

RESEARCH ARTICLE

WWW.PEGEGOG.NET

Public Financial Management and Institutional Capacity in Driving Sustainable Public Procurement: Evidence from Punjab Pakistan

Muhammad Nadeem Anjum^{*1}, Muhammad Kashif Khan²

¹PhD Scholar, The School of Business & Management Sciences, Minhaj University, Lahore, Punjab, Pakistan.

²Professor & HoD, The School of Business & Management Sciences, Minhaj University Lahore, Punjab, Pakistan.

Corresponding author: mr_nadem@hotmail.com, 2022f-mulphd-mgt-011@mul.edu.pk

ABSTRACT

Purpose: This study examines the mediating role of institutional capacity in strengthening sustainable public procurement (SPP), with a particular focus on the integration of public financial management (PFM) practices. The research emphasizes how institutional development and financial reforms jointly contribute to long-term procurement effectiveness in the healthcare sector of Punjab, Pakistan.

Design/methodology/approach: A quantitative approach was employed using a structured survey administered to procurement professionals. Data were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS to test the hypothesized relationships between PFM, institutional capacity, and SPP outcomes.

Findings: Results indicate that robust PFM practices including credible budgeting, risk management, and expenditure control are critical determinants of sustainable procurement. Institutional capacity demonstrates a significant mediating effect, enhancing transparency, accountability, and compliance while also exerting a direct positive influence on procurement sustainability. Evidence further highlights the complementary role of digital innovation in amplifying these effects.

Originality/value: This study contributes to the literature on financial governance and procurement sustainability by providing one of the first empirical validations from Pakistan. It underscores the strategic importance of harmonizing PFM systems with institutional strengthening and digital transformation to achieve procurement objectives aligned with environmental, social, and economic sustainability goals.

Practical implications: The findings provide actionable insights for policymakers, emphasizing the prioritization of budget credibility, capacity-building, and digital reforms to ensure transparent, efficient, and sustainable procurement systems.

Keywords: Institutional Capacity, Public Procurement, Public Financial Management, Procurement Efficiency, Healthcare Governance, ESG Principles

1. INTRODUCTION

Sustainable Public Procurement (SPP) is proving to be among the decisive drivers for increasing the efficiency, transparency, and development effectiveness of public spending. Introducing sustainability values to procurement procedures, governments can minimize material and energy losses, lower the life cycle cost of products and services, and improve overall environmental and social goals (Boyчук, 2024; Mendoza, Hernandez, & Franco, 2019). Since public procurement contributes to almost 12–15% of overall GDP, its potential to shape economic arrangements and foster sustainable development is virtually unlimited (OECD, 2021). Procurement is no longer viewed as a secondary transactional operation but as a policy tool of strategy for the achievement of sustainability goals (Pessoa et al., 2024; Stokke et al., 2023).

In comparison to traditional procurement patterns, SPP integrates long-term thinking like the sustainability of supply chains, inclusivity, and preservation of the environment. Its introduction has been prompted by changing regulatory environments, increased stakeholder demands, and international sustainability needs (Lagstrom & Osterberg, 2024). The shift to SPP is not, however, without challenges. Although policy changes have been central in integrating sustainable procurement approaches into organizations, they create operational intricacies that demand cross-sector cooperation among purchasing managers, suppliers, and policy makers. Such complexity management involves striking a balance between sustainability goals and risks like the "local trap" in which over-reliance on localized procurement may end up limiting even higher levels of sustainability achievement (Molin et al., 2024).

The COVID-19 pandemic also emphasized the strategic significance of SPP by revealing weaknesses in global supply chains and showcasing the strength of systems that had factored sustainability considerations into procurement practices (Benchekrout et al., 2024). At the same time, Information and Communication Technologies such as IFMIS have proven to be critical in facilitating public financial management, effectiveness, and transparency in procurement (Alo, Nwobu, & Adegboye, 2022; Andhov et al., 2020). These developments emphasize the complementarity between public financial management, institutional design, and sustainable procurement outcomes. Effective institutional capacity is central to promoting PFM reforms well conceived but better executed, towards strategic oversight, coordination, and accountability at government levels.

In spite of such progress, institutional weaknesses continue to be a great challenge in developing nations. Weak institutional enforcement, decentralized governance systems, corruption threats, and low absorptive capacity are usual spoilers of procurement reform efforts (Mota, 2024; Postula, 2022). Evidence from comparisons is that there are significant regional discrepancies in procurement performance: Asian nations have tended to achieve better performance than their African counterparts, both because they have more effective financial administration systems and lower agency costs (Amankwa & Tetteh, 2022; Thomann, Marconi, & Zhelyazkova, 2024). However, recurring agency issues and government inefficiencies remain to stand in the way of sustaining procurement systems globally (Kryshtanovych et al., 2022; Bawole & Adjei-Bamfo, 2020).

Public financial management reforms such as medium-term expenditure frameworks and outcome-budgeting have been transformative in developing fiscal discipline and linking expenditures with development priorities (Musiega, Tsofa, & Barasa, 2024; Jena, 2024; Lina,

2024). However, the reforms are fruitful only in the case of support by long-term administrative leadership, political commitment, and institutional capacity (Hepworth, 2023). Institutional capacity thus acts as a middleman between PFM reforms and sustainability outcome results by enabling accountability, organizational innovation, absorptive learning, and adaptive governance (Román et al., 2021; Guo & Madni, 2024).

Recent studies affirm that institutional capacity is a leading driver of sustainability transformations as a mediator between production systems, governance quality, and ultimate development objectives (Benchebkroun et al., 2024; Serniak, 2021). Not only technical capability, but also how individuals perceive institutional capacity, influences trust, participation, and acceptability of governance institutions (Wang & Zhang, 2024; Wijekoon et al., 2023). That such has the dual role of both financial conservatism and social acceptability is what makes the imperative of creating adaptive institutions that can meet the socio-economic and environmental imperatives of the 21st century all the more significant (Postula, 2022).

These are especially acute problems in Pakistan. It is accountable for about 20% of GDP and almost 90% of the development expenditures of public sector units, which is among the biggest channels of public expenditure (PIDE, 2024). The Punjab Public Procurement Regulatory Authority (PPRA) has made remarkable changes in recent history, such as the upcoming revamp of the Public Procurement Rules 2025 and e-procurement system training of over 10,000 professionals (Profit, 2025; ProPakistani, 2025). Despite such initiatives, lax enforcement, corruption risk, and poor institutional capacity still stand to impede the successful implementation of reforms into sustainable procurement outcomes (Zaidi, Ashraf, & Shah, 2023; Anjum & Khan, 2024).

To our knowledge, this study is one of the initial empirical investigations of the mediating role of institutional capacity between PFM reforms and sustainable procurement outcomes in the subnational context of Punjab, Pakistan. While previous work has taken rules of procurement, technology adoption, and efficiency into account, very little consideration has been given to the significance of institutional capacity in defining how fiscal governance reforms are connected to transitions towards sustainability. Bridging this knowledge gap is crucial since institutions are not only guardians of fiscal discipline but also engines of inclusive development and democratic citizenship.

This study hence adds to current knowledge through an investigation of how institutional capacity facilitates the mediation between the relationship between PFM reforms and sustainable procurement outcomes in Punjab, Pakistan. Through the incorporation of theoretical views of fiscal governance, institutional theory, and transitions to sustainability, this study is both practically and theoretically contributory. The study provides empirical evidence of institutional reforms that build up PFM systems to support sustainable procurement, thus contributing new evidence for policymakers, practitioners, and development partners looking to make progress in sustainability in public sector governance.

