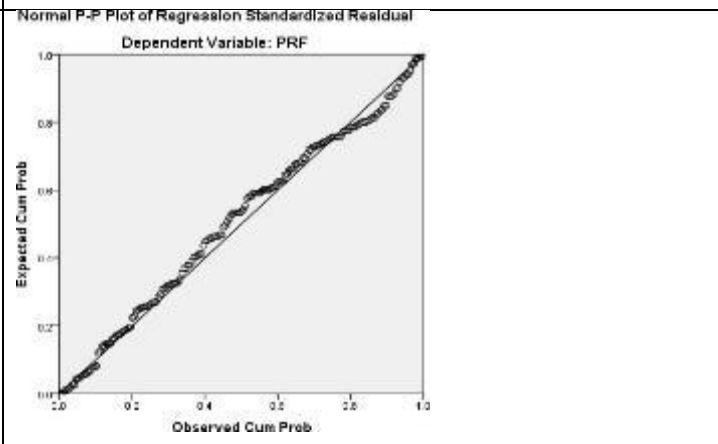
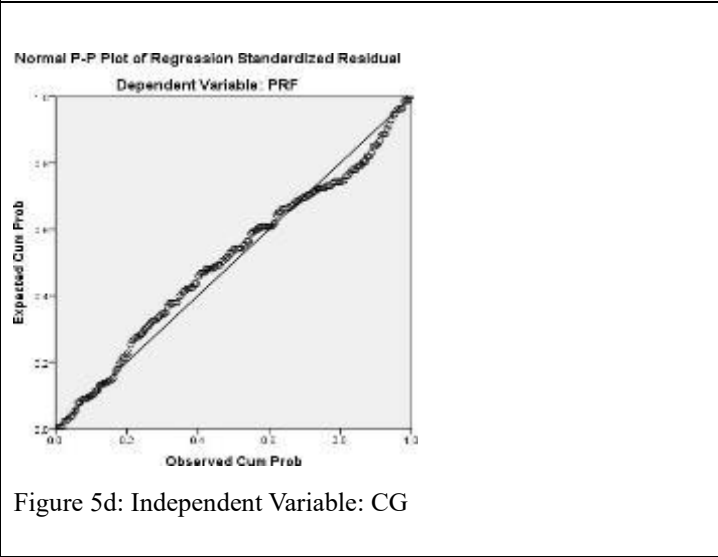
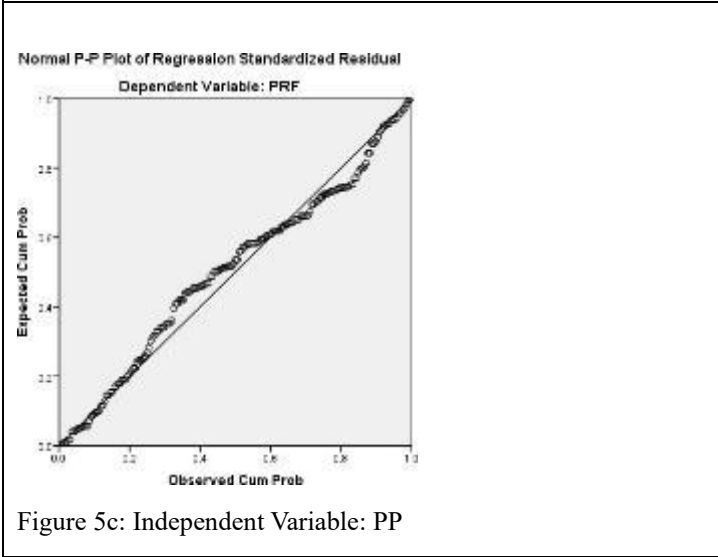
