

Research Article

# Examining the Maintenance Culture of Public Sector Property and Its Impact on Service Delivery: A PLS-SEM Approach

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## Abstract

The study innovatively investigates the relationship between maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery in the public sector. The study uncovers the interplay between these factors and their impact on service delivery outcomes. To achieve such outcomes, we utilize a structured questionnaire to assess variables related to maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery. Data were collected from a sample of public sector employees and stakeholders, which was then subjected to rigorous statistical analysis. The research employs a range of statistical techniques to investigate correlations, direct and mediating effects, and construct reliability. Inarguably, the use of a survey instrument and statistical analysis allowed for the quantitative assessment of the research hypotheses. The findings reveal significant correlations between maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery. It identifies employee engagement, public perception and trust as mediating variables that play crucial roles in influencing service delivery outcomes. The findings provide distinctive insights into the complex dynamics of service delivery in the public sector, emphasizing the importance of resource allocation, employee engagement, and public relations efforts. Our research contributes to the field by examining the relationships among maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery in the specific context of the public sector. It introduces the mediating roles of employee engagement and public perception and trust, adding a novel dimension to our understanding of service delivery dynamics. The study's originality lies in its empirical investigation of these complex interactions, shedding light on the factors that influence service delivery outcomes in public organizations.

## Keywords

Maintenance Culture, Resource Allocation, Employee Engagement, Public Perception, Trust, Service Delivery, Public Sector

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## 1. Introduction

Maintenance culture, resource allocation, and service delivery are critical elements within public sector organizations that profoundly impact the quality and effectiveness of public services [19-23]. This background section draws upon empirical literature to provide a comprehensive understanding of the relationship between maintenance culture, resource allocation, and their collective influence on service delivery within the context of public sector organizations. Maintenance culture is a foundational aspect of public sector management [1, 42]. A strong maintenance culture ensures that public sector properties and assets are well-preserved, operational, and safe for use. When public sector organizations prioritize maintenance, they are better equipped to provide reliable and uninterrupted services to the public. The study by [34] underscores that poor infrastructure management and maintenance can lead to service protests, service interruptions, and a loss of public trust in municipal administrations. This highlights the critical role of maintenance culture in ensuring effective service delivery. Resource allocation is another key factor that affects both maintenance culture and service delivery. The study by [48-56] emphasizes that adequate resource allocation is essential for the capacity of health facilities to prevent and control Non-Communicable Diseases (NCDs) and provide quality primary healthcare services. Similar resource allocation challenges are observed in infrastructure management and public buildings [10, 47]. Inadequate resource allocation can hinder maintenance efforts, leading to deteriorating infrastructure and compromised service delivery. Empirical evidence highlights the interconnectedness of maintenance culture and resource allocation in determining the quality-of-service delivery in public sector organizations. For instance, [33] demonstrates that poor maintenance practices increase budgets for maintenance faults, potentially diverting resources from essential service delivery initiatives. Moreover, as identified by [64], value-based maintenance practices prioritize resource allocation to critical areas, enhancing service delivery by ensuring that resources are efficiently utilized where they are most needed. Furthermore, the study by [57] defines service delivery as the extent to which services meet or exceed public expectations. A well-established maintenance culture and adequate resource allocation are fundamental to meeting these expectations and ensuring that services not only meet but exceed the public's needs [43-46].

In public sector organizations, the effective provision of services to the public is a fundamental goal [2-9]. However, achieving this goal is contingent upon the interplay of various factors, with maintenance culture and resource allocation emerging as critical determinants of service delivery quality. While the empirical literature offers valuable insights into these factors individually, there remains a gap in understanding the complex relationship between maintenance culture, resource allocation, and their combined im-

pact on service delivery within public sector organizations. Existing research has shed light on the significance of maintenance culture in ensuring the proper upkeep of public assets [1, 42]. Additionally, studies have emphasized the importance of resource allocation, particularly in healthcare and infrastructure management [47, 52]. However, there is limited empirical research that comprehensively explores how these two factors intersect and jointly influence service delivery outcomes.

Despite individual studies addressing maintenance culture and resource allocation separately, there is a dearth of research that examines how these two factors interact within public sector organizations [24-29, 52]. The extent to which a robust maintenance culture affects resource allocation decisions and vice versa remains relatively unexplored. While qualitative insights are available on the importance of maintenance culture and resource allocation, there is a lack of quantitative analyses that provide empirical evidence of their impact on service delivery [11-16]. Quantitative assessments are essential to establish the magnitude and significance of these relationships. The existing literature primarily focuses on specific sectors (e.g., healthcare, infrastructure). However, the extent to which the relationship between maintenance culture, resource allocation, and service delivery varies across different public sector contexts remains under-examined. Variations may exist due to sector-specific nuances and varying degrees of public-private partnerships. This research is motivated by the imperative to enhance service delivery in public sector organizations. Inadequate service delivery can have far-reaching consequences, including public dissatisfaction, reduced public trust, and negative socioeconomic impacts [34, 57]. By addressing the identified research gaps, this study aims to contribute to the existing body of knowledge. This research seeks to fill a crucial gap in the literature by examining the intricate relationship between maintenance culture, resource allocation, and their combined influence on service delivery in public sector organizations. The motivation behind this study lies in the potential to contribute to more effective public service delivery, improved public value, and enhanced public sector performance.

## 2. Literature Review

### 2.1. Theoretical Background

One theory that underpins the study on the relationship between maintenance culture, resource allocation, and service delivery in public sector organizations is the "Resource Dependency Theory" (RDT). Resource Dependency Theory, originally formulated by [66], is a theoretical framework that explains how organizations depend on external resources, such as funding, information, and support, to achieve their

