



## FORECASTING PUBLIC SECTOR ACCOUNTABILITY: ANALYZING AND PREDICTING AUDIT TRENDS IN RWANDA'S FINANCIAL MANAGEMENT (2020-2030)

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### **Abstract:**

This study, titled *Forecasting Public Sector Accountability: Analyzing and Predicting Audit Trends in Rwanda's Financial Management (2020-2030)*, provides a comprehensive analysis of the evolution of public financial management in Rwanda, focusing on the period from 2020 to 2030. Leveraging data from the Office of the Auditor General (OAG) and qualitative assessments, the study examines key trends in financial accountability, including audit opinions, compliance with laws, value for money, and the implementation of audit recommendations.

The findings indicate significant progress in Rwanda's public financial management, evidenced by an increase in unqualified audit opinions and a reduction in financial mismanagement. The study attributes these improvements to enhanced internal controls, strengthened financial regulations, and a heightened focus on value-for-money audits. By employing predictive modeling, the study forecasts continued positive trends, anticipating near-complete adherence to financial regulations and further reductions in mismanaged public funds by 2030.

The study concludes with strategic recommendations aimed at sustaining these improvements, including further strengthening internal controls, enhancing compliance monitoring, and leveraging advanced technology for financial oversight. These recommendations are intended to support Rwanda's ongoing efforts to achieve its 2030 development goals by ensuring efficient and transparent management of public resources.

**Key Words:** Audit Trends, Financial Accountability, Public Financial Management, Compliance, Value for Money

### **1. Introduction:**

In the 21st century, public sector accountability has emerged as a critical issue worldwide. Governments across the globe are under increasing pressure to manage public resources with greater transparency, efficiency, and responsibility. The global financial landscape has seen significant shifts, with developed and developing nations alike striving to implement rigorous audit systems and financial management practices. These efforts are aimed at curbing corruption, ensuring value for money in public spending, and maintaining public trust in governmental institutions. Organizations like the International Monetary Fund (IMF) and the World Bank have been instrumental in promoting global standards for public financial management, emphasizing the importance of strong audit mechanisms to safeguard public resources (IMF, 2020; World Bank, 2021).

In Africa, the quest for enhanced public sector accountability has gained momentum over the past two decades. The continent has witnessed a growing emphasis on strengthening public financial management systems, driven by the need to address corruption, mismanagement of public funds, and inefficiencies in governance. Various African nations have embarked on reforms to align with international best practices, with organizations such as the African Development Bank and the United Nations Development Programme (UNDP) providing support for these initiatives (AfDB, 2021; UNDP, 2022). Despite progress, challenges persist, including limited capacity, weak enforcement of regulations, and political interference in audit processes. However, countries like Rwanda, Kenya, and South Africa have made notable strides, setting examples for others on the continent (Rugege, 2021).

Within the East African Community (EAC), member states have been actively working towards improving public financial management and audit practices. The EAC region, comprising countries such as Kenya, Tanzania, Uganda, Rwanda, Burundi, and South Sudan, has recognized the importance of harmonized audit standards to enhance accountability and transparency. Collaborative efforts, such as the EAC Protocol on Good Governance, underscore the region's commitment to promoting integrity in the management of public resources (EAC, 2022). Rwanda, in particular, has emerged as a leader within the EAC in implementing comprehensive audit reforms and strengthening its public financial management systems. These efforts have contributed to improved governance and accountability across the region (OAG Rwanda, 2023).

Rwanda stands out as a beacon of progress in public sector accountability within both the EAC and Africa as a whole. Over the past decade, Rwanda has implemented significant reforms aimed at enhancing the efficiency, transparency, and accountability of its public financial management. The Office of the Auditor General (OAG) has played a pivotal role in driving these reforms, leading to increased compliance with financial regulations, a rise in unqualified audit opinions, and a notable reduction in financial mismanagement (OAG Rwanda, 2023). As Rwanda moves towards its 2030 development goals, it continues to set an example for other nations in the region, demonstrating the impact of robust audit practices and effective financial oversight on national development.