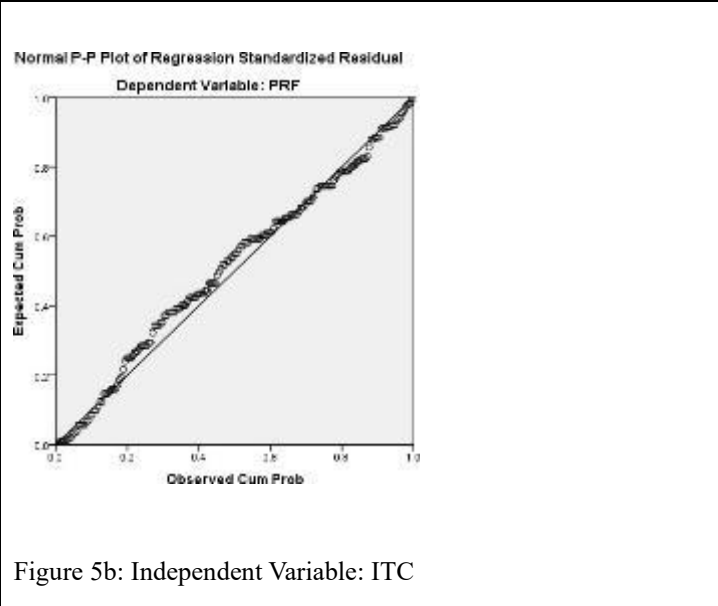
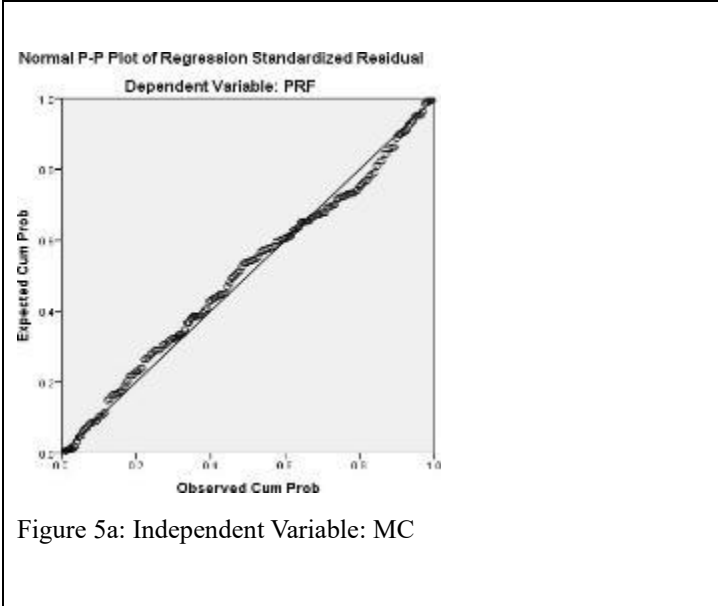