2. LITERATURE REVIEW

Sustainable public procurement (SPP) has shifted from a theoretical discourse to an established practice within the public sector. It is explicitly recognized in the United Nations Sustainable Development Goal (SDG) 12 on sustainable consumption and production,

highlighting its global importance. Empirical studies confirm the twin benefits of SPP in enhancing environmental performance and promoting inclusive economic development (Kitzmueller & Shimshack, 2021; Gelderman et al., 2023). Governments are particularly well-positioned to embed sustainability into procurement by issuing strategic policies and regulatory tools that systematically introduce environmental, social, and economic considerations into procurement decision-making (Munuhwa, 2023).

Effective implementation of SPP requires not only regulatory design but also institutional capacity. Institutions must empower staff with the necessary skills through targeted training and continuous professional development to ensure that sustainability values are integrated into daily procurement practices (Cabral & de Castro, 2020). The interdisciplinary nature of SPP is increasingly emphasized. Socio-legal perspectives highlight the importance of continuous stakeholder dialogue and participatory policymaking to ensure that rules remain adaptive and reflective of evolving sustainability demands (Lagstrom & Osterberg, 2024). This reflects a broader debate between top-down regulatory enforcement and more deliberative, participatory approaches to policymaking.

SPP implementation is influenced by multiple drivers, both external and internal. Externally, regulatory frameworks and market forces act as powerful motivators of change, while internally, organizational reforms and collaborative stakeholder relationships align procurement activities with sustainability objectives (Santos et al., 2024). Stakeholder involvement emerges as a critical bridging mechanism, linking sustainability aspirations with the operational realities of procurement. Nevertheless, significant barriers persist. In many low- and middle-income countries, weak institutional frameworks, insufficient research capacity, and the absence of digital procurement tools constrain the effectiveness of SPP, thereby limiting transparency, efficiency, and sustainability gains (Carrasco et al., 2024).

The economic rationale for SPP is also increasingly evident. By facilitating the procurement of sustainable goods and services, governments can reduce environmental degradation and energy consumption, while simultaneously lowering maintenance and repeat purchase costs, thereby creating long-term economic value (Mendoza Jimenez, Hernandez Lopez, & Franco Escobar, 2019). However, the literature highlights a tension: while developed countries have institutionalized SPP through robust regulatory dialogues and technological investments, developing contexts struggle with resource and capacity constraints. This divergence reflects an unresolved debate on whether sustainability in procurement is primarily a function of policy ambition or institutional and technological readiness.

Policy and regulatory frameworks provide the structural backbone of SPP. The Swedish experience illustrates how sustained regulatory dialogues can embed sustainability principles within procurement practice, ensuring adaptive policy evolution through iterative processes (Lagstrom & Osterberg, 2024). Similarly, interdisciplinary approaches underscore the importance of stakeholder engagement in refining policy instruments and ensuring responsiveness to evolving sustainability requirements (Lagstrom & Osterberg, 2024; Lichere, 2023). Yet the literature also warns against over-simplification and policy reversal, where early linkages between procurement and sustainability are diluted over time, undermining initial ambitions (Lagstrom & Osterberg, 2024).

Sector-specific applications of SPP reveal both opportunities and complexities. For example, in sustainable food procurement, public sector demand for local and organic produce demonstrates commitment to environmental and social objectives. However, assumptions equating local sourcing with sustainability risk falling into the “local trap,” whereby “local” is uncritically equated with “sustainable,” potentially overlooking broader environmental or economic trade-offs (Molin et al., 2024; Nadeem et al., 2017). Such findings reflect an ongoing scholarly debate over the extent to which sectoral priorities should be standardized or contextualized within broader sustainability frameworks.

Scientometric analyses further demonstrate the growing maturity of SPP scholarship. The literature is dominated by contributions from Europe and North America, which serve as leading sources of empirical evidence, policy experimentation, and best practices (Kamara & Turay, 2024; Okonta, 2023). This evidence base has shaped policymaking globally and facilitated knowledge exchange between practitioners, scholars, and policymakers. Nonetheless, the predominance of Global North perspectives raises concerns about the limited representation of developing country contexts, where institutional, financial, and technological conditions differ substantially. This signals a gap in understanding how SPP can be effectively localized in low- and middle-income countries with constrained institutional capacity.

In sum, the literature positions SPP as a transformative instrument for advancing environmental, social, and economic goals. Yet it also underscores enduring debates over the drivers and barriers to implementation, the balance between regulatory frameworks and participatory governance, and the contrasting experiences of developed and developing countries. While the evidence base is growing, limited empirical inquiry has addressed how institutional and financial mechanisms interact to enable or constrain SPP in developing contexts. This gap provides a strong justification for examining how public financial management and institutional capacity collectively shape sustainable procurement outcomes in Punjab, Pakistan.

Financial Management in Public Procurement

Effective financial management is integral to public procurement, encompassing strategic budgeting, costing analysis, risk assessment, and robust financial reporting systems. Poor financial governance has repeatedly been identified as a source of wastage, cost overruns, and delays that undermine sustainable procurement objectives (Lindholm & Levy, 2022). In response, advanced financial instruments such as lifecycle costing (LCC) and total cost of ownership (TCO) are increasingly recognized as cornerstones of fiscal responsibility, procurement efficiency, and sustainability. Likewise, public-private partnerships (PPPs) have emerged as critical funding mechanisms to leverage resources for long-term procurement efficiency and sustainable service delivery. These developments highlight how financial governance and procurement instruments must be integrated if SPP ambitions are to be realized, particularly in resource-constrained settings.

The linkage between public financial management (PFM) and procurement is therefore central to addressing inefficiencies and mitigating agency-type problems embedded within bureaucratic hierarchies. Governance activities anchored in sound financial management provide the evidence base for more transparent decision-making and improved service delivery outcomes (Bawole & Adjei-Bamfo, 2020; Beauchamp & Hicks, 2004). Yet, existing literature suggests that PFM should not be understood merely as an administrative or technical issue but rather as a broader managerial reform initiative. Contemporary PFM reforms increasingly emphasize accountability,

transparency, and results-based planning as the foundations for optimizing resource allocation and achieving developmental goals (Musiega, Tsofa, & Barasa, 2024; Hepworth, 2023). This conceptual shift positions PFM as both an enabler of efficiency and a mechanism for embedding sustainability in procurement practices. However, while developed economies have demonstrated success in linking PFM with sustainable procurement through robust institutional frameworks, the translation of such reforms into developing contexts remains fragmented and underexplored.

Incorporating social and environmental considerations into procurement has been institutionalized through instruments such as the European Union directives, which illustrate how procurement can advance both societal and global sustainability objectives (Brzezinski, 2024; Ssenyonjo et al., 2022). The synchronization of procurement functions with PFM systems is increasingly viewed as necessary to maximize accountability and sustainability performance. From a theoretical perspective, transaction cost economics (TCE) provides a useful lens for understanding governance complexity in procurement, highlighting that efficiency depends on aligning governance mechanisms with transaction-specific requirements (Rokkan & Haugland, 2021). Empirical studies also suggest that organizational performance is positively related to advanced procurement competencies, underscoring the need for professionalization and technical expertise in procurement management. Yet, these insights often originate from developed contexts, leaving a gap in evidence regarding how such frameworks function in fragile institutional settings like Pakistan.