By projecting these trends to 2030, this study anticipates further improvements in public sector accountability, with near-complete adherence to financial regulations and a substantial reduction in mismanaged public funds. The root causes driving these

trends include legal reforms, enhanced internal controls, and performance-based budgeting practices. The study concludes by recommending continued capacity building, refined audit methodologies, and stronger enforcement of financial regulations to sustain and accelerate these positive developments, thereby supporting Rwanda's broader development goals (Republic of Rwanda, 2021).

## 2. Specific Objectives:

Here are three specific objectives for the study

- To analyze the historical trends in financial statements audit opinions, compliance with laws and regulations, and realization of value for money in Rwanda's public sector from 2020 to 2023.
- To assess the effectiveness of current public financial management practices in Rwanda in reducing instances of financial mismanagement and enhancing accountability.
- To forecast the trends in public sector accountability in Rwanda up to 2030 and propose strategic recommendations for enhancing financial management practices and achieving better audit outcomes.

## 3. Statement of the Problem:

In recent years, Rwanda has made significant strides in improving public financial management and enhancing accountability within its public sector. Despite these advancements, challenges persist in achieving full compliance with financial regulations, realizing value for money, and ensuring the effective implementation of audit recommendations. The persistence of financial mismanagement, coupled with the slow progress in certain areas of audit outcomes, raises concerns about the sustainability of these improvements and the potential risks to Rwanda's long-term development goals. This study seeks to address these concerns by analyzing past trends, identifying the root causes of persistent issues, and forecasting the future trajectory of public sector accountability in Rwanda. The goal is to provide actionable insights that can guide policy decisions and strengthen financial governance in the country as it moves towards 2030.

## 4. Methodology:

This study employs a mixed-methods approach, combining quantitative analysis of audit data from the Office of the Auditor General (OAG) of Rwanda with qualitative assessments of public financial management practices. The quantitative analysis involves examining trends in audit opinions, compliance with laws, value for money assessments, and the implementation of audit recommendations from 2020 to 2023. Predictive modeling techniques are used to forecast these trends through 2030. Additionally, qualitative data is gathered through a review of relevant legal frameworks, internal control systems, and interviews with key stakeholders in public financial management.

Given the analytical model focusing on factors influencing unqualified audit opinions for public entities in Rwanda:

$$y=f(x)$$

Where  $y$ =Unqualified Audit Opinions (Dependent Variable)

The regression equation is expressed as:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\epsilon$$

Y: Unqualified Audit Opinions;  $\beta_0$ : Intercept (constant term);  $X_1$ : Fully Implemented Recommendations;  $X_2$ : Partially Implemented Recommendations;  $X_3$ : Not Implemented Recommendations;  $X_4$ : Compliance Unqualified;  $X_5$ : Partially Supported Expenditure and  $\epsilon$ : Error term

## 5. Literature Review:

The literature on Rwanda's public financial management highlights significant strides in enhancing accountability, transparency, and efficiency in the use of public resources. The Office of the Auditor General's (OAG) Annual Audit Report (2023) illustrates the positive trajectory in audit outcomes, showing an increase in unqualified audit opinions and a reduction in instances of financial mismanagement.