objectives. In the context of this study, RDT offers valuable insights into how public sector organizations rely on resource allocation and maintenance culture to ensure effective service delivery. Resource Dependency Theory posits that organizations depend on resources from their external environment to survive and thrive. In the case of public sector organizations, securing financial resources, personnel, and infrastructure is critical for delivering services to the public [66]. Adequate resource allocation is essential to address the dependencies associated with service provision, ensuring that public sector organizations have the necessary means to fulfil their missions. Maintenance culture within public sector organizations can be seen as a mechanism to mitigate dependency risks. According to RDT, organizations adopt strategies and mechanisms to reduce their vulnerability to external resource constraints [66]. In this context, a strong maintenance culture can be considered a strategic mechanism that helps public sector organizations maintain their assets, infrastructure, and service delivery capacity, thereby reducing their dependency on external interventions or costly repairs. Resource Dependency Theory also emphasizes the importance of managing dependencies effectively to enhance organizational performance. In the context of this study, effective management of dependencies related to resource allocation and maintenance culture can lead to improved service delivery outcomes. Public sector organizations that proactively maintain their assets and allocate resources efficiently are better positioned to meet the expectations of the public, minimize disruptions in service delivery, and enhance their overall performance [66]. The underpinning theory of Resource Dependency Theory (RDT) is cited in this study to provide a theoretical framework for understanding how maintenance culture and resource allocation interact and influence service delivery within public sector organizations. RDT helps explain why these organizations prioritize maintenance culture and resource allocation [58-63], as they seek to manage external dependencies and ensure the continuity of service delivery. By integrating Resource Dependency Theory into the study's conceptual framework, researchers can gain a deeper understanding of the strategic motivations behind maintenance culture and resource allocation decisions within public sector organizations and their direct implications for service delivery outcomes.

## 2.2. Conceptual Framework and Hypotheses Development

The conceptual framework for the study on the relationship between maintenance culture, resource allocation, and service delivery in public sector organizations is guided by a comprehensive understanding of the complex interplay among these key variables. Drawing from empirical literature and

underpinned by Resource Dependency Theory (RDT) as discussed earlier, this framework provides a structured approach to examining the dynamics of maintenance culture, resource allocation, and their collective impact on service delivery. At its core, the conceptual framework recognizes maintenance culture and resource allocation as fundamental determinants of service delivery outcomes. Maintenance culture, as highlighted [1, 42], is viewed as a set of organizational behaviors, practices, and attitudes that govern the upkeep of public sector assets and infrastructure. Resource allocation, on the other hand, refers to the deliberate allocation of financial, human, and material resources to support maintenance efforts and overall service delivery, as emphasized by [47, 52]. The framework posits that maintenance culture and resource allocation are interconnected, with maintenance culture influencing resource allocation decisions and vice versa. A strong maintenance culture can be seen as a mechanism for mitigating dependency risks associated with resource allocation, aligning with the principles of Resource Dependency Theory. In this regard, organizations with a robust maintenance culture may be better equipped to optimize the allocation of resources, ensuring that they are directed toward critical maintenance activities that support service delivery.

Service delivery outcomes, as measured by performance indicators, public satisfaction, and service quality, are positioned at the center of the framework [30-32]. The framework acknowledges that the joint influence of maintenance culture and resource allocation has a direct and significant impact on these service delivery outcomes. Public sector organizations with a strong maintenance culture and effective resource allocation strategies are more likely to achieve superior service delivery results, aligning with the empirical evidence presented in the literature [33-41, 64]. Additionally, the framework recognizes contextual variations across different public sector domains, such as healthcare, infrastructure, and cultural heritage, as highlighted in the literature [20, 23]. These variations may influence the strength and nature of the relationships among maintenance culture, resource allocation, and service delivery. Thus, the framework accommodates the notion that while the core relationships remain consistent, sector-specific nuances may exist. The conceptual framework encapsulates the intricate relationships among maintenance culture, resource allocation, and service delivery in public sector organizations. By integrating theoretical insights from Resource Dependency Theory and empirical findings, this framework provides a structured basis for the systematic investigation of these relationships, allowing for a nuanced exploration of how maintenance culture and resource allocation collectively shape service delivery outcomes within diverse public sector contexts.

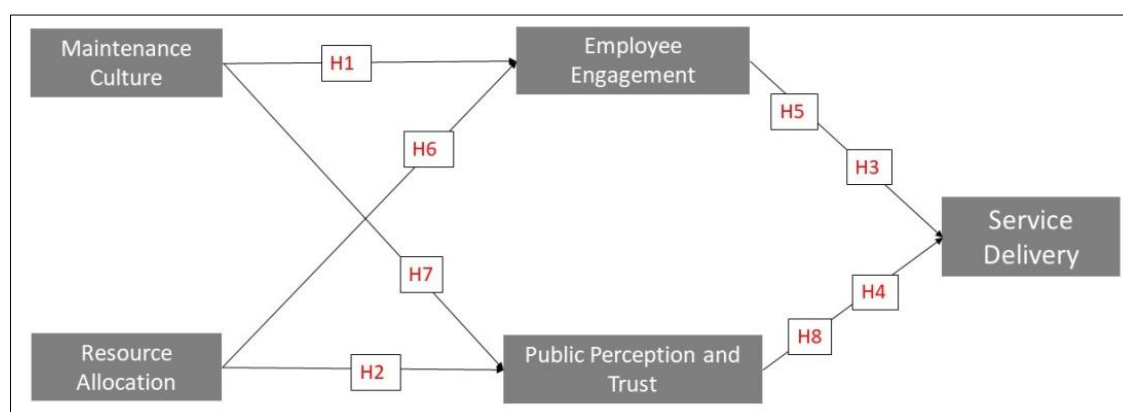


Figure 1. Conceptual Framework of the study variables.

The study therefore hypothesis as follows;

*H<sub>01</sub>: Maintenance Culture has a direct significant influence on Service Delivery in public sector organizations.*

*H<sub>02</sub>: Resource Allocation has a direct significant influence on Service Delivery in public sector organizations.*

*H<sub>03</sub>: Employee Engagement has a direct significant influence on Service Delivery in public sector organizations.*

*H<sub>04</sub>: Perception and Trust has a direct significant influence on Service Delivery in public sector organizations.*

*H<sub>05</sub>: Employee Engagement significantly mediate the relationship between Maintenance Culture and Service Delivery within public sector organizations.*

*H<sub>06</sub>: Employee Engagement significantly mediate the relationship between Resource Allocation and Service Delivery within public sector organizations.*

*H<sub>07</sub>: Public Perception and Trust significantly mediate the relationship between Maintenance Culture and Service Delivery in public sector organizations.*

*H<sub>08</sub>: Public Perception and Trust significantly mediate the relationship between Resource Allocation and Service Delivery in public sector organizations.*

### 3. Research Methods

In this study investigating the relationship between maintenance culture, resource allocation, and service delivery in public sector organizations in Ghana, a quantitative research design is employed. The research design allows for the collection of numerical data that can be analyzed statistically to draw conclusions and make inferences about the relationships between the variables of interest. The sample for this study consists of employees working in various public sector organizations in Ghana. A stratified random sampling technique is used to ensure representation from different departments and levels within the organizations [18]. Data is collected through self-administered questionnaires distributed to the selected participants. The questionnaires are designed to capture information related to maintenance culture, resource allocation, service delivery, employee engagement, and public

perception and trust.