A growing body of work also highlights the tension between short-term cost savings and long-term value creation. Traditional value-for-money (VfM) approaches tend to emphasize immediate fiscal efficiency, often at the expense of social and environmental dimensions of procurement (Lagstrom & Osterberg, 2024; Brammer & Walker, 2007). By contrast, more integrated evaluation models—particularly within PPP frameworks—seek to assess multidimensional value outcomes (Zhao et al., 2023). This debate is particularly acute in developing nations, where procurement expenditures often account for 50–70% of government budgets (Waci et al., 2024). The challenge remains whether developing country governments can reconcile fiscal prudence with sustainability ambitions in procurement, or whether financial constraints will continue to reinforce narrow cost-centric procurement approaches.

Financial barriers further restrict participation in innovative procurement practices. Small and medium-sized enterprises (SMEs), for instance, face disproportionate challenges in tendering processes due to the high transaction costs of compliance with sustainability requirements. Scholars argue that targeted financial incentives and institutional capacity-building initiatives are necessary to mitigate these disadvantages and foster greater SME participation in SPP (Schafer et al., 2023; Zhang et al., 2022). The limited uptake of such measures in developing contexts underscores a significant policy and research gap: while SMEs are crucial for inclusive economic development, their integration into sustainable procurement frameworks remains underdeveloped.

Technological innovation represents another critical dimension of PFM-procurement integration. E-government procurement (e-GP) systems have been celebrated as transformative, enhancing transparency, reducing corruption, and generating substantial cost savings. Bosio et al. (2023) report that e-GP systems in low- and lower-middle-income countries yield savings ranging from \$637.9 million to \$5.2 billion, with benefit–cost ratios of between 8 and 58. These findings highlight the fiscal effectiveness and return on investment of digital procurement platforms.

However, despite their proven potential, many developing countries face infrastructural and capacity-related barriers to full implementation, raising questions about how institutional readiness mediates the success of such innovations.

Finally, contract management emerges as a critical but often neglected stage of procurement. Weak institutional capacity in contract oversight results in budgetary overruns, service delivery delays, and diminished public trust. Patrucco et al. (2022) emphasize that targeted training and cross-sector collaboration are essential for improving contract execution and institutional accountability. This underscores a broader knowledge gap: while literature increasingly recognizes the importance of procurement reforms, less attention has been devoted to the institutional arrangements and human resource capacity necessary to sustain them over time.

Taken together, the literature demonstrates that PFM is not merely a financial safeguard but a strategic enabler of sustainable procurement outcomes. However, debates remain unresolved regarding whether PFM reforms primarily function as enablers of sustainability or whether rigid financial rules risk constraining innovative procurement practices. Furthermore, while evidence from developed contexts provides valuable insights, the application of these frameworks in developing economies—where procurement dominates public expenditure but institutional capacity is weak—remains underexplored. This research therefore positions itself at the intersection of these debates by examining how PFM practices shape institutional capacity and, in turn, drive SPP outcomes in Punjab, Pakistan.

Institutional Capacity as a Mediator

Effective financial management constitutes a cornerstone of public procurement, encompassing strategic budgeting, costing analysis, risk assessment, and robust financial reporting systems. Poor financial governance has been identified as a recurrent obstacle that derails the intentions of sustainable public procurement (SPP), often resulting in wastage, cost overruns, and delays (Lindholm & Levy, 2022). In response, advanced financial instruments such as lifecycle costing (LCC) and total cost of ownership (TCO) have become essential in ensuring fiscal responsibility, procurement efficiency, and sustainability. Furthermore, public–private partnerships (PPPs) have emerged as critical funding mechanisms, providing innovative approaches to mobilize resources for sustainable procurement (see Figure 4). These developments underscore the growing importance of aligning financial governance with procurement objectives to achieve broader developmental outcomes.

The linkage between public financial management (PFM) and procurement is central to addressing inefficiencies and minimizing agency problems within bureaucratic hierarchies. Governance activities rooted in sound financial management establish the foundation for evidence-based decision-making, thereby improving service delivery outcomes (Bawole & Adjei-Bamfo, 2020; Beauchamp & Hicks, 2004). Importantly, contemporary scholarship emphasizes that PFM should not be reduced to a technical or administrative exercise; rather, it represents a managerial reform initiative aimed at embedding accountability, transparency, and results-based planning (Musiega, Tsofa, & Barasa, 2024; Hepworth, 2023). This reconceptualization positions PFM as both a safeguard against inefficiency and an enabler of sustainability within procurement systems. Yet, while developed economies have institutionalized PFM reforms to strengthen procurement outcomes, evidence from developing contexts remains limited, signaling the need for further research on the adaptability of such frameworks in weaker institutional environments.

The incorporation of social and environmental factors into procurement processes reflects the growing recognition of procurement as a tool for advancing societal and global sustainability obligations. European Union directives provide a notable example of how procurement policy can institutionalize social and environmental objectives (Brzezinski, 2024; Ssenyonjo et al., 2022). Synchronizing procurement functions with broader PFM systems is thus seen as critical to enhancing institutional accountability and sustainability performance. Transaction cost economics (TCE) offers a useful theoretical framework to understand the complexity of procurement governance, emphasizing that efficiency improves when governance mechanisms are tailored to transaction-specific requirements (Rokkan & Haugland, 2021). Empirical evidence further suggests that organizational performance is positively related to advanced procurement competencies, reinforcing the need for technical expertise and institutional capacity. Nonetheless, most existing studies stem from developed contexts, leaving open the question of how such governance frameworks perform in developing economies with weaker institutional structures.

A key debate in the literature concerns the tension between short-term cost efficiency and long-term value creation. Traditional interpretations of value for money (VfM) often prioritize cost savings, thereby neglecting broader social and environmental dimensions (Lagstrom & Osterberg, 2024; Brammer & Walker, 2007). Conversely, more holistic evaluation models—particularly within PPP arrangements—seek to measure multidimensional value outcomes that balance financial, social, and environmental considerations (Zhao et al., 2023). This debate is especially pronounced in developing nations, where procurement frequently represents between 50% and 70% of government budgets (Waci et al., 2024). The question therefore, arises as to whether financial prudence in such contexts can coexist with sustainability ambitions, or whether fiscal constraints inevitably reinforce narrow cost-centric procurement approaches.

Financial barriers also disproportionately affect smaller market actors. Innovative procurement mechanisms often exclude small and medium-sized enterprises (SMEs), which face high compliance costs and limited access to resources. To mitigate these disadvantages, scholars have called for targeted financial incentives and institutional capacity-building initiatives that can enhance SME participation in SPP (Schafer et al., 2023; Zhang et al., 2022). Yet, while SMEs are recognized as engines of inclusive development, their integration into sustainable procurement frameworks remains uneven, particularly in low- and middle-income countries. This signals a persistent research and policy gap on how to operationalize inclusive procurement models under resource-constrained conditions.

Technological innovation represents a further dimension of reform. E-government procurement (e-GP) systems are widely regarded as transformative tools for enhancing transparency, reducing corruption, and generating fiscal savings. Bosio et al. (2023) report that e-GP systems in low- and lower-middle-income countries have achieved savings ranging from \$637.9 million to \$5.2 billion, with benefit–cost ratios between 8 and 58. These findings underscore the fiscal effectiveness and return on investment of digital procurement platforms. Nevertheless, infrastructural limitations and weak institutional capacity often hinder full adoption in developing contexts, raising important questions about the mediating role of institutional readiness in determining the success of digital procurement reforms.

Finally, contract management remains an underdeveloped yet critical dimension of public procurement. Weak institutional oversight has been linked to budgetary overruns, service delivery delays, and declining public trust. Strengthening institutional capacity—through targeted training, professional development, and cross-sector collaboration—has been identified as essential for improving contract execution and restoring accountability (Patrucco et al., 2022). However, research on how institutional arrangements, governance mechanisms, and human resource capabilities interact to sustain effective contract management is still limited, particularly in developing economies.