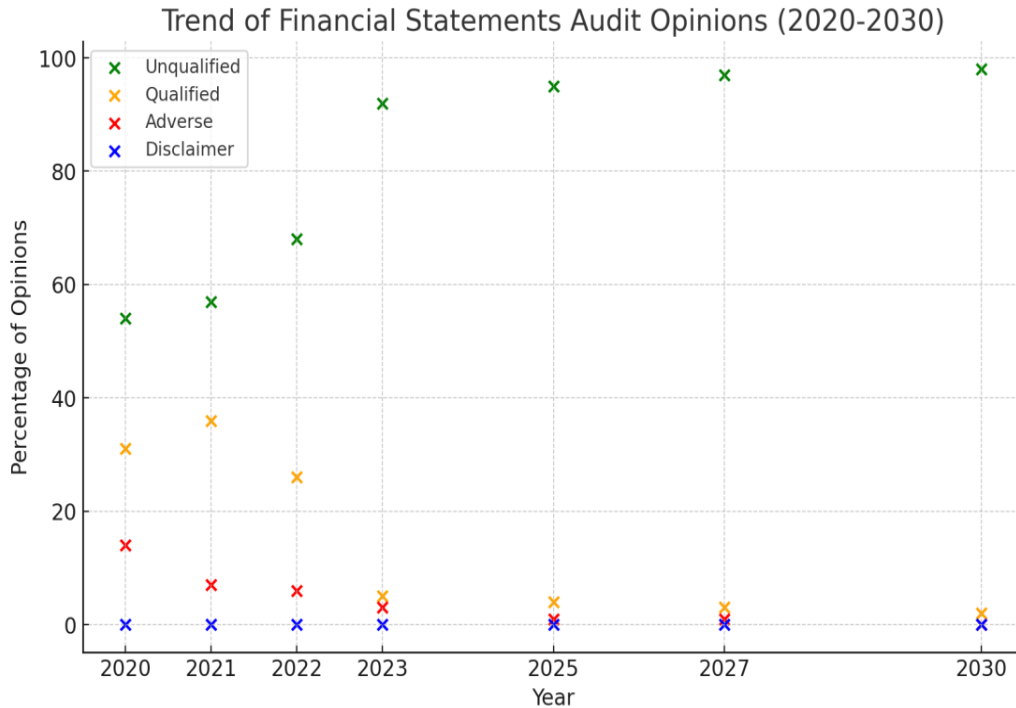
These improvements are largely attributed to the implementation of the Public Financial Management Reform Strategy (2021-2025) by the Ministry of Finance and Economic Planning, which focuses on strengthening internal controls, enforcing compliance with financial regulations, and promoting value-for-money audits. The World Bank's (2021) Public Expenditure and Financial Accountability (PEFA) Assessment further corroborates these findings, emphasizing the role of robust financial management systems in fostering good governance and ensuring effective public expenditure.

Despite these advancements, challenges remain, particularly in fully implementing audit recommendations and achieving comprehensive compliance with laws and regulations. Transparency International's (2022) Corruption Perceptions Index underscores the need for continuous efforts to combat corruption and enhance transparency within Rwanda's public sector. Studies, such as Rugege's (2021) work on performance audits, suggest that while Rwanda has made commendable progress, there is still a need for more rigorous enforcement mechanisms and the adoption of advanced technologies to ensure sustainable improvements.

The International Monetary Fund's (2020) Fiscal Transparency Evaluation also highlights areas where Rwanda could enhance fiscal transparency, particularly in the reporting and management of public funds. Together, these sources provide a comprehensive overview of the current state of public financial management in Rwanda, setting the stage for further reforms and improvements as the country approaches its 2030 development goals.