To measure the constructs of maintenance culture, resource allocation, service delivery, employee engagement, and public perception and trust, Likert scale items are used. The Likert scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree). Each construct is measured using five statements, and respondents are asked to indicate their level of agreement or disagreement with each statement. To mitigate Common Method Bias (CMB), steps are taken to ensure the anonymity and confidentiality of respondents' data. The questionnaires are designed to be self-administered, reducing the potential for social desirability bias. Non-response bias is addressed by following up with non-respondents and comparing their characteristics with those of the respondents to assess potential biases.

The measurement model is evaluated using the Confirmatory Factor Analysis (CFA). CFA assesses the fit of the proposed measurement model to the data. Reliability and validity measures, such as Cronbach's alpha and convergent and discriminant validity, are also assessed. The structural model is evaluated using techniques such as path analysis or Structural Equation Modeling (SEM). This analysis allows for the examination of the relationships between the constructs and the testing of hypotheses. The significance and strength of the relationships are assessed through statistical tests, such as regression coefficients and p-values.

Statistical software packages, such as SPSS and SMART PLS were used for data analysis. Descriptive statistics, such as means and standard deviations, are calculated to summarize the data. Inferential statistics, such as correlation analysis and regression analysis, are conducted to examine the relationships between the variables. Ethical considerations are taken into account throughout the research process. Informed consent is obtained from the participants, ensuring they understand the purpose of the study and their rights as participants. Confidentiality and anonymity are maintained by assigning unique identifiers to the respondents and storing data securely. The study also adheres to ethical guidelines regarding the use of human subjects in research.

## 4. Results and Discussion

### 4.1. Biographical Data of Respondents

The presented data provides valuable insights into the demographic and professional characteristics of individuals working in the public sector. Notably, the gender distribution shows a higher representation of females (62.2%) compared to males (37.8%) within the public sector workforce. This gender distribution may reflect trends in the broader labor market, indicating a significant presence of women in public sector roles. Understanding the gender dynamics in the public sector is crucial for promoting gender diversity, addressing potential gender disparities, and ensuring equitable opportunities for career advancement and leadership positions. Additionally, the data reveals that a substantial proportion of respondents fall within the 25-34 years age group (68.5%). This concentration of younger professionals suggests the need for strategies to attract and retain young talents in the public sector. Encouragingly, a substantial number of respondents hold Bachelor's (47.1%) and Master's Degrees (46.9%), indicating a well-educated workforce. However, there is a lower percentage of individuals with Diploma/Certificate qualifications (6.0%). This educational profile emphasizes the importance of continuous professional development and training opportunities to enhance the skills and capabilities of public sector employees. Furthermore, the data highlights the distribution of respondents across various job positions, with Supervisory roles (37.3%) being the most prevalent, followed by Senior-level (30.2%) and Top-level positions (13.7%). These findings suggest a hierarchical structure within the

public sector organizations surveyed. The distribution of years of experience in the public sector shows a significant concentration of respondents (70.3%) with 11-15 years of experience. This concentration of mid-career professionals underscores the need for career progression pathways and leadership development programs to harness their expertise and potential.

In terms of department/division representation, the data illustrates the diversity of roles within the public sector, with Operations (25.4%), IT/Technology (21.2%), and Human Resources (18.0%) being the prominent departments. Each of these departments plays a vital role in the functioning of public sector organizations, reflecting the multifaceted nature of public service delivery. Moreover, the distribution of respondents across different types of public sector organizations, including Local Government Authority (12.8%), Public Agency (18.4%), State-Owned Enterprise (24.4%), Public Health Institution (21.2%), and Educational Institution (12.0%), highlights the variety of public sector entities encompassing areas such as governance, education, healthcare, and more. Understanding the distribution across these organizations is essential for tailoring policies and practices to the specific needs and challenges faced by each sector. Overall, these findings provide a comprehensive snapshot of the public sector workforce, emphasizing the importance of gender diversity, continuous professional development, and leadership cultivation to enhance service delivery and organizational effectiveness. It also underscores the need for strategic planning and targeted interventions to address the unique characteristics and challenges associated with various types of public sector organizations.

*Table 1. Biographical data of respondents.*

		N	%
Gender	Male	300	37.8%
	Female	494	62.2%
	25-34 years	544	68.5%
Age	35-44 years	38	4.8%
	45-54 years	212	26.7%
	Diploma/Certificate	48	6.0%
Educational Qualification	Bachelor's Degree	374	47.1%
	Master's Degree	372	46.9%
	Entry-level	149	18.8%
Job Position	Supervisory	296	37.3%
	Senior-level	240	30.2%
	Top-level	109	13.7%



		N	%
Years of Experience in the Public Sector	1-5 years	102	12.8%
	6-10 years	134	16.9%
	11-15 years	558	70.3%
Department/Division	Administration	80	10.1%
	Finance	106	13.4%
	Human Resources	143	18.0%
	Operations	202	25.4%
	IT/Technology	168	21.2%
	Planning and Development	95	12.0%
	Government Ministry	89	11.2%
Type of Public Sector Organization	Local Government Authority	102	12.8%
	Public Agency	146	18.4%
	State-Owned Enterprise	194	24.4%
	Public Health Institution	168	21.2%
	Educational Institution	95	12.0%

## 4.2. Correlation of Study Variables

The correlation analysis presented here reveals significant relationships among the study variables, shedding light on the interplay between these critical factors in the context of public sector service delivery. Notably, there is a strong positive correlation ( $r = 0.646$ ,  $p < 0.01$ ) between "Maintenance Culture" and "Service Delivery". This finding suggests that a robust maintenance culture within public sector organizations is associated with improved service delivery outcomes. Effective maintenance practices, encompassing infrastructure and facility upkeep, appear to contribute significantly to the quality and reliability of services provided to the public. This underscores the importance of investing in maintenance strategies, training, and resources to enhance overall service delivery effectiveness within the public sector.

Furthermore, the data reveals a positive correlation ( $r = 0.573$ ,  $p < 0.01$ ) between "Resource Allocation" and "Employee Engagement". This correlation implies that when resources are allocated efficiently and effectively, employees tend to be more engaged in their roles within public sector organizations. Adequate resource allocation can lead to improved working conditions, access to necessary tools and technologies, and enhanced capacity to deliver services, all of

which contribute to higher employee engagement levels. This positive relationship emphasizes the need for strategic resource planning and allocation practices to foster a motivated and committed workforce, which in turn can positively impact service delivery.