Figure 5e: Independent Variable: TRS





**Table Rotated component matrix**

VARIABLES	PRF	CG	PP	MC	TRS	ITC
SC1				.686		
SC2				.664		
SC3				.662		
CC1				.714		
CC2				.656		
CC3				.611		
ITC1						.726

ITC2		.739
ITC3		.510
PP1	.690	
PP2	.626	
PP3	.786	
PP4	.736	
PP5	.565	
PP6	.599	
PP7		
CG1	.669	
CG2	.685	
CG3	.771	
CG4	.691	
CG5	.569	
CG6	.664	
CG7	.714	
TRS1		.772
TRS2		.783
TRS3		.777
TRS4		.582
TRS5		.610
TRS6		.504
PRF1	.693	
PRF2	.809	
PRF3	.789	
PRF4	.802	
PRF5	.675	
PRF6	.700	
PRF7	.572	
PRF8	.611	
<b>PRF9</b>	<b>.575</b>	

**Table Measurement Model validation-reliability and convergent validity**

<b>INDICATOR (CRONBACH'S A)</b>	<b>FACTOR LOADINGS</b>
<b>(MC) (<math>\alpha=0.89</math>)</b>	
Our procurement personnel have excellent skills to plan, organize, and lead projects. (Procurement Projects).	.686
Our procurement personnel have excellent skills to execute work in a team.	.664
Our procurement personnel's have excellent skills to accomplish multiple assignments.	.662
Our procurement personnel have excellent skills in analyzing our supply chain processes.	.714
Our procurement personnel have excellent skills in managing information flows.	.656
Our procurement personnel possess a strong cross-functional awareness.	.611
<b>(ITC) (<math>\alpha=0.70</math>)</b>	
Our procurement personnel are very skilled in working with databases.	.726
Our procurement personnel are very skilled in working with large amounts of data.	.739
Our procurement personnel are very skilled in working with decision-support systems.	.510
<b>(PP)(<math>\alpha=0.88</math>)</b>	
Our organization follow consolidation of the procurement plan.	.690
Our organization is continuously reviewing and updating the procurement plan.	.626
Our organization make priority as per procurement requirements.	.786
Our organization determines total time lines of the procurement process.	.736
Our organization Planned expenditure is realistic and achievable.	.565
Our organization determine the method of procurement to use.	.599
<b>(CG) (<math>\alpha=0.89</math>)</b>	
Our relationship with the other participants is governed primarily by written contracts.	.669
The contract has detailed the obligations and rights of every participant.	.685
The contract has a clear statement of the time, place, and the way of project fulfillment.	.771
The contract has specified the major principles or guidelines for handling unanticipated contingencies as they arise.	.691
The contract has provided alternative solutions for responding to various contingencies that are likely to arise.	.569
We have a clear expression of the default definitions and formulas.	.664
The contract has a detailed description of the conditions under which termination may occur.	.714
<b>T (TRS) (<math>\alpha=0.87</math>)</b>	
We are certain that the other participants (contractor) have the ability to perform their tasks.	.772
We are certain that the other participants (contractor) have the ability to meet technical and management requirements.	.783
We believe that the procurement project participants trust each other's working ability.	.777

We believe that all participants involved in the procurement project will comply with the contract.	.582
We believe that each other's commitment is reliable.	.610
We believe that the procurement project participants are upright and honest.	.504
<b>(PRF) (<math>\alpha=0.93</math>)</b>	
The procurement project was completed on time or earlier.	.693
The procurement project was completed within or below budget.	.809
The Procurement project achieved overall efficiency measures.	.789
The procurement project was completed on predefined quality. (Value for money).	.802
The project contributed to organization's direct performance.	.675
The procurement project results, or deliverables, were in line with the client/procuring agency objectives	.700
The procurement project was completed in compliance to guidelines/regulations	.572
I think procurement project completed with minimization of wastage of resources.	.611
<b>I THINK PROCUREMENT PROJECT COMPLETED IN A TRANSPARENT MANNER.</b>	<b>.575</b>

**Table Correlations:**

	MC	ITC	PP	CG	TRS	PRF
MC ITC	.659**					
PP CG	.727**	.649**				
TRS PRF	.529**	.424**	.541**			
	.487**	.321**	.525**	.606**		
	.603**	.470**	.588**	.656**	.620**	

**\*\* . CORRELATION IS SIGNIFICANT AT THE 0.01 LEVEL (2-TAILED).**

**Table Overall model is significant at ( $p<0.01$ )**

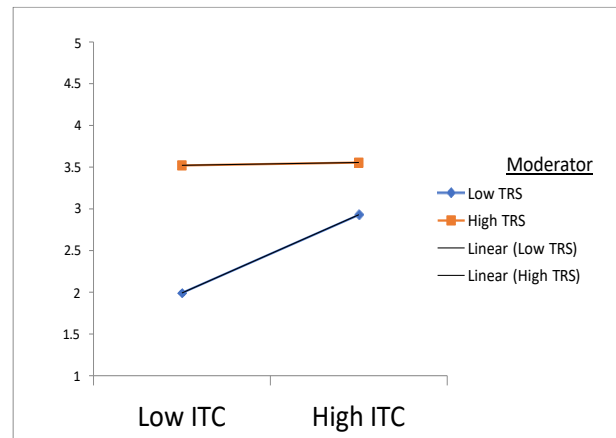
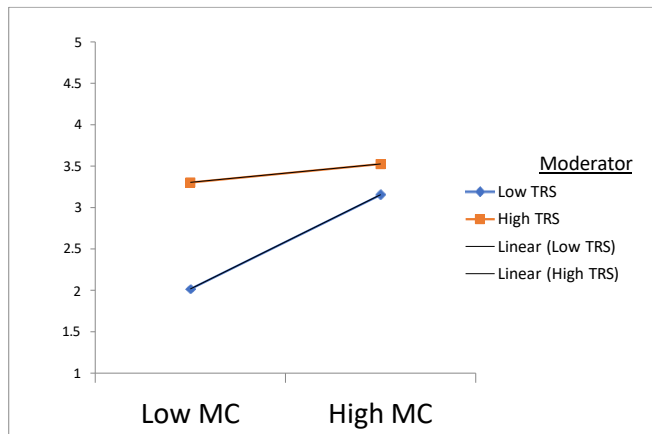
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE	R SQUARE CHANGE	F CHANGE	DF1
1	.641A	.411	.401	.60523	.411	41.672	3

