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Abstract

Purpose: This study examined the effect of procurement planning on public service delivery in local governments. Specifically, the study investigated the effect of needs identification, market assessment, and procurement scheduling on public service delivery.

Methodology: The study adopted a quantitative research approach using a cross-sectional survey design. Primary data were collected from 181 respondents from selected local governments using a structured questionnaire. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed to assess the validity and reliability of the measurement scales. Structural Equation Modelling (SEM) was subsequently performed using Onyx to test the hypothesized relationships among the study constructs. The measurement model demonstrated excellent goodness-of-fit statistics (CFI = 0.990, TLI = 0.985, RMSEA = 0.036, and SRMR = 0.054), confirming the adequacy of the model.

Findings: The findings revealed that procurement planning has a significant positive effect on public service delivery in local governments. Specifically, needs identification had the strongest positive effect on public service delivery ($\beta = 0.43$, $t = 4.82$, $p < 0.001$), followed by procurement scheduling ($\beta = 0.33$, $t = 3.95$, $p < 0.001$) and market assessment ($\beta = 0.21$, $t = 2.67$, $p = 0.008$). These results indicate that strengthening procurement planning practices enhances the efficiency, quality, and timeliness of public service delivery.

Unique Contribution to Theory, Practice and Policy:

This study contributes to theory by extending the application of procurement planning theory within the context of local government service delivery through the use of Structural Equation Modelling. It contributes to practice by demonstrating that effective needs identification, comprehensive market assessment, and realistic procurement scheduling are critical drivers of improved public service delivery. From a policy perspective, the findings provide empirical evidence to support reforms aimed at strengthening procurement planning, institutionalizing comprehensive needs assessments, enhancing market intelligence systems, and enforcing compliance with procurement schedules to improve accountability, value for money, and sustainable public service delivery in local governments.

Keywords: Procurement Planning, Needs Identification, Market Assessment, Procurement Scheduling, Public Service Delivery, Structural Equation Modelling, Local Governments

JEL Classification: H57, H83, M11, C30, O22

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INTRODUCTION

Government procurement has come out as one of the most important functions performed by the government since it is linked to the effectiveness of public expenditure, the quality of infrastructure, and provision of services to the citizenry (Knight et al., 2012). Across the globe, governments allocate large amounts of their budget (above 60%) through procurement practices; hence, procurement planning is an important means of economic development and value creation (Ahn, 2024). According to the Organization for Economic Co-operation and Development (OECD), good procurement planning helps in increasing transparency, accountability, cost-effectiveness, and service delivery efficiency since procurement is coordinated in relation to organizational objectives and budget (OECD, 2023). Nevertheless, in many developing countries, poor procurement planning continues to affect the performance of local governments as well as their ability to deliver quality public services (Owusu-Peprah, 2024).

The procurement process refers to the systematic identification of needs, cost estimation, scheduling of procurement activities, resource allocation, and choice of procurement techniques prior to undertaking procurement activities (Monczka et al., 2009). Procurement planning serves as the foundation upon which all other procurement activities are built because it guides budgeting, contract management, supplier engagement, and performance monitoring (Farrington & Lysons, 2020). Contemporary public procurement literature further argues that procurement planning is not merely an administrative requirement but a strategic management practice that can significantly influence organizational performance and service delivery outcomes (Darko et al., 2025).

The relationship between procurement planning and public service delivery has attracted increasing scholarly attention in recent years. Public service delivery refers to the effectiveness, efficiency, accessibility, responsiveness, and quality with which government institutions provide services to the public (Widanti, 2022).

Empirical studies conducted in Africa, Asia, and Latin America have shown that inadequate procurement planning is associated with delayed project implementation, cost overruns, poor-quality infrastructure, stock-outs of essential supplies, and reduced citizen satisfaction (Owusu et al., 2024). These findings suggest that procurement planning may be a significant predictor of service delivery performance in local government institutions.

Developing countries, local governments face unique procurement challenges, including limited financial resources, inadequate technical capacity, political interference, weak monitoring systems, and insufficient integration between procurement and budgeting processes. Such challenges often result in procurement plans that are either poorly prepared or inadequately implemented, thereby affecting the achievement of service delivery (Kalinzi et al., 2022).

Several studies have noted the need for effective procurement planning structures in local governments to ensure better project implementation, improve accountability, and increase trust in government institutions (Adekoya, 2024). Decentralization has added more significance to procurement planning due to the fact that local governments have become responsible for utilizing many public funds as well as providing many services (Basheka, 2009).

In Uganda, as well as in many other African countries, procurement reforms have been undertaken to enhance public financial management and deliver improved service delivery. Even with such reforms in place, issues related to delays in the procurement process, lack of implementation of procurement plans, and inadequate service delivery results in the context of local governments have persisted (Dza et al., 2013). Issues with inadequacy of needs assessment, procurement scheduling, budget alignment, and procurement monitoring have been noted on many occasions by various oversight bodies as the primary cause of inefficiencies in the operations of local governments (PPDA, 2024). Academics have noted that many local governments tend to formulate procurement plans just for compliance reasons instead of using procurement plans as strategic tools to realize entity performances and benefit citizens (Basheka, 2023).

The research has been carried out in order to fill the research gap on the effect of procurement planning on public service delivery in local governments employing structural equation modeling. In this study, procurement planning has been operationalized as needs assessment, market analysis, and procurement scheduling while public service delivery has been operationalized as service quality, service timeliness, service accessibility, service responsiveness, and customer satisfaction.

Hypotheses

H_{1a}: Needs identification has a significant positive effect on service delivery

H_{1b}: Market analysis has a significant positive effect on service delivery

H_{1c}: Procurement scheduling has a significant positive effect on service delivery

Theoretical review

Agency theory

This study is based on the Principal-Agent Theory developed by Jensen and Meckling (1976) which describes relationships in which a principal delegates authority to an agent to execute duties on their behalf. The theory states that conflicts can arise from information asymmetry where the agents have more information than the principals and personal interests that may not be consistent with company interests. This information asymmetry and divergence of interests may result in inefficiencies, misuse of public resources and poor organizational performance (Eisenhardt, 1989).