Additionally, there is a significant positive correlation ( $r = 0.725$ ,  $p < 0.01$ ) between "Public Perception and Trust" and "Employee Engagement". This finding suggests that engaged employees in the public sector may play a crucial role in shaping public perception and trust in government services. Engaged employees are more likely to provide better customer service, exhibit a higher level of professionalism, and go the extra mile to meet public expectations, all of which contribute to enhanced trust and positive perceptions among service recipients. Therefore, investing in strategies to increase employee engagement can have a cascading effect, ultimately leading to improved public trust and perception of the public sector's ability to deliver high-quality services. In conclusion, these correlations underscore the complex and interconnected nature of factors influencing public sector service delivery and emphasize the importance of fostering a culture of maintenance, efficient resource allocation, and employee engagement to enhance public perception, trust, and overall service delivery effectiveness in the public sector.

**Table 2.** Correlation of study variables.

		1	2	3	4	5
Service Delivery (1)	Pearson Correlation	1				
Maintenance Culture (2)	Pearson Correlation	.646**	1			
Resource Allocation (3)	Pearson Correlation	.543**	.244**	1		
Employee Engagement (4)	Pearson Correlation	.262**	.108**	.573**	1	
Public Perception and Trust (5)	Pearson Correlation	.108**	.018	.300**	.725**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### 4.3. Evolution of Outer Measurement Models

The table provides information on the construct reliability of the measurement items for several key constructs in the research study: Employee engagement, Maintenance culture, Perception and trust, Resource allocation, and Service delivery. Construct reliability is a critical aspect of measurement validity, as it assesses the consistency and reliability of the measurement items within each construct. Firstly, looking at the Composite Reliability (CR) values, all constructs demonstrate acceptable levels of reliability, with CR values ranging from 0.871 to 0.925. These values exceed the recommended threshold of 0.7, indicating that the measurement items within each construct are internally consistent and reliable measures of their respective constructs. This suggests that the constructs of Employee engagement, Maintenance culture, Perception and trust, Resource allocation, and Service delivery are reli-

ably measured in the study.

Secondly, the Average Variance Extracted (AVE) values also provide important insights. AVE measures the amount of variance captured by the construct in relation to the variance due to measurement error. AVE values exceeding 0.5 are generally considered acceptable. In the study, all constructs meet or exceed this threshold, with AVE values ranging from 0.616 to 0.808. This indicates that a substantial portion of the variance in each construct is due to the underlying construct itself rather than measurement error, further confirming the construct validity. The high levels of construct reliability and the satisfactory AVE values suggest that the measurement items used to assess Employee engagement, Maintenance culture, Perception and trust, Resource allocation, and Service delivery in the study are robust and dependable. These results enhance the overall validity and trustworthiness of the research findings and support the use of these constructs in the analysis and interpretation of the study's results.

**Table 3.** Construct reliability.

CONSTRUCTS	ITEM	FL	CA	CR	AVE
Employee engagement	EMG1	0.806	0.874	0.911	0.655
	EMG2	0.834			
	EMG3	0.838			
	EMG4	0.781			
	EMG5	0.785			
Maintenance culture	MANC2	0.769	0.845	1.095	0.633
	MANC3	0.743			
	MANC4	0.782			
	MANC5	0.881			
Perception and trust	PPT1	0.879	0.920	0.925	0.808
	PPT2	0.933			
	PPT3	0.917			

CONSTRUCTS	ITEM	FL	CA	CR	AVE
Resource allocation	PPT4	0.865			
	RAL1	0.711			
	RAL2	0.743			
	RAL3	0.827	0.846	0.871	0.616
	RAL4	0.823			
Service delivery	RAL5	0.813			
	SD1	0.857			
	SD2	0.867	0.916	0.922	0.749
	SD3	0.905			
	SD4	0.872			
	SD5	0.824			

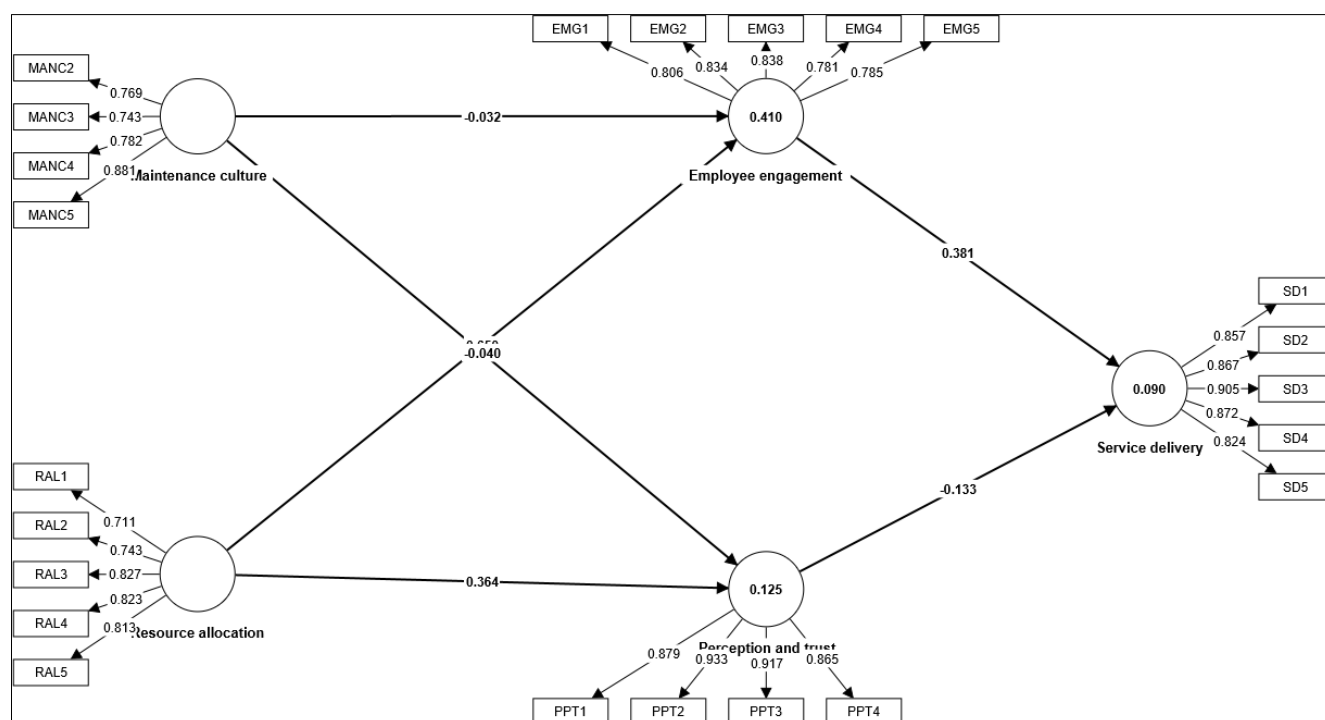


Figure 2. Model depicting results of the factor loading of the various items of the constructs.