**Table ANOVA**

MODEL		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
1	Regression	63.921	5	12.784	47.696	.000b
	Residual	47.442	177	.268		
	Total	111.363	182			

a. Dependent Variable: PRF

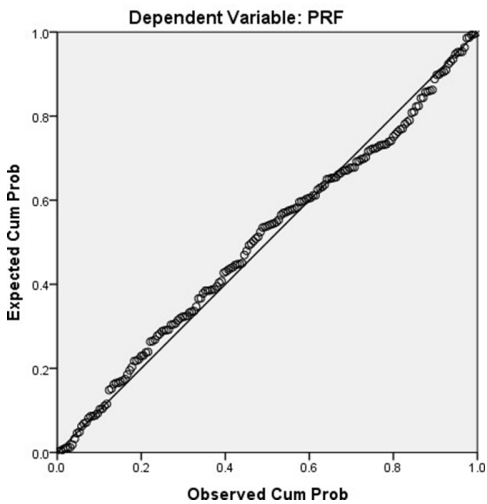
**B. PREDICTORS: (CONSTANT), TRS, ITC, CG, MC, PP**



Moderating effect of Trust between MC and PRF.

Moderating effect of Trust between ITC and PRF.

**Normal P-P Plot of Regression Standardized Residual**



**DISCUSSION**

The findings of this study contribute to the existing literature by providing empirical evidence on the relationship between staff competency, procurement planning, and public procurement project performance in the healthcare sector. The results highlight the significance of management competency as a key determinant of procurement efficiency, emphasizing the need for continuous training and knowledge-sharing to enhance procurement professionals' skills. This aligns with the broader understanding that procurement success is highly dependent on individual capabilities, particularly in complex sectors such as healthcare. The unexpected insignificance of IT competency in relation to procurement performance suggests that while technological proficiency is essential, its impact may be moderated by reliance on support staff for IT-related tasks. This finding underscores the necessity of integrating IT training with practical procurement responsibilities to ensure its effective utilization (24,25). Public procurement planning was anticipated to positively influence procurement performance, yet the empirical results did not support this assumption. This outcome suggests that structural and regulatory constraints, such as delayed budgetary allocations and shifting procurement priorities, limit the effectiveness of procurement planning in achieving optimal outcomes. In resource-constrained environments, procurement planning alone may not be sufficient to enhance efficiency without timely financial disbursement and strategic alignment with institutional needs. The disruption caused by unforeseen events, such as the COVID-19 pandemic, further illustrates the necessity of adaptable procurement strategies that can

accommodate changing circumstances. The contextual limitations of public sector procurement frameworks require reconsideration of planning methodologies to align with operational realities (26,27).

The moderating role of trust in procurement performance demonstrated a complex dynamic. While trust is widely regarded as an enabler of collaboration and process efficiency, its interaction with management competency and IT competency negatively impacted procurement performance. This paradox suggests that excessive reliance on trust may reduce the need for strict procedural adherence and accountability, leading to inefficiencies. Organizations with high levels of trust may assume compliance and commitment, potentially overlooking necessary oversight mechanisms that ensure procurement integrity. This finding challenges the assumption that trust uniformly enhances procurement outcomes, suggesting instead that an optimal balance between trust and formal governance structures is necessary to achieve efficiency (28,29). Contract governance, although theoretically expected to moderate procurement performance, did not yield statistically significant results. This may be attributed to the distinct separation of contract management and procurement functions within public sector institutions. In many organizations, procurement officers oversee the initial acquisition process, while contract enforcement and compliance fall under legal or administrative departments. The disconnection between procurement execution and contract oversight could explain the lack of a direct influence of contract governance on procurement performance. This finding suggests that procurement performance assessments should consider interdepartmental coordination, ensuring that procurement and contract management functions are integrated for improved outcomes (30-32).