In public procurement, the principals are the citizens, government institutions and political leaders, while the agents are the procurement officers and accounting officers who are responsible for managing procurement processes. Effective procurement planning is a governance tool that mitigates agency problems through increased transparency, accountability and compliance to procurement rules. Systematic planning helps procurement entities to link procurement decisions with organisational priorities and public needs, thus decreasing room for opportunistic behavior and inefficient use of resources.

The theory is a useful lens for explaining the study variables. The identification of needs ensures that the procurement activities are conducted on the basis of legitimate institutional needs and not on the personal interests of the procurement officials. Market assessment diminishes information asymmetry by providing procurement entities with credible information about supplier capability, prevailing market conditions and competitive prices to aid objective procurement decisions. Procurement scheduling sets clear timelines and

responsibilities, making it easier to track progress and increasing accountability throughout the procurement process. These procurement planning practices collectively mitigate agency conflicts and contribute to the efficient use of public resources, thus improving the public services delivery.

Therefore, the Principal-Agent Theory offers a theoretical framework to examine the relationship between procurement planning and public service delivery in local governments. The theory says that improvements in procurement planning practices can help to reduce agency problems, improve governance and help to deliver public services on time and effectively. The study therefore hypothesizes that needs identification, market assessment and procurement scheduling has a positive effect on public service delivery.

Public Value Theory

The Public Value Theory, formulated by Moore (1995), states that the main goal of public agencies is the generation of public value through the effective and responsive provision of public goods. Contrary to private agencies that are primarily concerned about maximizing profit, public agencies are assessed through the improvement of citizens' welfare and meeting societal expectations.

Procurement planning adds to the creation of public value through strategic use of public funds towards projects and services that cater for community requirements. Effective procurement planning results in better budget management, increased accountability, reduction in wastage, and timely delivery of necessary goods and services. These aspects increase public confidence in government agencies and improve citizen satisfaction with the performance of local government.

Hence, the Public Value Theory supports Institutional Theory and RBV by illustrating why effective procurement planning should lead to more effective public service delivery from the citizens' point of view.

Literature Review

Needs Identification and Public Service Delivery

The process of needs identification is one of the most important processes in the procurement plan as it entails defining the requirements of goods, works, and services that will be used to realize the organization's objectives in such a way that the procurement processes will be in line with strategic considerations and financial availability (Thai, 2017). The process of needs identification in the public sector helps in making wise decisions and reduces wasteful spending (Erridge, 2007).

Needs identification is considered by the Resource-Based View (RBV) as an organizational competence that allows local governments to use their resources effectively based on the needs of citizens (Barney et al., 2021). Procurement needs assessment organizations can more effectively manage their resources and forecast future demands in services, thus avoiding procurement inefficiencies. As a result, effective needs assessment helps provide better quality, accessibility, responsiveness, and value-for-money in public services delivery (Prier, Schwerin, & McCue, 2016).

A number of empirical studies have established that needs assessment plays an important role in improving procurement performance and public service delivery. For instance, Basheka (2009) observed that strategic procurement planning, which begins with needs assessment,

increases the level of transparency, accountability, and procurement effectiveness in local governments in Uganda. Moreover, Basheka and Bisangabasaija (2010) observed that adequate needs assessment reduces procurement delays, emergency procurements, and cost overruns in the organization.

Other empirical studies have corroborated the above findings. For example, Ouma, Mugenyi, and Basheka (2023) have noted that good needs assessment helped to improve public service delivery in Adjumani District Local Government through improved procurement decision-making, budgeting, and implementation of public projects. In the same way, Nair, Jayaram, and Das (2022) observe that needs identification leads to improved procurement performance since procurement activities are in line with organizational objectives and stakeholders' expectations.

The international research is also supportive of the significance of needs identification in improving public sector performance. The Organisation for Economic Co-operation and Development (OECD, 2023) stresses that strategic procurement planning starts with the proper needs assessment, which allows for optimizing decision-making in regard to procurement and increasing expenditure efficiency, as well as improving public service provision. Likewise, the World Bank (2020) states that insufficient needs identification leads to problems such as procurement delays, failure to implement projects, inadequate performance of contracts, and inefficient use of public funds.

Market Analysis and Service Delivery

Market analysis is a crucial element of procurement planning that requires gathering and analyzing data on the strengths of suppliers, market trends, price structures, innovations, and risks of procurement processes to make better purchasing decisions (Farrington & Lysons, 2020). This process makes it possible for public organizations to gain insight into the supplier market dynamics, locate new sources of supply, and choose procurement processes which foster efficiency, competition, and good value for money. With market intelligence being provided through market analysis, it becomes possible to make informed procurement decisions (Monczka et al., 2009).

Market analysis is seen by the RBV as an organizational capability in strategy that boosts decision making and resource management. An organization with good knowledge about market will be well-placed to recognize competent suppliers, enter into favorable agreements, foresee market uncertainties and minimize supply risks. Hence, market analysis will help organizations achieve the timely procurement of necessary products, works and services for efficient delivery of public services (Monczka et al., 2009). Various empirical studies have repeatedly shown the significance of market analysis in boosting the effectiveness of procurement. In the view of Gelderman, Semeijn, and Bouma (2021), systematic market analysis improves supplier selection, fosters competitive procurement and lowers procurement costs since organizations get to know about market circumstances before carrying out procurement activities. Likewise, Knight, Harland, Telgen, Thai, Callender, and McKen (2022) hold that procurement decisions backed by market intelligence enhance contract performance as such decisions lower information asymmetry between the procuring parties and suppliers.

The significance of conducting market analysis is rising in the public sector because of the fast-changing supplier markets and technology. According to Patrucco, Luzzini, and Ronchi (2021), public organizations that conduct full-scale market analysis tend to increase procurement efficiency, supplier performance, and project implementation since procurement strategies are

tailored to existing market conditions. Similarly, according to Glas, Hofmann, and Eßig (2022), market intelligence helps to increase procurement resilience since it allows public institutions to predict disruptions in the supply and find alternative suppliers in order to provide continuous services.