In sum, the literature highlights that PFM is not merely a financial safeguard but a strategic enabler of SPP outcomes. Nonetheless, unresolved debates persist regarding whether PFM reforms serve as flexible enablers of sustainability or impose rigidities that constrain innovation. Moreover, while developed economies offer useful insights into the integration of PFM and SPP, the unique challenges faced by developing countries—where procurement dominates government expenditure but institutional capacity is weak—remain underexplored. These gaps underscore the necessity of examining the role of PFM in strengthening institutional capacity to deliver sustainable procurement outcomes in contexts such as Punjab, Pakistan.

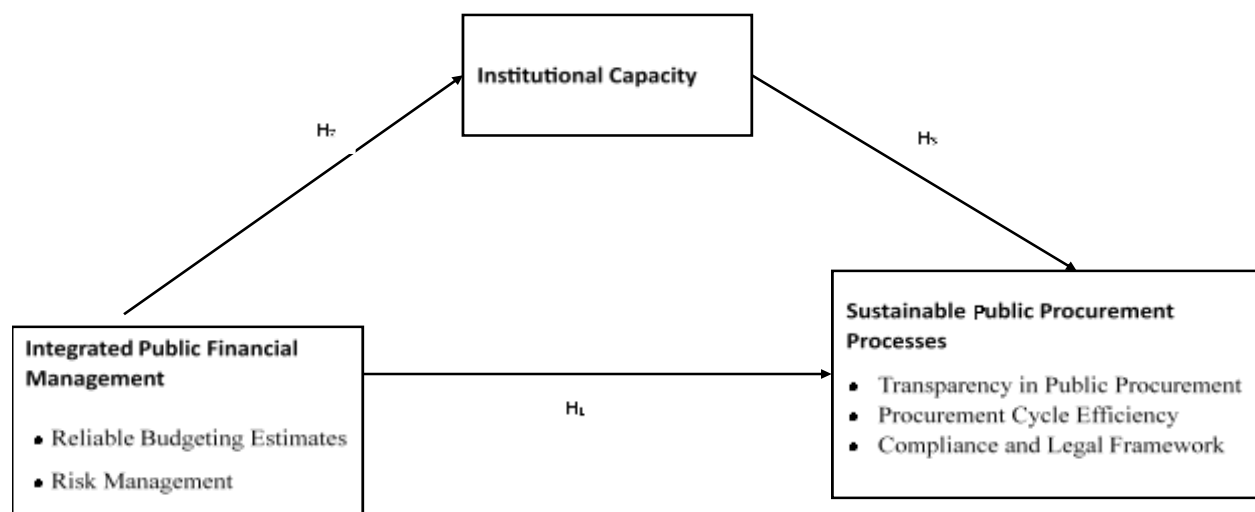


Figure 6: *Conceptual Framework*

Hypotheses

Grounded in the reviewed literature and guided by the proposed conceptual framework (Figure 6), this study formulates the following hypotheses to empirically test the interplay among public financial management (PFM), institutional capacity, and sustainable public procurement (SPP):

H₁: Robust public financial management practices particularly reliable budgeting, risk management, and expenditure control have a significant and positive impact on sustainable public procurement outcomes.

H₂: Institutional capacity mediates the relationship between public financial management practices and procurement sustainability, thereby shaping the effectiveness of PFM in achieving long-term procurement objectives.

H₃: Institutional capacity directly enhances sustainable public procurement outcomes by fostering transparency, improving procurement cycle efficiency, and ensuring compliance with legal and regulatory frameworks.

The objective of these hypotheses is to capture both the direct and mediating effects of institutional capacity in linking financial management practices with sustainable procurement performance. In line with the conceptual framework, the hypotheses emphasize how institutional dynamics influence the translation of PFM reforms into tangible SPP outcomes. This formulation is theoretically informed by prior scholarship on governance and procurement effectiveness (e.g., Akram et al., 2022; Anjum & Khan, 2024) and provides a foundation for empirical validation of institutional–financial interdependencies in public sector procurement governance.

RESEARCH DESIGN AND METHODOLOGY

Research Approach

This study adopts a quantitative research design, appropriate for testing hypothesized relationships between PFM, institutional capacity, and SPP outcomes. The quantitative approach allows for the systematic identification of trends, correlations, and causal linkages, thereby providing robust empirical evidence to inform procurement policy and governance reforms (Akram, Khan, & Abbas, 2022).

Population and Sampling

The target population comprises public procurement practitioners, financial managers, and institutional stakeholders engaged in procurement functions across Punjab, Pakistan. Given the study's focus on specialized expertise, a purposive sampling technique was employed to ensure that only respondents with substantive knowledge and decision-making roles in procurement and financial management were included (Anjum & Khan, 2024). This approach enhances the relevance and validity of the collected data.

Survey Instrument and Pre-testing

Data were collected through a structured questionnaire designed to measure constructs of PFM practices, institutional capacity, and SPP outcomes. The instrument was subjected to a pre-test with a pilot group to ensure clarity, cultural appropriateness, and construct validity. Feedback from the pilot phase was incorporated to refine the questionnaire and minimize ambiguity in the final survey instrument.

Data Collection Procedures

A mixed-methods distribution strategy was adopted to maximize participation and accommodate respondents with varying levels of digital accessibility. Specifically, 208 surveys were administered in person to respondents with limited internet access, while 87 surveys were distributed electronically via mobile phones and computers. This dual approach not only increased participation but also ensured inclusivity across diverse institutional contexts.

Sample Size and Response Rate

Out of 295 questionnaires distributed, a total of 290 were returned completed, yielding a highly impressive response rate of 98.3%, significantly exceeding the conventional 90% benchmark for survey-based research. The final sample size ($n = 290$) is methodologically robust

for quantitative analysis and sufficiently powered to conduct advanced statistical techniques, including reliability tests, regression modeling, and mediation analysis.

Justification of Design

The selected methodological design ensures direct alignment with the stated hypotheses. By employing purposive sampling, a rigorously tested instrument, and a diversified distribution strategy, the study guarantees data quality and relevance. Furthermore, the quantitative framework is well-suited to empirically validate the mediating role of institutional capacity in linking PFM to sustainable procurement outcomes, thereby addressing a critical research gap in the context of developing economies such as Pakistan.

SMART PLS Technology

Partial Least Squares (PLS) approach of Structural Equation Modeling (SEM) applied to analyze the primary data collected from the survey questionnaire.

The SMART PLS software computer statistical software specifically designed for PLS-SEM the research analysis used to analyze the data and construct research model.