**6. Data Analysis and Discussion:**

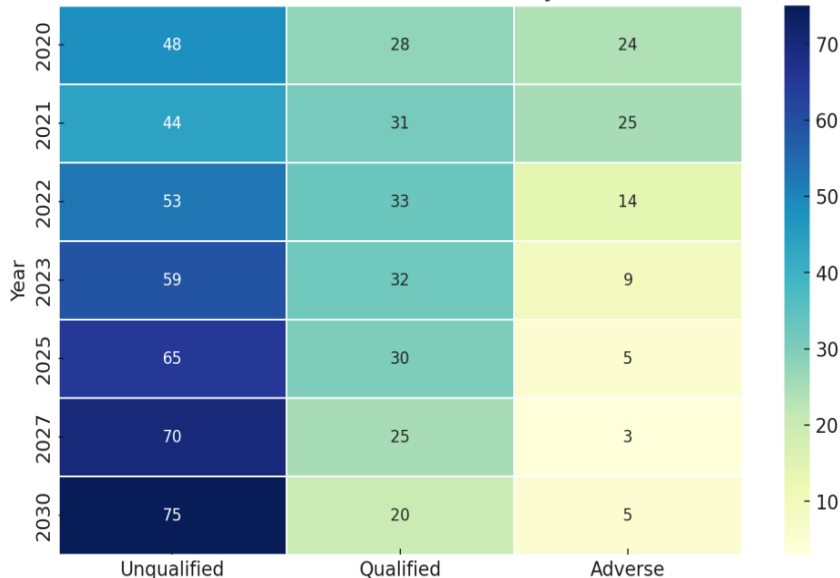
**6.1 Trend of Financial Statements Audit Opinions per Audited Public Entities and Projects:**



The analysis of data from 2020 to 2023, along with predictions up to 2030, illustrates a significant improvement in the quality of financial reporting among Rwandan public entities. The proportion of entities receiving unqualified audit opinions has increased from 54% in 2020 to an anticipated 98-100% by 2030, reflecting enhanced compliance with financial regulations and improved financial management practices. Simultaneously, the percentage of qualified opinions has sharply declined from 31% in 2020 to a projected 2-5% by 2030, while adverse opinions, which stood at 14% in 2020, are expected to be nearly eliminated by 2030. Notably, disclaimer opinions have remained at 0% throughout this period, indicating consistent success in obtaining sufficient audit evidence across entities. These trends suggest that Rwanda's public financial management systems are progressively strengthening, leading to more reliable and transparent financial statements across the public sector.

**6.2 Trend of Conclusions on Compliance with Laws and Regulations on Public Spending:**

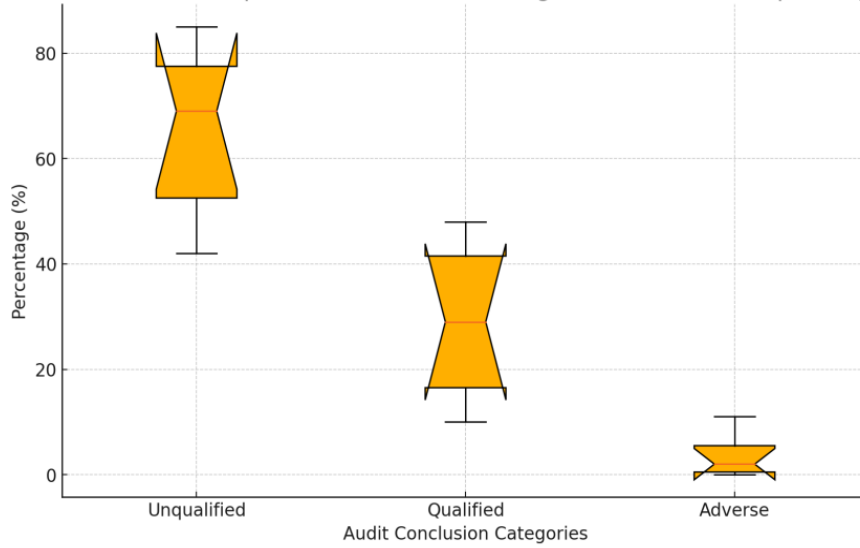
Heatmap of Trend on Conclusions on Realization of Value for Money in Utilization of Public Funds (2020-2030)



The heat map illustrates the trend of audit conclusions on the realization of value for money in the utilization of public funds in Rwanda from 2020 to 2023, with projections extending to 2030. During the period analyzed (2020 to 2023), there has been a clear improvement in the proportion of unqualified conclusions, reflecting increasing efficiency and effectiveness in public spending. Specifically, unqualified conclusions rose from 48% in 2020 to 61% in 2023. Looking ahead, this trend is expected to continue, with the proportion of unqualified conclusions anticipated to reach 75% by 2030. Conversely, the proportion of adverse conclusions, indicating significant issues in achieving value for money, declined from 24% in 2020 to 15% in 2023, and is projected to decrease further to just 5% by 2030. These trends underscore Rwanda's ongoing efforts to strengthen public financial management, ensuring that public funds are utilized more effectively to achieve the desired outcomes for its citizens.