Market analysis is known to contribute to public service delivery in its own right due to increasing procurement efficiency and reducing the implementation time. As Amann and Essig (2019) state, those organizations that use supplier market analysis in procurement processes have high procurement effectiveness and service outcomes since the decisions on procurement are made basing on the market data. Besides, Schiele (2020) believes that proactive supplier market analysis increases the performance of procurement processes via creating innovation, relationship with suppliers, and value creation.

Procurement Scheduling and Service Delivery

Procurement scheduling is one of the essential aspects of procurement planning that entails setting time frames for various procurement activities to enable the acquisition of goods, works and services at appropriate times (Farrington & Lysons, 2020). Good procurement schedules help in coordinating procurement activities with budget implementation and project time frames, hence avoiding delays in procurement activities to enhance continuity in the provision of services (Ellram et al., 2020). Public organizations benefit from procurement schedules through the proper utilization of financial resources and timely implementation of government programs (Basheka, 2009).

According to Nag & Ferdausy (2021), procurement scheduling allows organizations to plan for procurement needs, provide enough lead times for the process and coordinate various parties including users of the services, procurement and suppliers of the materials. Effective procurement scheduling helps in reducing the chances of conducting emergency procurements, supply problems and effective management of contracts. Therefore, organizations that conduct themselves according to well-planned procurement schedules are able to offer quality services.

There is empirical evidence to show that procurement scheduling is essential in improving procurement performance and organizational efficiency. Titu & Mwalukasa (2024) observed that the use of procurement schedules considerably increased procurement efficiency and project implementation in public organizations through reducing delays in contract award and timely delivery of goods and services. In the same way, (Ameyaw et al., 2021) indicated that procurement schedules improve the rate of project completion and service delivery as it ensures that procurement activities are aligned with budgeting and implementation plans.

Procurement scheduling also contributes to accountability and transparency in public procurement processes. As (Patrucco et al., 2016) observe, procurement schedules offer a means of monitoring procurement processes, assessing procurement performance and observing procurement regulations. Through setting out timelines and responsibilities, procurement schedules minimize administrative challenges and hence improve service delivery efficiency. In a similar vein, Kermani et al., (2024) observe that organizations with procurement schedules experience fewer procurement disputes and implementation delays as procurement processes are well organized and coordinated.

Moreover, recent research reveals that procurement scheduling helps in improving the delivery of public services due to enhanced coordination of various stakeholders participating in the process of procurement. According to Uyarra, Flanagan, Magro, and Zabala-Iturriagagoitia

(2020), good scheduling facilitates collaboration between organizations that procure goods or services, their suppliers, and users of services, thereby leading to prompt implementation of projects and better results from services. At the same time, McCue and Prier (2021) point out that combining procurement scheduling with an organization's strategic plan improves resource distribution and makes public institutions capable of responding to changes in service delivery requirements.

Notwithstanding the increasing importance of procurement scheduling as a determinant of procurement efficiency, there is still a lack of empirical research establishing the link between procurement scheduling and public service delivery. In other words, most previous studies paid little attention to how procurement scheduling affects service delivery, focusing instead on procurement efficiency, contract management, and project efficiency. What is more, there is also a scarcity of studies that examined the impact of procurement scheduling on service delivery in local governments of developing countries. As such, this research seeks to bridge this gap by analyzing the concept of procurement scheduling as a latent construct that impacts the delivery of public services using Structural Equation Modelling (SEM).

Research Gaps

Previous research has shown that procurement planning affects organizational and procurement performance, but there are still some gaps. For example, the existing literature has mostly focused on procurement performance, project performance and financial performance, rather than public service delivery. In addition, procurement planning has traditionally been treated as a single construct, providing little evidence of the effect of its dimensions on service delivery. Also, most of the studies use conventional regression techniques and there is limited use of Structural Equation Modelling (SEM) for the simultaneous assessment of measurement and structural relations. Finally, there is still limited empirical evidence from local governments in developing countries, especially Uganda. This study seeks to address these theoretical, methodological, empirical and contextual gaps by investigating the impact of procurement planning dimensions on public service delivery using SEM.

METHODOLOGY

In this case, a quantitative research methodology through a cross-sectional survey design was adopted in order to investigate the impact of procurement planning on service delivery in local governments. Quantitative research methodology was used since it was capable of measuring the relationship between latent constructs and testing hypotheses based on structural equation modeling (SEM) (Creswell & Plano Clark, 2023). A cross-sectional survey design was utilized since data could be collected from the respondents at one point in time and, therefore, it was suitable in investigating the relationship among the variables in this study without incurring high costs and time (Saunders & Darabi, 2024).

The study was carried out in Jinja city in Uganda where procurement planning is governed by the PPDA act and regulations. The sample population included procurement officers, accounting officers, heads of user departments, finance officers, internal auditors, engineers, health officers, education officers, members of contract committees and community opinion leaders. They were selected in this study since they have been directly involved in procurement planning and implementation and have adequate knowledge on the issues surrounding procurement and service delivery in their respective local governments (Basheka, 2009).

Sample size determination was done through the sample size determination table by Krejcie & Morgan (1970).

Simple random sampling technique was used to eliminate sampling bias and give every eligible respondent an equal opportunity of being included in the study.

Primary data collection was done through a structured self-administered questionnaire. This questionnaire had two parts. The first part collected information on the demographic profile of the respondents, whereas the second part collected data on procurement planning and public service delivery through a five-point Likert Scale, where 1 means strongly disagree and 5 means strongly agree. Measurement of procurement planning was done based on four dimensions including need identification, market evaluation, and procurement schedule. The public service delivery was measured through various indicators that include quality of services, timeliness of the services, accessibility, responsiveness, and citizens' satisfaction.

Validity was conducted using content validity through an expert review conducted by academics from universities and practitioners of procurement to ensure that the questionnaire measured the intended concepts (Boateng et al., 2018). The validity of the constructs was performed using Confirmatory Factor Analysis (CFA) whereby factor loadings, Composite Reliability (CR) and Average Variance Extracted (AVE) were tested. According to (Hair & Alamer, 2022), valid construct is attained where factor loadings exceed 0.50, Composite Reliability exceeds 0.70 and Average Variance Extracted is more than 0.50.