RESULTS

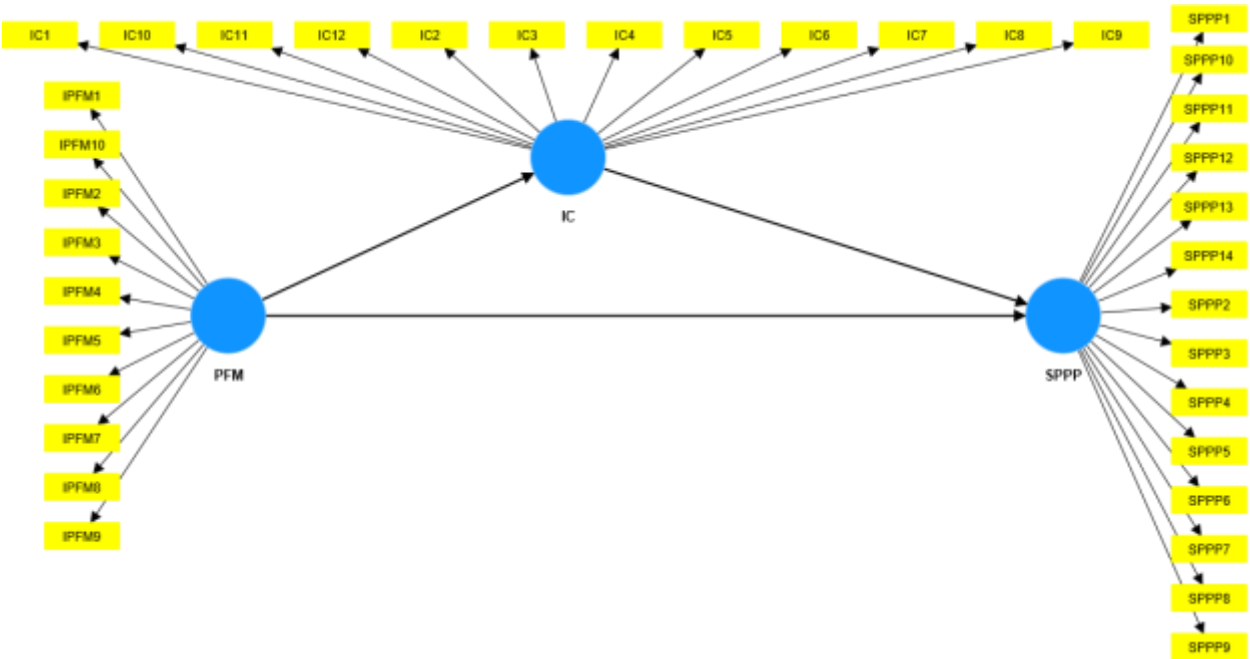


Figure 7: Measurement Model

Model

The measurement model at **figure 7** presents, the relationships between Public Financial Management (PFM), Sustainable Public Procurement Practices (SPPP) and Institutional Capacity (IC). The figure 7 presents the variables, each represented by latent constructs, to assess the theoretical framework's validity and predictive strength.

R-square

R-square	R-square adjusted
----------	-------------------

IC	0.538	0.537
SPPP	0.679	0.679

Table 1: R-square

The **Table 1** depicts the outcomes of the R-square measures which indicate the independent variable's predictability. The R-square for IC is 0.538, meaning that 53.8% of variation in PFM is explained by institutional capacity. Likewise, the R-square measure for SPPP is 0.679, which means that 67.9% of variation in sustainable procurement practices is explained by the independent variables. These statistics demonstrate a moderate-to-strong model fit, confirming the validity of institutional capacity and financial management in affecting procurement efficiency.

Adjusted R-square estimates also support the above results with little difference from R-square estimates, indicating a good number of predictors with no overfitting. Model structure supports good theory fit, in line with theorized interactions between financial governance, institutional capacity, and procurement sustainability. Empirical evidence supports the study conceptual model, with important data presented to policymakers to enhance procurement processes through financial reforms and institution-building.

Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho _a)	Composite reliability (rho _c)	The average variance extracted (AVE)
IC	0.935	0.943	0.945	0.592
PFM	0.918	0.920	0.931	0.576
SPPP	0.941	0.943	0.949	0.571

Table 2: Construct reliability and Validity

Table 2 reports the construct validity and reliability measures, which approximate the internal reliability and measure validity of latent constructs Institutional Capacity (IC), Public Financial Management (PFM), and Sustainable Public Procurement Practices (SPPP). Cronbach's alpha for all constructs is greater than the cut-off point of 0.7, with IC (0.935), PFM (0.918), and SPPP (0.941) indicating high internal reliability.

These values indicate that the items of measurement of each construct have strong reliability and coherence in measuring the theoretical constructs underneath.

Composite reliability (rho_a and rho_c) also provides stability for the measurement model. The IC (0.945), PFM (0.931), and SPPP (0.949) rho_c values are all above the critical level of 0.7, which signifies high construct reliability and ensuring observed indicators' reliability. The average variance extracted (AVE) scores for IC (0.592), PFM (0.576), and SPPP (0.571) also exceed the recommended standard of 0.5, confirming sufficient convergent validity. This means that most of the observed variance in the indicators is explained by their corresponding latent constructs and not by measurement error.

These results cumulatively authenticate the measures and reliability of the constructs and attest to the soundness of the mooted theoretical framework. The findings empirically support the application of the constructs in investigating the interrelation between financial governance, institutional capacity, and sustainable public procurement practices. This ensures the reliability of

later structural model evaluation and adds credence to policy implications drawn from the findings of the study.

Discriminant Validity

Heterotrait-monotrait ratio (HTMT) – Matrix

	Procurement Processes	Public Financial Management	Technology
IC			
PFM	0.779		
SPPP	0.779	0.812	

Table 3: *Heterotrait-monotrait ratio (HTMT) – Matrix*

Table 3 summarizes the Heterotrait-Monotrait Ratio (HTMT) matrix used to assess the discriminant validity of Institutional Capacity (IC), Public Financial Management (PFM), and Sustainable Public Procurement Practices (SPPP) constructs. Discriminant validity is responsible for ensuring that constructs of the study are empirically different and capture distinct theoretical concepts as opposed to common constructs.

The HTMT values for each construct pair are less than the conservative cut-off of 0.85 (Henseler, Ringle, & Sarstedt, 2015), with IC–PFM being 0.779, IC–SPPP being 0.779, and PFM–SPPP being 0.812. The values indicate that the constructs have good discriminant validity, confirming that each latent variable measures a different aspect of the research model. The results also validate the structural relations by ruling out multicollinearity and conceptual redundancy between the constructs.

By discriminant validity, these findings make the theoretical framework more trustworthy, ensuring institutional capacity, financial management, and sustainable procurement are empirically distinguishable factors influencing procurement efficiency. Confirming this makes subsequent testing of hypotheses more robust and helps to make policy implications from the research more trustworthy.

Total effects

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
IC → SPPP	0.031	0.031	0.011	2.954	0.003
PFM → IC	0.733	0.734	0.025	29.785	0.000
PFM → SPPP	0.989	0.989	0.002	553.667	0.000

Table 4: *Total Effects*

Table 4 presents the overall effects of the structural model, including standardized path coefficients, sample means, standard deviations, T-statistics, and p-values. The results provide an overview of the intensity and significance of the relationships between Institutional Capacity (IC), Public Financial Management (PFM), and Sustainable Public Procurement Practices (SPPP).

IC → SPPP's coefficient is 0.031 (T = 2.954, p = 0.003), indicating a statistically significant but poor direct relationship of institutional capacity with sustainable procurement practices. This suggests that institutional capacity plays a role in influencing procurement sustainability but that other factors may play a stronger role.

The path PFM → IC is a high and highly significant path of 0.733 ($T = 29.785$, $p = 0.000$), which suggests that public financial management significantly enhances institutional capacity. This result underscores the central role of good financial management mechanisms in supporting institutional mechanisms needed to ensure efficient procurement processes.

The strongest impact observed is PFM → SPPP, with a path coefficient of 0.989 ($T = 553.667$, $p = 0.000$), reflecting a deterministic relationship between public financial management and sustainable procurement performance. This result reflects the key role financial governance and budget control measures play in influencing sustainability across public procurement processes.

The results of this study collectively reinforce the theoretical proposition that robust financial management systems underpin institutional capacity, which in turn drives the achievement of sustainable procurement objectives. The statistical strength of the findings not only validates the conceptual framework but also underscores the policy relevance of embedding financial reforms within institutional strengthening efforts.