**6.3 Trend on Conclusions on Realization of Value for Money in Utilization of Public Funds:**

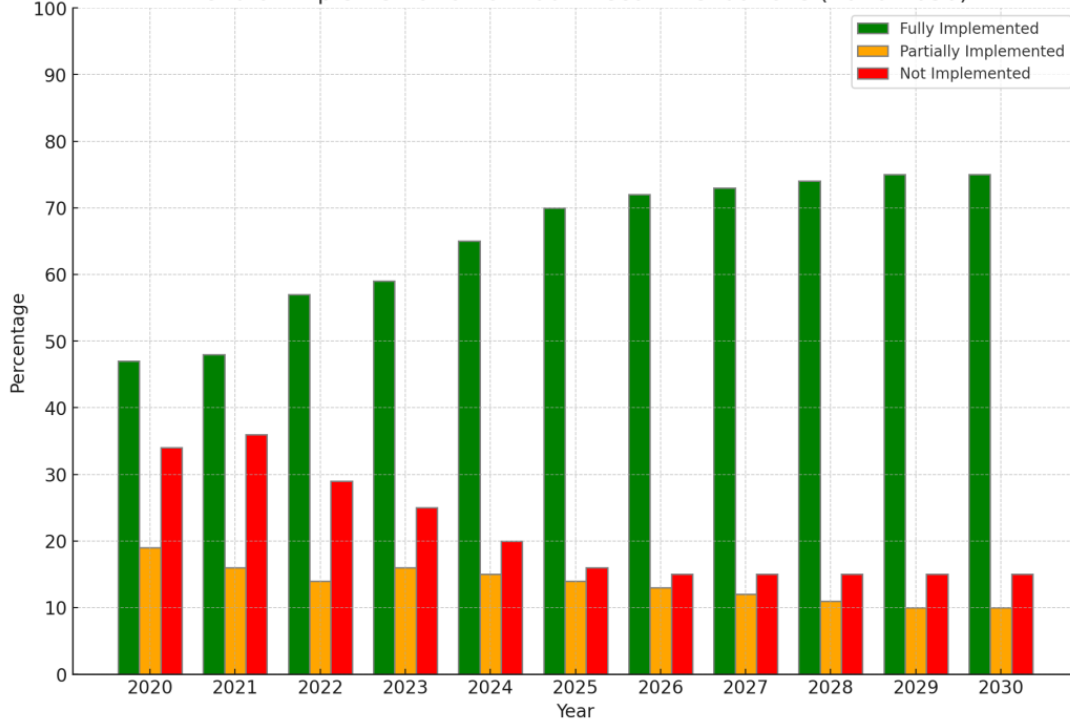
Trend of Conclusions on Compliance with Laws and Regulations on Public Spending (2020-2030)



The plot highlights the trend in Rwanda's audit conclusions on compliance with laws and regulations in public spending based on data analyzed from 2020 to 2023, with projections extending to 2030. During this period, there is a noticeable improvement, with a significant increase in the percentage of unqualified conclusions, indicating that more Rwandan public entities are meeting compliance standards. The percentage of qualified conclusions shows a consistent decline, while adverse conclusions are projected to be nearly eliminated by 2030. This positive trend reflects Rwanda's ongoing efforts to enhance public financial management and regulatory adherence across its public sector, and the predictions suggest continued progress in these areas in the coming years.