Validity of discriminant was done using both Fornell-Larcker and Heterotrait-Monotrait (HTMT) ratio according to (Hair & Alamer, 2022). The internal consistency reliability was tested using Cronbach's alpha and McDonald's Omega, with a value of above 0.70 regarded as reliable.

Ethical approval and permission to conduct this research were sought and granted from the Kabale University Research Ethics Committee, the Uganda National Council for Science and Technology and Jinja City. The respondents were told about the purpose of the study and that their involvement was voluntary. The respondents' consent was sought prior to the administration of questionnaires. In order to maintain confidentiality and anonymity of the respondents, there was no need for personal identification as well as ensuring that the data collected would be used for academic purposes only (Creswell & Creswell, 2018).

The filled-in questionnaires were then coded, cleaned and entered in IBM SPSS Statistics Version 29 for initial analysis after which the data was exported into JASP and Onyx using Maximum Likelihood Estimation for Structural Equation Modelling (SEM).

The choice of Structural Equation Modelling was due to its ability to estimate the measurement and structural models simultaneously while accounting for measurement errors and evaluating relationships between several latent variables (Kline, 2023). In accordance with the two-step approach to modelling recommended by (Hair & Alamer, 2022), the measurement model was first estimated through the use of Confirmatory Factor Analysis (CFA) before estimating the structural model.

The model fit was determined using different fit measures such as Chi-square (χ^2), Chi-square/degrees of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). According to the criteria provided by Hair & Alamer, 2022) and

(Kline, 2023), adequate model fit was achieved if χ^2/df is less than 3.0, CFI and TLI values are above 0.90, RMSEA is below 0.08, and SRMR values are less than 0.08.

Hypotheses related to the connection between procurement planning and public services provision were examined through standardized path coefficients (β). Statistical significance was set at 5% significance level ($p < .05$). Explanatory power of the model was evaluated using the coefficient of determination (R^2), whereas the standardized regression weights were utilized to determine the magnitude and direction of the relations among constructs (Hair et al., 2022).

FINDINGS

From a population of 455, the study administered 210 questionnaires and response rate of 181 (86.2%) was achieved, exceeding the accepted threshold of 70% for survey-based studies (Creswell & Creswell, 2018).

Multivariate Normality

Table 1: Mardia's Test of Multivariate Normality

	Value	Statistic	df	p
Skewness	8.242	812.47	32420	> 0.173
Small Sample Skewness	8.542	835.32	32420	> 0.191
Kurtosis	73.286	0.792		> 0.292

Note. The statistic for skewness is assumed to be χ^2 -distributed, and the statistic for kurtosis is standard normal.

Mardia's test was performed to examine whether the study data satisfied the assumption of multivariate normality. As presented in Table 4.1, the multivariate skewness coefficient was 8.242 ($\chi^2 = 812.47$, $df = 32,420$, $p = 0.173$), while the small sample corrected skewness coefficient was 8.542 ($\chi^2 = 835.32$, $df = 32,420$, $p = 0.191$). In addition, the multivariate kurtosis coefficient was 73.286 with a standardized statistic of 0.792 ($p = 0.292$). Since the p-values associated with both the skewness and kurtosis statistics exceeded the recommended significance level of 0.05, the null hypothesis of multivariate normality was accepted. These findings suggest that the data were approximately multivariate normal and therefore suitable for subsequent multivariate analyses.

The findings are consistent with Cain et al., (2017), who demonstrated that Mardia's multivariate skewness and kurtosis statistics provide a reliable assessment of departures from multivariate normality, with non-significant test results indicating that the observed data adequately approximate a multivariate normal distribution.

Convergent Validity of Measurement Scales

Table 2: Average Variance Extracted

Factor	AVE
Needs Identification	0.832
Market Assessment	0.643
Procurement scheduling	0.862
Service delivery	0.625

Convergent validity was assessed using the Average Variance Extracted (AVE). As presented in Table 2, all constructs achieved AVE values exceeding the recommended threshold of 0.50. Factor 1, Factor 2, Factor 3, and Factor 4 had average variance extracted (AVE) scores of 0.832,

0.643, 0.862, and 0.625, respectively. These findings show that each factor explained more than 50% of the variance in its indicators, thus offering adequate evidence for convergent validity.

These findings conform to the guidelines provided by (Fornell & Larcker, 1981) who suggested that an AVE score of not less than 0.50 is enough evidence that a construct explains more variance in its indicators than measurement errors do. Similarly, (Hair & Alamer, 2022) argued that AVE values above 0.50 provide empirical evidence that indicators share a high proportion of common variance, thereby supporting the convergent validity of the measurement model.

Discriminant Validity of Measurement Scales

Table 3: Heterotrait-Monotrait Ratio

NIF	MAF	PSF	SDF
1.000			
0.349	1.000		
0.142	0.595	1.000	
0.430	0.293	0.441	1.000

Discriminant validity was assessed using the Heterotrait–Monotrait ratio (HTMT). As presented in Table 3, all HTMT values were below the recommended threshold of 0.85. Specifically, the HTMT values ranged from 0.142 to 0.595, with the highest association observed between Market Assessment and Procurement Scheduling (HTMT = 0.595), while the lowest association was between Needs Identification and Procurement Scheduling (HTMT = 0.142). The remaining HTMT values between Needs Identification and Market Assessment (0.349), Needs Identification and Service Delivery (0.430), Market Assessment and Service Delivery (0.293), and Procurement Scheduling and Service Delivery (0.441) were also substantially below the recommended threshold.

These findings indicate that the constructs are empirically distinct and measure different theoretical concepts. The relatively low HTMT values demonstrate that the correlations between indicators across different constructs are lower than the correlations among indicators within the same construct, thereby providing evidence of adequate discriminant validity. Accordingly, the measurement model demonstrates acceptable discriminant validity, implying that each latent construct represents a unique dimension of procurement planning and services.