H₁ posited that robust public financial management (PFM) practices—particularly reliable budgeting, risk management, and expenditure control—have a significant positive effect on sustainable public procurement (SPP) outcomes.

Empirical evidence from the structural model strongly supports this hypothesis, with the coefficient for PFM → SPP estimated at 0.989 ($T = 553.667$, $p < 0.001$). This exceptionally strong and statistically significant relationship indicates that PFM is not merely a supporting mechanism but a central determinant of procurement sustainability. Effective PFM practices—such as budget credibility, fiscal responsibility, and comprehensive risk management—create an enabling environment in which transparent, accountable, and resource-efficient procurement decisions can flourish.

This finding is consistent with prior literature that emphasizes the role of credible budgeting and risk mitigation in ensuring procurement efficiency and long-term sustainability (Akram et al., 2022). By reducing financial uncertainty and aligning expenditures with policy objectives, PFM reforms stabilize procurement processes and foster an institutional culture of accountability. The strength of the relationship observed in this study extends existing scholarship by empirically demonstrating that PFM itself can function as a direct driver of procurement sustainability, rather than simply an enabler.

From a policy standpoint, this result suggests that procurement authorities should prioritize reforms in budget reliability, expenditure controls, and risk assessment mechanisms. Such measures would not only enhance fiscal discipline but also contribute directly to the broader objectives of transparency and sustainable utilization of public funds.

H₂ proposed that institutional capacity (IC) mediates the relationship between PFM and procurement sustainability, thereby shaping the effectiveness of financial management practices.

The analysis provides robust empirical support for this hypothesis. The path coefficient of 0.733 ($T = 29.785$, $p < 0.001$) confirms that IC significantly strengthens the link between PFM and SPP outcomes. This finding underscores the critical role of governance mechanisms, administrative capability, and organizational adaptability in ensuring that financial management systems translate into effective procurement outcomes.

Institutional arrangements such as regulatory oversight, skilled human resources, and transparent monitoring mechanisms not only enhance compliance with financial and procurement regulations but also improve the efficiency of procurement cycles. These results echo prior scholarship that highlights how institutional quality ensures fiscal discipline and accountability

(Anjum & Khan, 2024). Yet, this study goes further by empirically quantifying the mediating role of IC in a developing country context, thereby filling an important gap in the literature.

The findings suggest that without adequate institutional capacity, even technically sound PFM reforms may fail to achieve their intended impact. Policymakers are therefore advised to view financial management reforms and institutional strengthening as complementary strategies. Investments in institutional reforms—such as regulatory modernization, professional capacity building, and digital transformation—can amplify the effectiveness of PFM and ensure that procurement objectives align with sustainability goals.

H₃ hypothesized that institutional capacity directly enhances sustainable public procurement outcomes by fostering transparency, improving procurement efficiency, and ensuring compliance with legal and regulatory frameworks.

The results confirm this proposition, with IC → SPP showing a statistically significant effect ($\beta = 0.031$, $T = 2.954$, $p = 0.003$). Although the effect size is smaller than that of PFM, its statistical significance affirms the independent role of IC in shaping procurement outcomes. Specifically, institutional capacity through regulatory enforcement, administrative effectiveness, and procedural oversight promotes transparency, minimizes inefficiencies, and reduces opportunities for corruption.

This aligns with global evidence that strong institutional frameworks encourage ethical procurement, competitive bidding, and efficient resource allocation. Importantly, the findings also highlight the capacity of institutions to integrate technological innovations such as e-procurement platforms and blockchain systems, thereby enabling transparency and secure transactions. Such insights extend the existing literature by demonstrating how institutional strength directly influences sustainability outcomes even in resource-constrained environments.

For policymakers, the implications are clear: strengthening institutional capacity should be viewed as a priority reform area in its own right. Beyond procedural efficiency, institutional quality creates the governance infrastructure necessary to embed sustainability principles into procurement systems. This includes fostering ethical practices, enabling digital innovation, and reducing systemic vulnerabilities.

FINDINGS AND DISCUSSION

This study provides robust empirical evidence that public financial management (PFM) reforms, institutional capacity building, and technological innovation are central to enhancing the transparency, efficiency, and sustainability of public procurement. The results validate the research hypotheses and align with the conceptual framework, emphasizing that procurement reforms cannot be effective in isolation but require a synergistic interaction between financial governance and institutional frameworks.

First, the findings confirm that well-designed PFM practices—such as lifecycle costing, credible budgeting, and risk-based expenditure controls—significantly improve procurement outcomes by ensuring financial responsibility, reducing uncertainty, and enhancing transparency. These results are consistent with prior studies that highlight PFM as a cornerstone of procurement sustainability (Lindholm & Levy, 2022; Musiega et al., 2024). However, the extremely high effect size observed in this study extends existing literature by demonstrating that PFM is not simply an enabling factor but a primary determinant of sustainable procurement outcomes in developing country contexts.

Second, the study highlights the mediating role of institutional capacity in shaping the effectiveness of PFM reforms. Strong institutional frameworks—encompassing regulatory

oversight, administrative professionalism, and governance mechanisms—translate financial management systems into meaningful procurement results. This finding resonates with global evidence emphasizing the importance of institutional quality in minimizing bureaucratic inefficiencies and fostering accountability (Anjum & Khan, 2024; Patrucco et al., 2022). Importantly, the study contributes novel empirical insights by quantifying the strength of this mediation effect in a resource-constrained setting, where institutional weaknesses often undermine reform agendas.

Third, the analysis underscores the transformative role of technology in strengthening institutional capacity and procurement performance. The evidence demonstrates that digital solutions—such as e-procurement platforms, blockchain, and artificial intelligence—improve cost-effectiveness, supplier accountability, and regulatory compliance. While advanced economies have pioneered such approaches, this study demonstrates their applicability and fiscal effectiveness in a developing economy like Pakistan. Comparative evidence from Nordic countries and South Korea suggests that institutional-technology integration can trigger substantial gains in transparency and governance. Yet, as this study confirms, newly industrialized economies continue to face shortages in institutional capacity and digital infrastructure, limiting their ability to fully exploit technological innovations.

Collectively, these findings reaffirm the interdependence of financial management, institutional capacity, and digital innovation in achieving sustainable public procurement (SPP). The results also highlight an enduring gap in the literature: while developed economies report success with technologically advanced procurement frameworks, developing countries remain constrained by weak institutional capacity and limited digital infrastructure. This underscores the importance of tailoring SPP strategies to local institutional realities while learning from international best practices.

Recommendations

Drawing on the empirical results and critical discussion, the study offers several policy recommendations to strengthen sustainable procurement frameworks:

Governments should mandate the adoption of LCC and TCO methods in procurement policies to ensure that decisions reflect long-term financial, environmental, and social value.

Training and professional certification for procurement and financial management officials should be prioritized. Partnerships with international organizations can support capacity building through knowledge transfer and adoption of best practices.

Governments should expand investment in e-procurement platforms, blockchain-based systems, and AI-driven analytics to automate processes, enhance transparency, and improve fiscal accountability.

Procurement laws and guidelines should be aligned with international sustainability standards, such as the United Nations Sustainable Development Goals (SDGs), to ensure coherence between local reforms and global commitments.

Multi-stakeholder participation including civil society, SMEs, and private sector actors—should be encouraged to strengthen accountability, innovation, and inclusivity in procurement processes.

For developing economies with limited digital infrastructure, phased implementation of procurement technologies should be pursued, ensuring alignment with institutional readiness and capacity-building efforts.