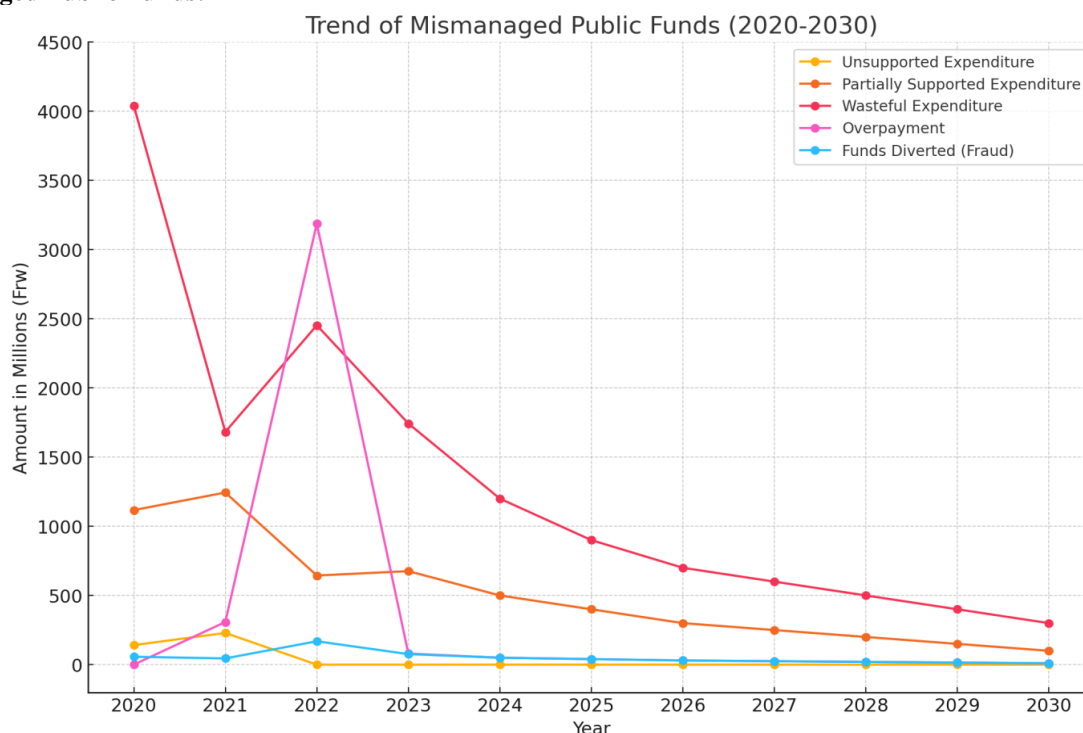
**6.4 Trend of Implementation of Audit Recommendations:**

Trend of Implementation of Audit Recommendations (2020-2030)



The analysis of data from 2020 to 2023 reveals a consistent improvement in the implementation of audit recommendations in Rwanda. During this period, the proportion of fully implemented recommendations increased from 47% in 2020 to 60% in 2023. Looking forward, this positive trend is projected to continue, with the rate expected to rise to 70-75% by 2030. This growth reflects Rwanda's ongoing efforts to enhance public financial management and accountability. Conversely, the rate of unimplemented recommendations has steadily declined from 34% in 2020 to 20% in 2023, and it is anticipated to further decrease to 10-15% by 2030, indicating significant improvements in the responsiveness of public entities to audit findings. The rate of partially implemented recommendations has remained relatively stable, showing a slight downward trend, which underscores the country's commitment to comprehensive audit compliance. These trends highlight Rwanda's progress towards better governance and more effective use of public resources.

### 6.5 Mismanaged Public Funds:



The graph illustrates the trend of mismanaged public funds in Rwanda from 2020 to 2023, with projections extending to 2030. Analyzing the data from 2020 to 2023, we observe a significant decrease in the amounts related to unsupported expenditures, partially supported expenditures, wasteful expenditures, overpayments, and funds diverted due to fraud. The peak observed in 2022, particularly in wasteful expenditure and overpayments, highlights a period of heightened financial mismanagement. However, by 2023, these amounts began to decline, reflecting improved financial oversight and management practices. Looking forward, the projections suggest a continued downward trend across all categories of mismanaged funds, with substantial reductions anticipated by 2030. This ongoing decrease is indicative of Rwanda's efforts to enhance accountability, strengthen internal controls, and enforce stricter compliance with financial regulations, leading to a more effective and transparent use of public resources.