Reliability of the Measurement Scales

Table 4: Reliability

	Coefficient ω	Coefficient α
Needs Identification	0.829	0.826
Market Assessment	0.778	0.784
Procurement scheduling	0.739	0.735
Service delivery	0.893	0.765
Total	0.886	0.744

The reliability measures of the study constructs are provided in Table 4.2, where McDonald's omega (ω) and Cronbach's alpha (α) were employed. It can be concluded from the obtained results that the reliability level of all constructs surpassed the suggested reliability criterion of 0.70, which is quite satisfactory. In particular, Needs Identification had a coefficient omega of 0.829 and a Cronbach's alpha of 0.826, which proves excellent internal consistency of the

measurement items. The construct of Market Assessment also had acceptable reliability, which is evidenced by coefficient omega and Cronbach's alpha equal to 0.778 and 0.784, respectively. At the same time, Procurement Scheduling had coefficient omega and Cronbach's alpha values of 0.739 and 0.735, correspondingly, which proves internal consistency of the items. The construct of Service Delivery had the highest coefficient omega value (0.893), and its Cronbach's alpha was 0.765. Thus, the overall instrument obtained a coefficient omega of 0.886 and a Cronbach's alpha of 0.744, proving satisfactory internal consistency of the questionnaire.

The results agree with Hayes & Coutts (2020) in arguing that the value of coefficient omega offers a better estimation of the measure of internal consistency than Cronbach's alpha since coefficient omega does not consider an assumption of equal item loadings. Therefore, coefficient omega is widely suggested as the optimal reliability coefficient for multidimensional measures. In that regard, the high omega coefficients obtained in the current study strongly suggest that the measure items accurately captured the underlying construct.

Sampling Adequacy

Table 5: Kaiser-Meyer-Olkin (KMO) Test

Indicator	MSA
Overall	0.846

Kaiser-Meyer-Olkin (KMO) test of sampling adequacy was conducted to ascertain the appropriateness of the data for conducting factor analysis. According to Table 4.5, the general KMO statistic was 0.846, implying that the sample was adequate for factor analysis. The KMO statistic was greater than the required minimum value of 0.60, and the stricter level of 0.80, indicating that there was enough shared variance amongst the observed variables for the conduct of factor analysis.

The results indicate that the correlation structure of the study variables was tight enough to allow extraction of the underlying constructs. A KMO value of 0.846 is considered indicative of meritorious sampling adequacy, reflecting the appropriateness of the data for exploratory or confirmatory factor analysis.

These findings are consistent with (Kaiser, 1974), who classified KMO values between 0.80 and 0.89 as meritorious, indicating that the variables are likely to produce reliable and distinct factors. Similarly, (Shrestha, 2021) noted that KMO values above 0.80 demonstrate strong inter-correlations among variables and provide evidence that the data are suitable for factor analysis. Therefore, the KMO result confirms that the sample and the observed variables were appropriate for factor extraction and subsequent multivariate analyses.

Table 6: Bartlett's Test of Sphericity

X ²	df	P
1850	231	< .001

The suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. As presented in Tables 4.5 and 4.6, the overall KMO value was 0.846, indicating meritorious sampling adequacy and confirming that the sample was appropriate for factor analysis. Furthermore, Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 1850$, $df = 231$, $p < .001$), indicating that the correlation matrix differed significantly from an identity matrix. This finding suggests that the

observed variables were sufficiently inter-correlated to justify the application of factor analysis.

The relatively high KMO value indicates that the variables shared substantial common variance, while the significant Bartlett's test confirms the presence of meaningful correlations among the observed variables. When considered together, these results offer empirical proof that the true factor structure can be reliably extracted, thus validating the measurement model.

Hair et al. (2022) argued that a significant Bartlett's Test of Sphericity ($p < .05$), together with an acceptable KMO value, demonstrates that the variables possess sufficient shared variance to permit reliable factor extraction. Likewise, Shrestha (2021) noted that the joint use of the KMO statistic and Bartlett's test provides a robust assessment of the factorability of a dataset before conducting exploratory and confirmatory factor analysis. Therefore, the KMO and Bartlett's test results confirm that the measurement model was appropriate for subsequent factor analysis and structural model evaluation.

Needs Identification Factor Loadings

Table 7: Factor Loadings for Needs Identification Factor (NIF)

	Factor 1	Uniqueness
NI 4	0.625	0.346
NI 7	0.609	0.271
NI 1	0.582	0.277
NI 2	0.572	0.297
NI 3		0.772
NI 5		0.661
NI 6		0.604
NI 8		0.475
NI 10		0.788
NI 9		0.998

Note. Applied rotation method is promax.

Exploratory Factor Analysis (EFA) was conducted to assess the dimensionality and construct validity of the Needs Identification Factor (NIF). Principal Component Analysis with Varimax rotation was employed to determine the extent to which the measurement items represented the underlying latent construct. The analysis revealed that only four items (NI1, NI2, NI4, and NI7) met the recommended criteria of 0.5 and above factor loading and less than 0.7 uniqueness values for retention, and demonstrated adequate convergent validity while the remaining six items (NI3, NI5, NI6, NI8, NI9, and NI10) did not satisfy the retention criteria.

The isolation of only one factor serves to illustrate the unidimensionality of the construct needs identification.

The process of purifying the measurement scale through the elimination of weak indicators is in line with the recommendations by Hair et al. (2022). These authors recommend that poor performers be eliminated to increase construct validity, reliability, and overall model fit. Therefore, the indicators remaining serve to offer a more parsimonious and psychometrically sound measure of the needs identification construct.

Extracted Needs Identification Model (NIF)