CONCLUSION

This study provides compelling evidence that sustainable public procurement (SPP) depends on the interlinkages between robust public financial management (PFM), strong institutional capacity, and technological innovation. Effective PFM practices—such as lifecycle costing and risk-based budgeting—directly enhance procurement sustainability by promoting transparency, efficiency, and accountability. Institutional capacity, in turn, mediates this relationship by ensuring that financial reforms are effectively implemented, while technological innovation further strengthens procurement outcomes through digital transformation.

The findings extend the existing body of knowledge by empirically validating the mediating role of institutional capacity in a developing country context, offering theoretical insights into governance-performance linkages, and demonstrating the fiscal effectiveness of digital procurement interventions. From a practical perspective, the study provides actionable recommendations for policymakers to integrate financial discipline, institutional strengthening, and technology adoption into procurement reforms.

Despite its contributions, challenges remain. Regulatory enforcement, stakeholder participation, and institutional constraints continue to hinder the full potential of SPP in emerging economies. Addressing these barriers will require governments to consolidate institutionalized systems, invest in digital infrastructure, and adopt capacity development initiatives. The study also emphasizes the need for comprehensive regulatory guidelines that align procurement policies with global sustainability frameworks.

Future Research Directions

To build on this study, future research should:

Examine sector-specific applications of SPP in high-impact areas such as health, energy, and infrastructure.

Conduct longitudinal studies to assess the long-term effects of digitalization on procurement governance and sustainability.

Explore the interdependence between institutional development and procurement outcomes to better understand how institutional quality can be enhanced in support of global sustainability objectives.

By addressing these avenues, scholars and practitioners can refine procurement models that balance fiscal efficiency with social and environmental imperatives. Ultimately, the evolution of SPP underscores its central role as a catalyst for sustainable development, particularly in developing economies such as Pakistan.

REFERENCES

- Akram, M. W., Khan, I. A., & Abbas, A. (2022). Measuring the Effects of Globalization on Public Purchasing with Mediating Role of Research and Development: Empirical Evidence from Pakistan. *Journal of Managerial Sciences*, 16(1), 109-130.
- Alo, U. U., Nwobu, O. A., & Adegboye, A. (2021). Government Integrated Financial Management Information System and Sustainable Public Procurement in Nigeria. *Revista Brasileira de Políticas Públicas*, 11(3).
- Amankwa, M. O., & Tetteh, E. K. (2022). Comparative analysis of public procurement and public financial management within Asia and Africa. *International Journal of Procurement Management*, 15(2), 133-159.
- Ahmad, S., Ahmad, A., Shair, W., & Bhatti, M. A. A. (2022). Unlocking Pakistan's Youth Potential: A Comprehensive Analysis of Youth Development Indices and Strategic Alignment with

- the UN Sustainable Development Goals. *Journal of Professional Research in Social Sciences*, 9(2), 80-95.
- Andhov, M., Caranta, R., Stoffel, T., Grandia, J., Janssen, W. A., Vornicu, R., Czarnezki, J. J., Gromnica, A., Tallbo, K., Martin-Ortega, O., Mélon, L., Edman, Å., Göthberg, P., Nohrstedt, P., & Wiesbrock, A. (2020). Sustainability through public procurement: the way forward: Reform Proposals. Social Science Research Network. <https://doi.org/10.2139/SSRN.3559393>
- Andrii Boychuk. (2024). Modern problems of organization and management of procurement activities in the healthcare system and ways to address them.. 49-62. doi: 10.21045/1811-0185-2024-5-49-62.
- Anjum, M. N. ., & Khan, M. K. . (2024). Impact of Public Procurement Rules on the Efficient Procurement Processes Mediated by Technology Integration Health Sector: A Case of Punjab. *Research Journal for Societal Issues*, 6(2):326-347. doi: 10.56976/rjsi.v6i2.226.
- Akbar, A., Ahmad, S., Khalid, M., Aslam, M. F., & Bhatti, M. A. A. (2024). Analyzing the effect of green HRM on organizational performance. *Bulletin of Business and Economics (BBE)*, 13(2), 864-869.
- Bawole, J. N., & Adjei-Bamfo, P. (2020). Public procurement and public financial management in Africa: Dynamics and influences. *Public Organization Review*, 20(2), 301-318.
- Beauchamp, S., & Hicks, C. (2004). Financial management and effectiveness in public service organizations: The CIPFA FM model. *Public Money & Management*, 24(3), 185-191.
- Benchebkroun, H., Benmamoun, Z., & Hachimi, H. (2024). Sustainable public procurement for supply chain resilience and competitive advantage. *Acta Logistica*, 11(03), 349–360. <https://doi.org/10.22306/al.v11i3.519>
- Berman, R., Quinn, C., & Paavola, J. (2012). The role of institutions in the transformation of coping capacity to sustainable adaptive capacity. *Environmental Development*, 2, 86-100.
- Bhatti, M. A. A., & Nazir, M. U. (2024). The Impact of Project Process Management on Sustainable Project Success in the Construction Sector: The Moderating Role of Risk Management Practices. *Bulletin of Business and Economics (BBE)*, 13(2), 1065-1072.
- Brammer, S., & Walker, H. L. (2007). Sustainable procurement practice in the public sector: An international comparative study. <http://unpcdc.org/media/15782/sustainable%20procurement%20practice.pdf>
- Bosio, E., Hayman, G., & Dubosse, N. (2023). The Investment Case for E-Government Procurement: A Cost–Benefit Analysis. *Journal of Benefit-Cost Analysis*, 14(S1), 81-107.
- Brzezinski, M. (2024). Contract award criteria in public procurement procedures—The possibility of improving the situation of society from the perspective of the European Union and Poland. *F1000Research*, 13, 832.
- Cabral, V. N., & de Castro, B. S. (2020). ANÁLISE DA IMPLEMENTAÇÃO DA POLÍTICA DE COMPRAS PÚBLICAS SUSTENTÁVEIS: um estudo de caso. *Revista de Políticas Públicas*, 24(1), 49–67. <https://doi.org/10.18764/2178-2865.V24N1P49-67>.
- Guo, R., & Madni, G. R. (2024). Encirclement of productive capacities and institutions in context of sustainable development. *Plos one*, 19(3), e0297350.
- Hepworth, N. (2023). Changing from Financial Control to Financial Management in the Public Sector: An Introduction to the Changes That Will Be Required (pp. 1–46). Springer Nature. https://doi.org/10.1007/978-3-031-35066-5_1