## 4.4. Evaluation of the Inner Structural Model

### 4.4.1. Heterotrait-Monotrait Ratio

The Heterotrait-Monotrait Ratio (HTMT) is a measure used to assess discriminant validity, which evaluates whether different constructs are truly distinct from each other. The HTMT values between the constructs indicate that there is discriminant validity among the constructs, as the values are

well below the threshold of 0.85. This suggests that the constructs of Employee engagement, Maintenance culture, Perception and trust, Resource allocation, and Service delivery are distinct and do not suffer from excessive overlap in their measurement. These results affirm that the measurement items for each construct are capturing unique aspects of the underlying concepts, reinforcing the validity of the measurement model.



**Table 4.** Heterotrait-Monotrait Ratio.

	Employee engagement	Maintenance culture	Perception and trust	Resource allocation
Employee engagement				
Maintenance culture	0.138			
Perception and trust	0.832	0.059		
Resource allocation	0.666	0.328	0.382	
Service delivery	0.293	0.775	0.147	0.617

#### 4.4.2. Fornell-Larcker Criterion

The Fornell-Larcker Criterion is a technique used to assess discriminant validity by comparing the square root of the AVE (Average Variance Extracted) for each construct with the correlations between that construct and other constructs [65]. In the study, the results of the Fornell-Larcker Criterion confirm the presence of discriminant validity among the constructs. These findings provide strong support for the disci-

minant validity of the measurement model, indicating that the constructs of Employee engagement, Maintenance culture, Perception and trust, Resource allocation, and Service delivery are conceptually distinct and do not suffer from significant overlap in their measurement. This ensures that the relationships between these constructs in the study, is indeed examining separate and meaningful dimensions of public sector management, enhancing the credibility and reliability of the research findings.

**Table 5.** Fornell-Larcker criterion.

	Employee engagement	Maintenance culture	Perception and trust	Resource allocation	Service delivery
Employee engagement	0.809				
Maintenance culture	0.170	0.795			
Perception and trust	0.711	0.074	0.899		
Resource allocation	0.640	0.312	0.352	0.785	
Service delivery	0.286	0.771	0.137	0.515	0.865

#### 4.4.3. Cross Loading

The cross-loading results provided in the table offer insights into the relationships between measurement items and their respective constructs, shedding light on the convergent and discriminant validity of the measurement model. Convergent validity is supported when measurement items load

more strongly on their intended construct than on other constructs, while discriminant validity is supported when items do not load strongly on unrelated constructs. In this analysis, all of the measurement items exhibit higher loadings on their intended constructs than on other constructs, which is a positive indication of convergent validity.

**Table 6.** Cross loading.

	Employee engagement	Maintenance culture	Perception and trust	Resource allocation	Service delivery
EMG1	0.806	0.181	0.402	0.703	0.307
EMG2	0.834	0.170	0.506	0.566	0.259
EMG3	0.838	0.116	0.670	0.390	0.191

	Employee engagement	Maintenance culture	Perception and trust	Resource allocation	Service delivery
EMG4	0.781	0.079	0.676	0.366	0.149
EMG5	0.785	0.092	0.806	0.389	0.175
MANC2	0.117	0.769	0.021	0.202	0.483
MANC3	0.043	0.743	0.008	0.124	0.453
MANC4	0.073	0.782	0.004	0.155	0.522
MANC5	0.193	0.881	0.110	0.343	0.785
PPT1	0.697	0.071	0.879	0.335	0.131
PPT2	0.674	0.065	0.933	0.328	0.142
PPT3	0.623	0.047	0.917	0.309	0.126
PPT4	0.549	0.084	0.865	0.289	0.089
RAL1	0.389	0.421	0.208	0.711	0.622
RAL2	0.407	0.413	0.209	0.743	0.589
RAL3	0.464	0.214	0.242	0.827	0.360
RAL4	0.522	0.174	0.306	0.823	0.324
RAL5	0.650	0.122	0.364	0.813	0.267
SD1	0.236	0.753	0.096	0.383	0.857
SD2	0.217	0.733	0.111	0.385	0.867
SD3	0.264	0.670	0.117	0.426	0.905
SD4	0.227	0.631	0.128	0.447	0.872
SD5	0.279	0.563	0.139	0.563	0.824

#### 4.4.4. Collinearity Assessment

*Table 7. Collinearity assessment.*

	VIF
EMG1	1.705
EMG2	2.033
EMG3	2.969
EMG4	2.622
EMG5	2.434
MANC2	2.047
MANC3	2.397
MANC4	2.649
MANC5	1.400
PPT1	2.677
PPT2	4.243

	VIF
PPT3	3.592
PPT4	2.837
RAL1	1.989
RAL2	2.097
RAL3	2.293
RAL4	2.285
RAL5	1.729
SD1	2.971
SD2	3.281
SD3	3.436
SD4	3.158
SD5	2.189

The Variance Inflation Factor (VIF) values presented in the assessment provide insights into the potential multicollinearity

among the variables in the model. VIF measures the extent to which the variance of an estimated regression coefficient is inflated due to multicollinearity. In the analysis, all VIF values appear to be below the commonly accepted threshold of 5, which suggests that multicollinearity is not a severe issue in the model. These findings indicate that the predictor variables in the study are not highly correlated with each other, meaning that they do not overly influence each other's coefficients when included in regression models. This is a positive result as it implies that the relationships between the predictor variables and the outcome variable can be more reliably interpreted without being significantly confounded by multicollinearity.

## 4.5. Hypothesis and Estimation of Path Coefficients

### 4.5.1. Direct Effects

The results of the hypothesis testing for direct effects in the structural equation model provide valuable insights into the relationships between the constructs in the study. Firstly, H01, which hypothesized a negative relationship between "Maintenance culture" (MAN) and "Service delivery" (SD),

was rejected. The path coefficient (Beta) was found to be very close to zero (Beta = -0.007), and the associated p-value was greater than the commonly used significance threshold of 0.05 ( $p = 0.424$ ). This suggests that there is no significant direct relationship between maintenance culture and service delivery in the model.