From a managerial perspective, the findings indicate that public sector healthcare institutions and pharmaceutical firms should prioritize enhancing staff competencies through targeted training programs. Developing procurement professionals' expertise in technical specifications, evaluation criteria, and regulatory compliance can strengthen procurement efficiency. Strategic procurement should extend beyond basic compliance to incorporate value-based decision-making throughout the procurement cycle, from demand assessment to contract execution. Procurement organizations should invest in professional development initiatives to build a knowledgeable workforce, which in turn enhances procurement performance and strengthens overall healthcare service delivery (33-35). The results also highlight the importance of aligning procurement planning with financial planning mechanisms to prevent inefficiencies caused by budgetary constraints. The requirement for early procurement planning in public sector entities often conflicts with delayed financial approvals, leading to frequent modifications in procurement plans. Addressing these systemic issues requires a more flexible approach to procurement planning that accommodates financial uncertainties while maintaining procedural integrity. The adoption of digital procurement platforms can enhance transparency, facilitate better planning, and improve procurement efficiency by providing real-time insights into procurement processes (36-38).

The study identifies professionalism, capacity-building, and procurement workforce development as key elements for procurement success. Procurement teams should be formed with a mix of technical and behavioral competencies, ensuring effective project management and stakeholder engagement. The integration of socio-political skills into procurement training can enhance negotiation capabilities and interdepartmental coordination, which are critical for navigating complex procurement environments. Inter-organizational collaboration should be supported through structured training initiatives that foster adaptability and responsiveness among procurement professionals (39). The study also underscores the role of e-procurement in improving purchasing performance. Digital procurement systems can reduce transaction costs, improve compliance, and facilitate data-driven decision-making. The implementation of centralized procurement databases can enhance supplier evaluation, enabling procurement officers to make informed choices based on historical performance metrics. The digitalization of procurement processes can mitigate the inefficiencies associated with manual procedures, improving procurement cycle times and reducing the risk of financial lapses due to procedural delays (40).

Several limitations should be acknowledged in interpreting these findings. The study was conducted within a single country and industry, which may limit the generalizability of the results. Future research could expand the scope to include multiple sectors and geographic regions to validate the findings in diverse procurement environments. The cross-sectional nature of the study restricts the ability to capture long-term procurement performance trends, suggesting that longitudinal research designs would provide a more comprehensive understanding of procurement dynamics over time. Additionally, the reliance on self-reported data introduces the potential for response bias, which could be mitigated by incorporating multiple data sources, including procurement performance records and independent evaluations (12,38). Further research should explore the role of contract governance in procurement performance by examining interdepartmental interactions and the enforcement of procurement contracts. Investigating the impact of e-procurement adoption on procurement efficiency and supplier performance could provide valuable insights into the digital transformation of public procurement. The influence of procurement planning on performance outcomes should be analyzed in relation to financial management practices to identify strategies for aligning procurement objectives with fiscal constraints. A deeper exploration of procurement governance



mechanisms, including accountability frameworks and risk management strategies, would contribute to a more holistic understanding of procurement performance determinants (9,18,21).

Overall, this study provides valuable insights into the complex interplay between procurement competencies, planning, governance, and trust in public sector procurement. The findings suggest that procurement success is contingent on a combination of professional expertise, regulatory alignment, and adaptive procurement strategies. Strengthening procurement workforce capabilities, integrating digital procurement solutions, and fostering interdepartmental collaboration are essential steps toward enhancing public procurement performance in the healthcare sector.

## CONCLUSION

This study provides a comprehensive analysis of the impact of procurement management practices on public procurement project performance, emphasizing the critical role of staff competency and procurement planning. The findings highlight that management competency significantly contributes to procurement efficiency, underscoring the necessity of continuous professional development in public procurement. However, procurement planning did not exhibit a direct influence on performance, suggesting that regulatory and financial constraints may limit its effectiveness in real-world applications. The moderating role of trust revealed a complex dynamic, where excessive reliance on trust may reduce procedural oversight, while contract governance did not significantly alter procurement outcomes, possibly due to its separation from procurement execution. These insights underscore the importance of structured training programs, strategic procurement planning, and digital procurement solutions to enhance transparency and efficiency. By addressing procurement challenges through competency development, technological integration, and interdepartmental coordination, public procurement systems can achieve greater accountability, efficiency, and value for money, particularly in the healthcare sector

Author	Contribution
Sidra Batool*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Faiza Batool	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Rasain Latif	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
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