- Imam, M. A., Ahmad, S., Bhatti, M. A. A., & Afzal, M. (2023). Contextualizing research approaches: The role of Western and Islamic philosophies in shaping methodology and knowledge creation. *Al-Irfan*, 8(16), 69-90.
- Jena, P. R. (2024). Public Financial Management in India. 275–298. <https://doi.org/10.1093/9780198930464.003.0017>
- Kamara, O. G., & Turay, F. B. (2024). An evaluation on the impact of sustainability practice in public procurement: a case of the sierra leone airport authority, port loko district north-west region of sierra leone. *European Journal of Economic and Financial Research*, 8(4). <https://doi.org/10.46827/ejefr.v8i4.1782>
- Kanwal, S., Rehan, M., Nazir, M. U., & Bhatti, M. A. A. (2025). Linking Green Transformational Leadership to Environmental Performance: A Mediation–Moderation Study of Pakistan’s Banking Industry. *Journal of Management Science Research Review*, 4(2), 372-390.
- Kikavets, V. V., & Tsaregradskaya, Y. K. (2023). Financial control as a factor in effective public procurement management. *Law Enforcement*, 7(2), 85-95.
- Kryshtanovych, M., Akimova, L., Akimov, O., Parkhomenko-Kutsevil, O., & Omarov, A. (2022). Features of creative burnout among educational workers in public administration system. *Creativity Studies*, 15(1), 116–129-116–129.
- Lagstrom, C., & Ek Osterberg, E. (2024). Exploring Sustainable Public Procurement Through Regulatory Conversations. *Financial Accountability & Management*, e12412.
- Lichere, F. (2023). Sustainability public Procurement using new procedures of the 2014 Directives. *European Journal of Public Procurement Markets*, 1(4), 80–85. <https://doi.org/10.54611/xhbr1548>
- Lina, Z. (2024). Towards the sustainable financial management in green economic growth through big data technology innovation; Case study in China. *Heliyon*, 10(19).
- Liu, R., & Fan, B. (2023). Roles of institutions and dynamic capability in the relationship between collaboration and performance in emergency management: evidence from 110 cases in Shanghai. *Journal of Chinese Governance*, 8(2), 206-233.
- McAlexander, R. J., Yang, J., & Urpelainen, J. (2023). Political regime, institutional capacity, and inefficient policy: Evidence from gasoline subsidies. *Review of Policy Research*.
- Mahar, A. S., Zhang, Y., Sadiq, B., & Gul, R. F. (2025). Sustainability transformation through green supply chain management practices and green innovations in Pakistan’s manufacturing and service industries. *Sustainability*, 17(5), 2204.
- Mendoza Jimenez, J., Hernandez Lopez, M., & Franco Escobar, S. E. (2019). Sustainable public procurement: From law to practice. *Sustainability*, 11(22), 6388.
- Molin, E., Lingegård, S., Martin, M., & Björklund, A. (2024). Sustainable public food procurement: criteria and actors’ roles and influence. *Frontiers in Sustainable Food Systems*, 8, 1360033.
- Musiega, A., Tsofa, B., & Barasa, E. (2024). How does Public Financial Management (PFM) influence health system efficiency: A scoping review. *Wellcome Open Research*, 9, 566.
- Munuhwa, S. (2023). The role of government in promoting sustainable procurement. In *Government impact on sustainable and responsible supply chain management* (pp. 260-281). IGI Global.
- Mota, P. I. (2024). Government Procurement and Sustainable Development in the WTO. In *Sustainable Finances and the Law: Between Public and Private Solutions* (pp. 219-249). Cham: Springer Nature Switzerland.

- Nadeem, S., Mohamad, H., & Abdullah, N. A. H. (2017). *Driving indicators for implementation of sustainable procurement behavior and practices*. <http://repo.uum.edu.my/22162/>
- Okonta, D. E. (2023). The scientometric analysis and visualization of sustainable procurement. *Heliyon*, 9(10).
- Ortega Carrasco, P., Iannone, F., Ferrón Vilchez, V., & Testa, F. (2024). Green public procurement as an effective way for sustainable development: A systematic literature review and bibliometric analysis. *Sustainable Development*.
- Pakistan Institute of Development Economics (PIDE). (2024). Pakistan's public procurement regime: Challenges and opportunities. Islamabad: PIDE.
- Patrucco, A. S., Dimand, A. M., Neshkova, M. I., & Cevallos, M. M. (2023). How can procurement create (sustainable) public value under the Bipartisan Infrastructure Deal?. *Public Administration Review*, 83(4), 960-973.
- Pessoa, S. F. L., de Brito, C. K. R., & Bernardi, R. (2024). Environmental Sustainability in Public Procurement Processes: A Study Guided by The Paradigms of The New Law on Tenders and Contracts. *Revista de Gestão Social e Ambiental*, 18(6), e08265-e08265.
- Postula, M. (2022). Public Financial Management in the European Union. <https://doi.org/10.4324/9781003222033>
- ProPakistani. (2025, May 20). PPRA trains over 10,000 professionals in e-procurement regulatory frameworks.
- Profit. (2025, March 10). PPRA initiates overhaul of procurement rules to align with global standards. Profit by Pakistan Today.
- Rafaqat, M., Azad, F., Ahmad, S., Aijaz, K., Ikram, S. H., Bashir, U., ... & Saeed, S. (2024). Impact of Governance and Strategy Performance on Employer Branding. *Research Journal for Societal Issues*, 6(2), 852-867.
- Rokkan, A. I., & Haugland, S. A. (2022). A transaction cost approach for public procurement. *Journal of Business & Industrial Marketing*, 37(2), 341-352.
- Santos, F., Lozano, R., & Barreiro-Gen, M. (2024). Analysing the drivers for sustainable public procurement. *Environment Systems and Decisions*, 1-14.
- Schafer, D., Stephan, A., & Fuhrmeister, S. (2024). The impact of public procurement on financial barriers to general and green innovation. *Small Business Economics*, 62(3), 939-959.
- Ssenyonjo, A., Osoro, O., Ssengooba, F., Ekirapa-Kiracho, E., Mayora, C., Ssempala, R., & Bloom, D. (2022). The government budget: an overlooked vehicle for advancing strategic health purchasing. *Health Systems & Reform*, 8(2), 2082020.
- Stokke, R., Qiu, X., Sparrevik, M., Truloff, S., Borge, I., & De Boer, L. (2023). Procurement for zero-emission construction sites: a comparative study of four European cities. *Environment Systems and Decisions*, 43(1), 72-86.
- Tavares, J. F. (2024). Transparency and accountability in public management. *Accounting and Management Review* | *Revista de Contabilidade e Gestão*, 28(1).
- Thomann, E., Marconi, F., & Zhelyazkova, A. (2024). Did pandemic responses trigger corruption in public procurement? Comparing Italy and Germany. *Journal of European Public Policy*, 31(9), 2907-2936.
- Trang, T. T., Bush, S. R., & van Leeuwen, J. (2023). Enhancing institutional capacity in a centralized state: The case of industrial water use efficiency in Vietnam. *Journal of Industrial Ecology*, 27(1), 210-222.

- Ullah, A., Aslam, N., Rehman, H., & Hongfei, H. (2024). An empirical analysis to examine the role of institutions in bridging the gap between environmental policy stringency and energy poverty. *Journal of Environmental Management*, 366, 121901.
- Waci, J. M., Kariuki, P. W. O., & Mwirigi, P. M. (2024). Procurement practices and value for money in State Corporations in Kenya. *PloS one*, 19(6), e0303879.
- Wijekoon, W. M. C. R., Lokugamage, A., Wickrama, W. A. S. S., & Dissanayake, D. M. A. K. (2023). Analysis of sustainable practices adopted in the health sector public procurement process of goods by the Provincial Director of Health Services Office, Central Province of Sri Lanka. *International Journal of Procurement Management*, 16(2), 252-274.
- Zaidi, S. A. M., Ashraf, S., & Shah, S. (2023). The public procurement system in Pakistan: A critical analysis. *Journal of Social Sciences and Management Studies*, 4(2), 50–67.
- Zhang, M., Zhang, L., & van Dijk, M. P. (2022). Managing Sustainable Public Procurement: A Nationwide Survey in China. *Sustainability*, 14(19), 11955. <https://doi.org/10.3390/su141911955>
- Zhao, J., Liu, H. J., Love, P. E., Greenwood, D., & Sing, M. C. (2023). Value for money assessments for public-private partnerships: characteristics, research directions, and policy implications. *Developments in the Built Environment*, 100246.
- Zia ud din, M., Yuan yuan, X., Khan, N. U., & Han, H. (2023). Linking local collaborative governance and public service delivery: mediating role of institutional capacity building. *Humanities and Social Sciences Communications*, 10(1), 906.