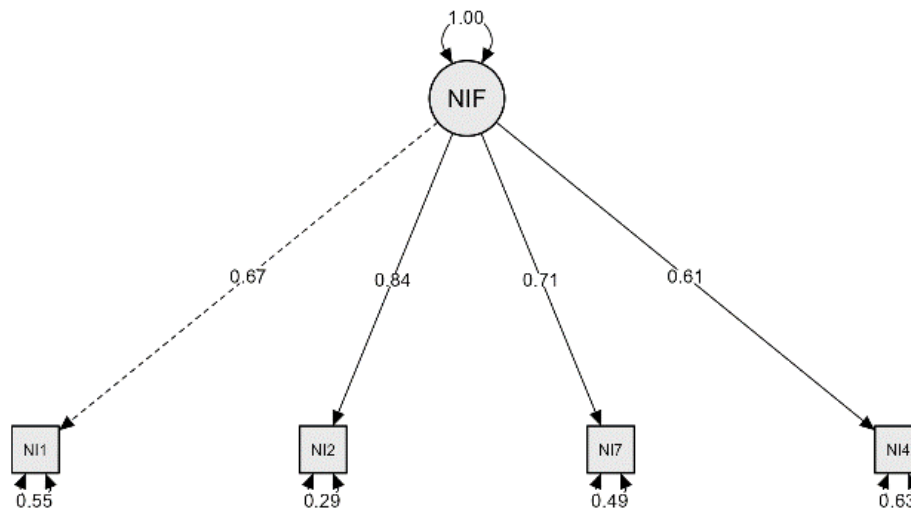
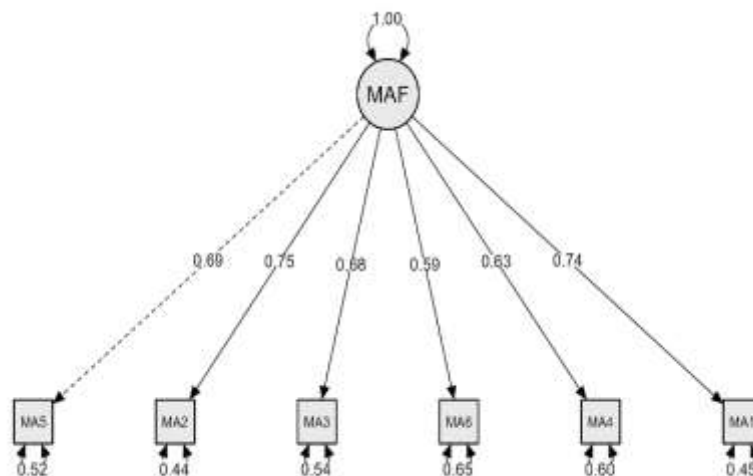


Table 8: Factor Loadings for Market Assessment Factor (MAF)

	Factor 1	Factor 2	Uniqueness
MA7	0.749	0.237	0.005
MA5	0.695		0.511
MA2	0.679		0.542
MA3	0.675		0.549
MA1	0.642		0.584
MA6	0.607		0.630
MA4	0.602		0.612
MA10	0.469		0.714
MA9	0.467		0.777
MA8			0.982

Note. Applied rotation method is Promax.

It was found that the construct Market Assessment was captured using six indicators, but four other indicators were dropped because they did not meet the set criteria for factor retention. Table 4.8 reveals that the retained indicators have standardized factor loadings of between 0.602 and 0.695, surpassing the minimum threshold of 0.50 required for factor loadings (Hair et al., 2022). Item MA7 exhibited the highest loading ($\lambda = 0.749$), however it was eliminated due to cross loading. The retained indicators were sufficiently correlated with the Market Assessment construct and therefore demonstrated acceptable convergent validity. The uniqueness values for the retained items ranged from 0.511 to 0.630, all of which were below the recommended upper limit of 0.70 (Costello & Osborne, 2005). These findings indicate that a substantial proportion of the variance in each retained item was explained by the common factor.

Extracted Market Assessment Measurement Model (MAF)**Table 9: Factor Loadings for Procurement Scheduling (PSF)**

	Factor 1	Uniqueness
PS3	0.650	0.323
PS6	0.624	0.361
PS2	0.562	0.255
PS8	0.544	0.447
PS4	0.527	0.411
PS7	0.516	0.288
PS9	0.463	0.392
PS10	0.437	0.329
PS5	0.419	0.423
PS1		0.251

Note. Applied rotation method is Promax.

As shown in Table 9, the retained indicators recorded standardized factor loadings ranging from 0.516 to 0.650, exceeding the minimum recommended threshold of 0.50, while the uniqueness values for the retained items ranged from 0.255 to 0.447, all of which were below the recommended upper threshold of 0.70.

Extracted Procurement Scheduling Measurement Model (PSF)

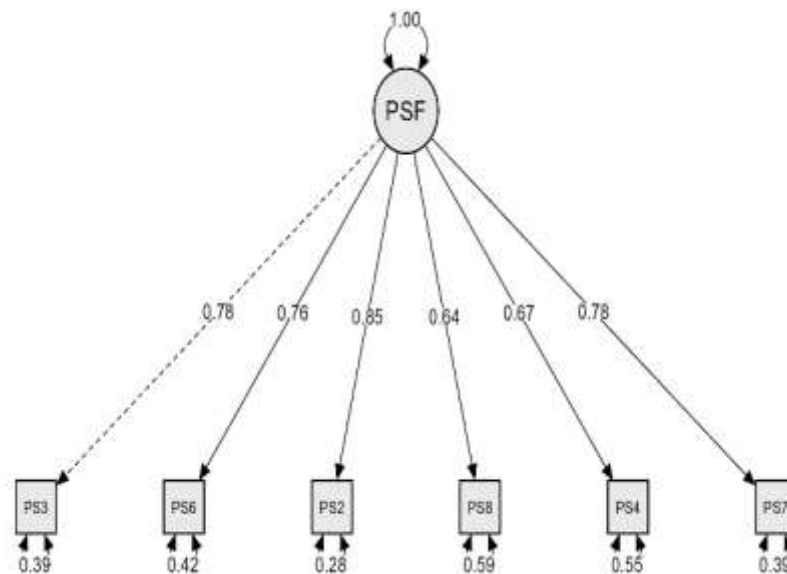


Table 10: Factor Loadings for Public Service Delivery (PSDF)

	Factor 1	Factor 2	Factor 3	Uniqueness
SD4	0.927			0.224
SD5	0.703			0.468
SD1	0.625			0.571
SD6	0.533			0.682
SD7		0.767		0.380
SD9		0.728		0.496
SD10		0.684		0.483
SD8			0.680	0.491
SD2			0.667	0.542
SD3			0.646	0.596

Note. The applied rotation method is promax.

As presented in Table 10, all ten indicators demonstrated acceptable psychometric properties, with standardized factor loadings ranging from 0.533 to 0.927. The factor loadings exceeded the recommended minimum threshold of 0.50, suggesting that each retained indicator contributed meaningfully to its respective latent dimension (Hair et al., 2022).