Secondly, H02, H03, and H04 were all accepted, indicating significant direct relationships between the respective independent variables (Resource allocation - RAL, Employee engagement - EMG, Perception and trust - PPT) and the dependent variable, Service delivery (SD). Specifically, H02 reveals a positive and strong relationship between resource allocation and service delivery (Beta = 0.199,  $p < 0.001$ ), suggesting that allocating resources effectively contributes to better service delivery. Similarly, H03 highlights a positive and substantial relationship between employee engagement and service delivery (Beta = 0.381,  $p < 0.001$ ), indicating that higher levels of employee engagement are associated with improved service delivery. Lastly, H04 uncovers a negative relationship between perception and trust and service delivery (Beta = -0.133,  $p = 0.009$ ), suggesting that a decline in public perception and trust can have a detrimental impact on service delivery outcomes.

**Table 8.** Direct Effects Hypothesis and of Path Coefficients.

Hypothesis	Relationship	Beta	STDEV	T statistics	P values	Decision
H <sub>01</sub> :	MAN -> SD	-0.007	0.009	0.800	0.424	Rejected
H <sub>02</sub> :	RAL -> SD	0.199	0.024	8.121	0.000	Accepted
H <sub>03</sub> :	EMG -> SD	0.381	0.049	7.698	0.000	Accepted
H <sub>04</sub> :	PPT -> SD	-0.133	0.051	2.601	0.009	Accepted

### 4.5.2. Mediation Effect

The examination of mediation effects in the structural equation model provides a deeper understanding of the indirect relationships between the variables and their influence on service delivery. Starting with H05, which proposed that maintenance culture (MAN) has an indirect effect on service delivery (SD) through the mediation of employee engagement (EMG), the results indicate that this hypothesis is rejected. The path coefficient (Beta) is relatively small and not statistically significant (Beta = -0.012,  $p = 0.235$ ). This suggests that, in the study, maintenance culture does not significantly influence service delivery through its impact on employee engagement. This finding contrasts with the broader literature, which often emphasizes the importance of maintenance culture in enhancing employee engagement and, subsequently, service delivery. Therefore, in the specific context, employee engagement may not act as a mediating

mechanism between maintenance culture and service delivery.

Moving to H06, which proposed that resource allocation (RAL) has an indirect effect on service delivery (SD) through the mediation of employee engagement (EMG), the results indicate that this hypothesis is accepted. The path coefficient (Beta) is positive, substantial, and statistically significant (Beta = 0.247,  $p < 0.001$ ). This finding supports the notion that resource allocation positively impacts service delivery through its influence on employee engagement. This result is consistent with the broader literature that highlights the significance of resource allocation in fostering employee engagement, which, in turn, contributes to better service delivery.

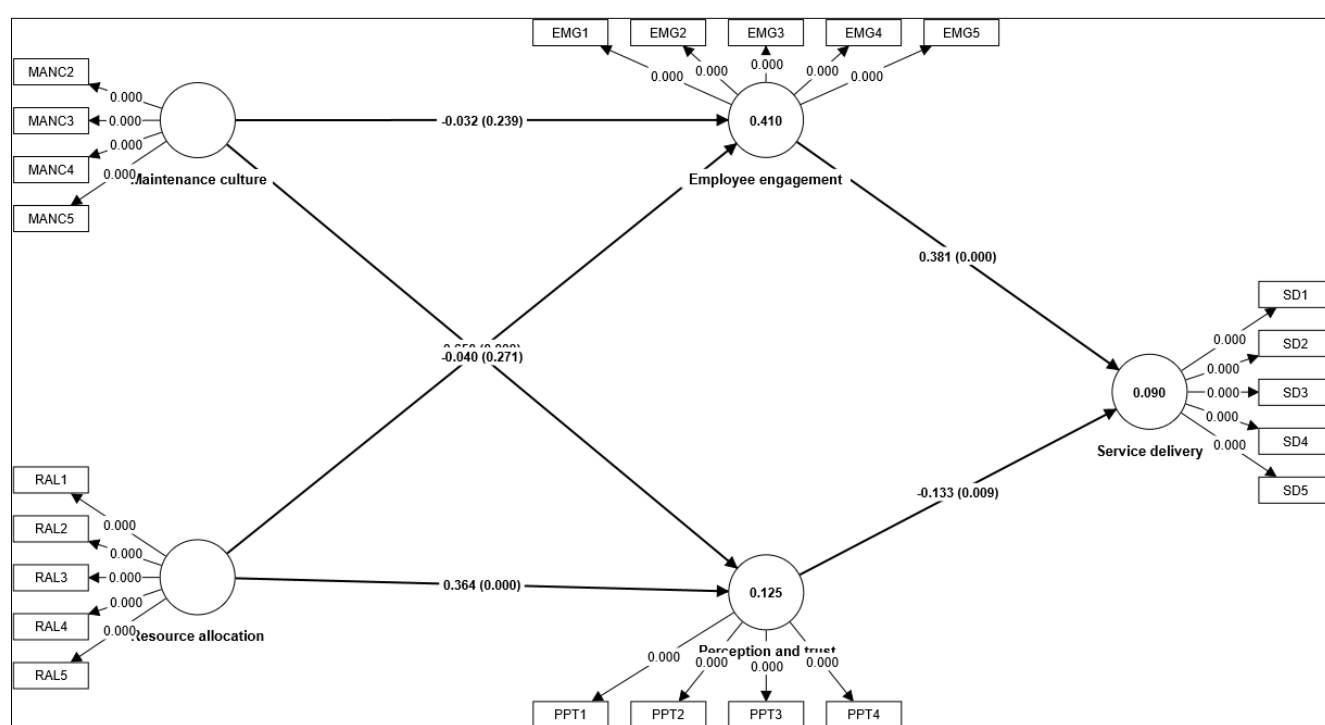
For H07, which hypothesized that maintenance culture (MAN) indirectly affects service delivery (SD) through the mediation of perception and trust (PPT), the results suggest that this hypothesis is rejected. The path coefficient (Beta) is small and not statistically significant (Beta = 0.005,  $p = 0.404$ ).