The uniqueness values ranged from 0.224 to 0.682, all of which were below the commonly accepted upper limit of 0.70. The Promax rotation produced a simple and interpretable factor structure, with each indicator loading predominantly on a single factor and no evidence of problematic cross-loadings. This finding provides evidence of satisfactory discriminant validity among the extracted dimensions of service delivery. The multidimensional nature of the construct found in the study is in line with the definition of public service delivery as a construct that includes different components of performance and citizen outcomes.

Extracted Service Delivery Measurement Model (PSDF)

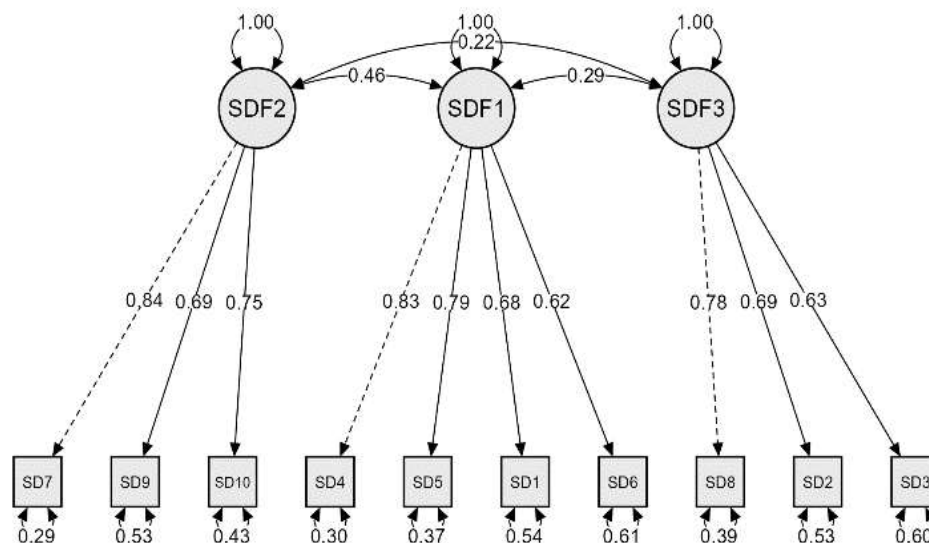


Table 11: Fit Indices

Index	Value
Comparative Fit Index (CFI)	0.990
Tucker-Lewis Index (TLI)	0.985
Parsimony Normed Fit Index (PNFI)	0.695
Root mean square error of approximation (RMSEA)	0.036
Standardized root mean square residual (SRMR)	0.054
Note. Apart from the PNFI, the fit indices are scaled up a bit because of the categorical variables in the data, not sure why exactly but it seems needed.	

After the measurement model had been validated, confirmatory factor analysis (CFA) was performed to test how well the proposed model fits the empirical data. Several goodness-of-fit indices were used for assessing the model fit since there is no single statistic that allows assessing the model fit comprehensively (Hair et al., 2022; Kline, 2023).

As can be seen from Table 11, the measurement model showed an excellent fit to the observed data. The value of the Comparative Fit Index (CFI) was 0.990, which is higher than the minimum acceptable level of 0.90. It means that the hypothesized model significantly outperforms the null model in terms of explaining the covariance structure (Hu & Bentler, 1999; Hair et al., 2022). Likewise, the Tucker–Lewis Index (TLI) amounted to 0.985, which is also higher than the minimum recommended value of 0.90 (Kline, 2023).

The Parsimony Normed Fit Index (PNFI) of 0.695 is greater than the widely accepted cutoff value of 0.50. Even though there is no well-accepted criterion for PNFI, a value greater than 0.50 usually shows that the model has an acceptable compromise between model fit and model parsimony (Mulaik et al., 1989).

The Root Mean Square Error of Approximation (RMSEA) was found to be 0.036, which is much smaller than the recommended cutoff value of 0.08 and less than the more stringent criteria of 0.05 used for a close approximation (Browne et al., 1993; Hu & Bentler, 1999). This

shows that the difference between the observed covariance matrix and the one obtained from the model was very small, indicating a perfect approximate fit of the model.

In the same way, the Standardized Root Mean Square Residual (SRMR) was 0.054, which is below the suggested cutoff value of 0.08 (Hu & Bentler, 1999).