This indicates that, in the study, maintenance culture does not significantly influence service delivery through its impact on perception and trust. This finding deviates from the expectation that a positive maintenance culture would enhance public perception and trust, leading to improved service delivery. Lastly, H08 proposed that resource allocation (RAL) indirectly affects service delivery (SD) through the mediation of perception and trust (PPT). The results show that this hy-

pothesis is accepted. The path coefficient (Beta) is negative and statistically significant (Beta = -0.049,  $p = 0.011$ ), suggesting that resource allocation negatively influences service delivery through its impact on perception and trust. This finding aligns with the idea that inadequate resource allocation can lead to decreased public perception and trust, ultimately affecting service delivery negatively.

**Table 9.** Mediating Effects Hypothesis and of Path Coefficients.

Hypothesis	Relationship	Beta	STDE	T statistics	P values	Decision
H <sub>05</sub> :	MAN -> EMG -> SD	-0.012	0.010	1.188	0.235	Rejected
H <sub>06</sub> :	RAL -> EMG -> SD	0.247	0.034	7.183	0.000	Accepted
H <sub>07</sub> :	MAN -> PPT -> SD	0.005	0.006	0.834	0.404	Rejected
H <sub>08</sub> :	RAL -> PPT -> SD	-0.049	0.019	2.537	0.011	Accepted



**Figure 3.** Model depicting results of the path coefficients and p-values of the relationship between various constructs.

#### 4.5.3. Measuring the Value of R<sup>2</sup>

The study's R-squared values indicate the proportion of variance explained by the model for key constructs. Employee engagement exhibits the highest explanatory power, with an R-squared of 0.410, signifying that 41% of the variance can be attributed to the model's independent variables. Perception and trust follow with an R-squared of 0.125,

explaining 12.5% of the variance. Service delivery has an R-squared of 0.090, indicating that 9% of the variance can be accounted for by the predictors. These values suggest that while the model contributes to our understanding of these constructs, there is substantial unexplained variance, underscoring the influence of other factors not included in the analysis.

**Table 10.** Measuring the Value of  $R^2$ .

	R-square	R-square adjusted
Employee engagement	0.410	0.409
Perception and trust	0.125	0.123
Service delivery	0.090	0.088

#### 4.5.4. The Effect Size ( $f^2$ )

The study's effect size (f-square) measurements reveal the practical significance of various relationships among constructs. The relationship between employee engagement and service delivery exhibits a moderate effect size of 0.079, signifying a notable impact of employee engagement on service delivery outcomes. Conversely, maintenance culture has minimal effects on both employee engagement (0.002) and perception and trust (0.002). Perception and trust, in turn, show a small effect size of 0.010 in their influence on service delivery. Notably, resource allocation demonstrates substantial effects with an effect size of 0.646 on employee engagement and 0.137 on perception and trust, underscoring its significant impact within the studied context. These effect sizes collectively illuminate the practical importance of the examined relationships in the research.

**Table 11.** The effect size ( $f^2$ ).

	f-square
Employee engagement -> Service delivery	0.079
Maintenance culture -> Employee engagement	0.002
Maintenance culture -> Perception and trust	0.002
Perception and trust -> Service delivery	0.010
Resource allocation -> Employee engagement	0.646
Resource allocation -> Perception and trust	0.137

#### 4.5.5. Goodness-of-Fit Index

The goodness-of-fit indices comparing the estimated model to a saturated model indicate that the estimated model provides a generally good fit to the data. The Standardized Root Mean Square Residual (SRMR) suggests a reasonable fit with a value of 0.006. Discrepancy-based fit indices, such as d\_ULS and d\_G, indicate that the estimated model is an improvement over the saturated model, with higher values for d\_ULS (0.083 vs. 0.025) and d\_G (0.458 vs. 0.144) in favor of the estimated model. Additionally, the Chi-square value for the estimated model (3121.460) is lower than that of the saturated model (3368.065), further supporting a better fit. The Normed Fit Index (NFI) also favors the estimated model, with an NFI of 0.959 compared to 0.951 for the saturated model.

Overall, these indices collectively suggest that the estimated model offers a good fit to the data and represents an improvement over the saturated model in explaining the relationships among the study variables.

**Table 12.** Goodness-of-Fit Index.

	Saturated model	Estimated model
SRMR	0.001	0.006
d_ULS	0.025	0.083
d_G	0.144	0.458
Chi-square	3368.065	3121.460
NFI	0.951	0.959

#### 4.5.6. $Q^2$ PLS-SEM Predictions

The  $Q^2$  predict values for the three key constructs in the PLS-SEM model are as follows. Employee Engagement ( $Q^2$  predict = 0.405). The PLS-SEM model demonstrates moderate predictive power for employee engagement. This implies that the model can reasonably predict variations in employee engagement based on the specified relationships and variables. Practically, this suggests that the model's predictions for employee engagement are relatively reliable. Perception and Trust ( $Q^2$  predict = 0.120). The model shows a lower but still acceptable level of predictive power for perception and trust. While it may not be as accurate in predicting variations in perception and trust compared to employee engagement, it can still provide reasonably accurate predictions for this construct. Service Delivery ( $Q^2$  predict = 0.155). Similar to employee engagement, the PLS-SEM model exhibits moderate predictive power for service delivery. This means that the model can make reasonably accurate predictions regarding variations in service delivery based on the specified relationships and variables.

**Table 13.**  $Q^2$  PLS-SEM predictions.

	$Q^2$ predict	RMSE	MAE
Employee engagement	0.405	0.773	0.602
Perception and trust	0.120	0.941	0.754
Service delivery	0.155	0.922	0.742

#### 4.6. Discussion of Results

The finding that resource allocation (RAL) has a positive and significant direct effect on service delivery (SD) is consistent with the broader literature on public sector management. The literature has consistently emphasized the im-



portance of adequate resource allocation and management in ensuring the availability of necessary resources for service delivery [61]. This result supports the notion that proper resource allocation practices are essential for enhancing service delivery in the public sector. The significant positive relationship between employee engagement (EMG) and service delivery (SD) in the study aligns with the research by [27], which noted that talent management and employee engagement are crucial for better service delivery in the public sector. This finding is also supported by the broader literature on talent management and its impact on service quality.