Structural Model

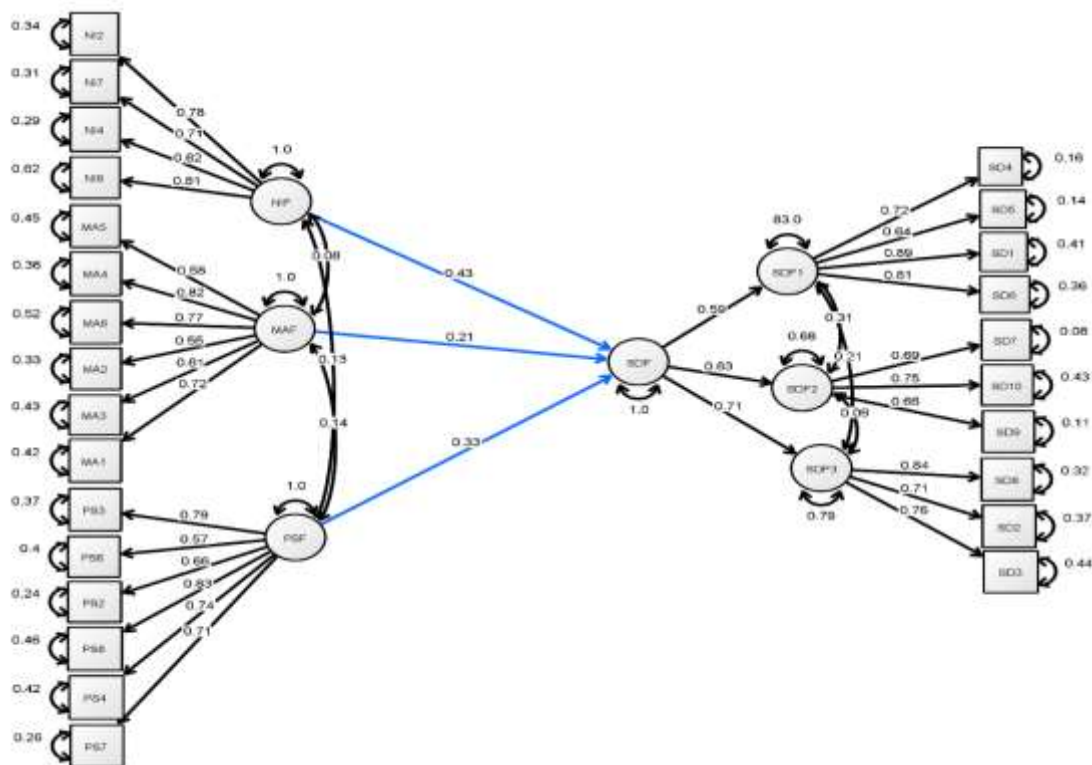


Figure 1: Service Delivery Structural Model

Having validated the measurement model, it was estimated the structural model to analyze the impact of the dimensions of procurement planning on public service delivery in local governments. In the structural model, the impacts of Needs Identification (NIF), Market Assessment (MAF), and Procurement Scheduling (PSF) on the latent variable Service Delivery (SDF) were analyzed. The standardized path coefficients from the structural model are shown in Figure 1 below.

It is clear from the results that all three dimensions of procurement planning positively impacted public service delivery. The highest impact on the latent variable Service Delivery was found in case of dimension Needs Identification ($\beta = 0.43$). Procurement Scheduling and Market Assessment had smaller but still positive impacts ($\beta = 0.33$; $\beta = 0.21$, respectively).

Particularly, a standardized coefficient of 0.43 means that an increase of one-standard deviation in needs identification results in a corresponding 0.43 increase in service delivery while all other procurement planning dimensions remain unchanged. The study highlights the significance of needs identification, the lack of which may result in ineffective procurement processes in local governments. Systematic needs identification allows local authorities to acquire goods, works, and services that meet organizational needs and are in line with citizens' requirements. The findings of the study are in line with procurement planning theory, which

postulates that the need for adequate identification of procurement needs minimizes waste and unnecessary procurement and results in greater value for money (Thai, 2017; Van Weele, 2018).

It should be noted that Procurement Scheduling had a significant positive impact on service delivery ($\beta = 0.33$). Particularly, the study proved the importance of procurement timeline for timely execution of government projects and provision of public services. Procurement scheduling ensures efficient use of funds, proper coordination among user departments, and eliminates delays. Thus, preparation of realistic procurement schedule in local government contributes to better service delivery outcomes.

Market Assessment also had a positive impact on Service Delivery ($\beta = 0.21$). Nevertheless, the strength of its impact on the latter is lower compared to the influence of other procurement planning constructs. Thus, the results suggest that carrying out market surveys, identifying the strengths of suppliers, and evaluating current market situations have a positive impact on procurement processes and, hence, lead to an improvement in service delivery. Nonetheless, when compared to other constructs, market assessment does not seem to be dominant in influencing variations in service delivery.

The measurement model indicates strong connections between the higher-level concept of Service Delivery and its dimensions. The standardized factor loadings were 0.59 for Service Delivery Dimension 1 (SDF1), 0.63 for Service Delivery Dimension 2 (SDF2), and 0.71 for Service Delivery Dimension 3 (SDF3). The figures above show that all three dimensions make substantial contributions to measuring the higher-level concept of service delivery, with SDF3 making the largest contribution to the latter.

Table 12: Hypothesis Testing

Hypothesis	Path	Beta Values	t-values	p-values	Decision
H _{1a}	NIF→SDF	0.43	4.82	<0.001	Supported
H _{1b}	MAS→SDF	0.21	2.67	<0.008	Supported
H _{1c}	PSF→SDF	0.33	3.95	<0.001	Supported

The first hypothesis (H_{1a}) proposed that needs identification has a significant positive effect on public service delivery in local governments. The findings indicate a positive and statistically significant effect of needs identification on service delivery ($\beta = 0.43$, $t = 4.82$, $p < 0.001$). The t-value exceeds the critical value of 1.96, while the p-value is well below the 0.05 significance threshold, providing strong evidence in support of the hypothesis, hence accepting the null hypothesis and rejecting the alternative.

The second hypothesis (H_{1b}) proposed that market assessment has a significant positive effect on public service delivery. The results revealed a positive and statistically significant effect ($\beta = 0.21$, $t = 2.67$, $p = 0.008$). Hence, accepting the null hypothesis and rejecting the alternative.

The third hypothesis (H_{1c}) proposed that procurement scheduling has a significant positive effect on public service delivery. The analysis established a positive and statistically significant relationship between procurement scheduling and service delivery ($\beta = 0.33$, $t = 3.95$, $p < 0.001$). Hence, accepting the null hypothesis and rejecting the alternative.

CONCLUSION AND RECOMMENDATIONS

Conclusions and recommendations show that procurement planning is not only an administrative process but a strategic management function that plays a key role in the

improvement of public sector performance. In this connection, improving procurement planning procedures is necessary for ensuring better accountability, use of resources, and sustainability of public service delivery.

It is recommended that Local governments improve needs identification by developing a process of needs assessment that is comprehensive in nature and involves user departments, technical officers, community members, and other stakeholders. The procurement plans are to be based on clear service delivery needs and in line with the strategic plans and budgets of the local government. This will help procurement procedures to serve real community needs.

Market assessment should be strengthened by conducting market surveys and keeping an up-to-date supplier database. The procurement agencies are to analyze the capacity of suppliers, market prices, innovations in technologies, and procurement risks before starting the procurement procedure.

Procurement institutions must work to optimize procurement scheduling through the preparation of realistic annual procurement plans with clear schedules that are aligned with budget implementation schedules. Procurement processes need to be continually monitored to ensure adherence to schedules and minimize delays that may negatively impact service delivery.

The government and relevant authorities need to develop the capacity of institutions through regular professional training programs in areas such as procurement planning, market analysis, strategic sourcing, procurement analytics, and e-procurement.

Local governments need to embrace electronic procurement systems for improved planning, coordination, monitoring, and reporting during the procurement process. Electronic procurement will make it easier to manage records, decision-making, and ultimately improve public service delivery.

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