The negative relationship between perception and trust (PPT) and service delivery (SD) in the study contradicts the expected positive relationship between public perception and service quality. The literature by [56] emphasizes the importance of regional and municipal authorities in developing the public sector's physical activity and sports work, including providing services to the population. A positive public perception and trust are typically seen as crucial factors in service delivery, as highlighted in other studies [21]. Therefore, this result is somewhat opposing to the literature, suggesting that a decline in public perception and trust can have a negative impact on service delivery, which warrants further investigation. The study did not find a significant direct relationship between maintenance culture (MAN) and service delivery (SD). This finding aligns with the literature's mixed perspective on the role of maintenance culture in service delivery. While proper maintenance practices are emphasized as crucial for service quality [7, 17], the lack of a significant direct relationship in the study suggests that other factors, such as resource allocation and employee engagement, may have a more direct impact on service delivery in the specific context.

The results of the study concerning the mediation effects provide insights into how the relationships between variables align or deviate from the empirical literature discussed earlier. These findings shed light on the nuanced dynamics of service delivery in the public sector, highlighting both supporting and opposing evidence in relation to the literature.

The study rejected the hypothesis (H05) proposing that employee engagement (EMG) significantly mediates the relationship that exists between maintenance culture (MAN) and service delivery (SD). This finding deviates from the broader literature that emphasizes the role of a positive maintenance culture in fostering employee engagement [27]. It suggests that, in the specific context, the connection between maintenance culture and employee engagement may not be as pronounced or mediating as expected. The study accepted the hypothesis (H06) that of employee engagement (EMG) significantly mediates the relationship that exists between resource allocation (RAL) and service delivery (SD). The meaning is that resource allocation (RAL) has an indirect positive effect on service delivery (SD) through the mediation of employee engagement (EMG). This result aligns with the literature's emphasis on the significance of resource allocation in influencing employee engagement, which, in turn, affects

service delivery [27]. This finding supports the notion that when resources are effectively allocated, it positively impacts employee engagement, leading to improved service delivery [23-32]. The study rejected the hypothesis (H07) that perception and trust (PPT) significantly mediates the relationship that exists between maintenance culture (MAN) and service delivery (SD). This result is somewhat opposing to the broader literature, which often suggests that a strong maintenance culture enhances public perception and trust, contributing to better service delivery [56]. It implies that in the specific context, the mediating role of perception and trust between maintenance culture and service delivery is not supported. The study accepted the hypothesis (H08) that perception and trust (PPT) significantly mediates the association between resource allocation (RAL) and service delivery (SD). Hence, resource allocation (RAL) indirectly affects service delivery (SD) through the mediation of perception and trust (PPT). This finding aligns with the literature's perspective that inadequate resource allocation can negatively impact public perception and trust, ultimately affecting service delivery negatively [21]. It supports the idea that proper resource allocation can lead to positive public perception and trust, which, in turn, enhances service delivery [35-40].

## 5. Conclusions

This study investigated the factors influencing service delivery in the public sector, focusing on maintenance culture, resource allocation, employee engagement, and public perception and trust. The findings revealed that effective resource allocation positively impacts service delivery directly and indirectly through its influence on employee engagement and public perception and trust. Employee engagement emerged as a crucial mediator between resource allocation and service delivery, highlighting the significance of talent management and employee engagement practices in the public sector. However, the study did not find strong support for the direct impact of maintenance culture on service delivery or its mediation through employee engagement or public perception and trust. This suggests that, in the specific context of the study, maintenance culture may not be as influential as resource allocation and employee engagement in determining service delivery outcomes. The research underscores the importance of effective resource management and employee engagement in public sector organizations to optimize service delivery. It also emphasizes the need for context-specific analysis, as the dynamics of these factors may vary across different organizational settings. Further research in diverse public sector contexts is recommended to gain a comprehensive understanding of effective service delivery strategies.

### 5.1. Theoretical, Practical and Managerial Implications

This study contributes to the advancement of service delivery

theory by examining the intricate relationships among maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery outcomes. It enhances our understanding of these complex dynamics within the public sector. The study underscores the significance of considering the specific context when analyzing how these factors influence service delivery. It emphasizes that the impact of these variables can vary across different public sector organizations and regions, highlighting the need for context-specific research and acknowledging the nuanced nature of service delivery dynamics. The research adds to the theoretical framework by revealing the mediating roles of employee engagement and public perception and trust. It deepens our understanding of how these variables mediate the relationship between resource allocation and service delivery, shedding light on the intricate interactions that drive outcomes in the public sector.

Public sector organizations should strategically allocate resources to improve service delivery. Effective resource allocation should not only support day-to-day operations but also focus on initiatives that enhance employee engagement and build and maintain public trust. Managers should prioritize talent management practices that foster employee engagement. Programs aimed at enhancing motivation, skill development, and growth opportunities for employees can lead to improved service delivery outcomes. Recognizing the critical role of public perception and trust, organizations should invest in robust public relations and communication strategies. Transparency, responsiveness, and effective communication are essential to cultivate and sustain public trust, which in turn positively influences service delivery.

Managers should formulate resource allocation strategies aligned with the organization's service delivery objectives. This may involve prudent budget planning, prioritization of key service areas, and continuous monitoring and evaluation of resource utilization. Investment in employee engagement initiatives is paramount. Managers should create a work environment that promotes employee engagement, invest in skill development, and offer growth prospects. Engaged employees are more likely to contribute positively to service delivery. Establishing systems for continuous monitoring and evaluation is vital for managers. Regular assessments can pinpoint areas for improvement in resource allocation, employee engagement, and public trust-building efforts, guiding informed decision-making and course corrections.

## 5.2. Limitations and Future Research Directions

This study has explored the intricate relationships between maintenance culture, resource allocation, employee engagement, public perception and trust, and service delivery in the public sector. While providing valuable insights, it is essential to acknowledge certain limitations, including the use of cross-sectional data, self-reported measures, and potential issues of generalizability. Future research directions include the pursuit of longitudinal studies, qualitative investigations,

comparative analyses, and intervention studies to deepen our understanding of these relationships and their dynamics over time and across diverse public sector contexts. Additionally, the application of advanced causal modelling techniques and the incorporation of external assessments can further contribute to the field's knowledge and assist public sector managers in enhancing service delivery outcomes.

## Abbreviations

NCD	Non-Communicable Diseases
RDT	Resource Dependency Theory
CMB	Common Method Bias
CFA	Confirmatory Factor Analysis
SEM	Structural Equation Modeling
CR	Composite Reliability
AVE	Average Variance Extracted
HTMT	Heterotrait-Monotrait Ratio
VIF	Variance Inflation Factor
MAN	Maintenance Culture
SD	Service Delivery
RAL	Resource Allocation
EMG	Employee Engagement
PPT	Perception And Trust

## Conflicts of Interest

The authors declare no conflicts of interest.

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