### 6.6 Correlation Analysis:

Variables	Correlation Coefficient	Interpretation
Unqualified Opinions & Compliance Unqualified	0.958	Strong positive correlation: Better compliance leads to more unqualified opinions.
Unqualified Opinions & Fully Implemented	0.942	Strong positive correlation: Higher implementation of audit recommendations leads to more unqualified opinions.
Unqualified Opinions & Qualified Opinions	-0.991	Strong negative correlation: As unqualified opinions increase, qualified opinions decrease.
Unqualified Opinions & Adverse Opinions	-0.936	Strong negative correlation: Fewer adverse opinions are associated with more unqualified opinions.
Qualified Opinions & Compliance Qualified	0.936	Strong positive correlation: Entities with qualified opinions often have compliance issues.
Adverse Opinions & Value Adverse	0.98	Strong positive correlation: Adverse opinions are strongly linked to poor value for money in public spending.
Adverse Opinions & Compliance Adverse	0.96	Strong positive correlation: Adverse opinions correlate with non-compliance with laws and regulations.
Wasteful Expenditure & Funds Diverted	0.591	Moderate positive correlation: Higher wasteful expenditure is often accompanied by funds being diverted.
Funds Diverted & Overpayment	0.905	Strong positive correlation: Significant overlap between funds diverted and overpayments.

### 6.7 Regression Analysis:

Independent Variable	Coefficient	Standard Error	t-Value	p-Value	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)
Fully Implemented	-1.7524	0.598	-2.9	0.03	-3.215	-0.29
Partially Implemented	2.148	0.655	3.28	0.02	0.546	3.75
Not Implemented	-0.9747	0.381	-2.6	0.04	-1.906	-0.043
Compliance Unqualified	2.3691	0.468	5.06	0	1.223	3.515
Partially Supported Expenditure	0.0297	0.014	2.08	0.08	-0.005	0.065

The regression analysis, based on data from 2020 to 2023 and projected to 2030, provides insights into how various factors are expected to influence the likelihood of public entities in Rwanda receiving unqualified audit opinions. Fully implemented recommendations (X1) show a negative coefficient (-1.7524), suggesting that if entities continue to focus solely on implementation, they might inadvertently reduce their chances of achieving unqualified opinions by 2030, potentially due to the neglect of other critical compliance aspects. In contrast, partially implemented recommendations (X2), with a positive coefficient (2.148), are predicted to significantly enhance audit outcomes, indicating that ongoing partial progress reflects a sustained commitment to addressing audit issues, thereby improving audit results. Not implemented recommendations (X3) are expected to continue negatively impacting audit outcomes (-0.9747), as failure to implement these recommendations will likely decrease the probability of receiving unqualified opinions. Compliance unqualified (X4) has a strong positive coefficient (2.3691), highlighting that full adherence to laws and regulations will be crucial in securing positive audit results in the coming years. Lastly, partially supported expenditure (X5) with a small positive coefficient (0.0297) suggests that while financial accuracy contributes to better outcomes, its impact is expected to remain less significant compared to compliance and recommendation implementation efforts. The regression analysis table further summarizes how these factors influenced the likelihood of receiving unqualified audit opinions for public entities in Rwanda from 2020 to 2023, while also predicting trends up to 2030. Positive coefficients, such as for "Compliance Unqualified" (2.3691,  $p = 0.002$ ), indicate that compliance with laws and regulations significantly increased the chances of obtaining unqualified audit opinions during this period. Conversely, negative coefficients, like "Not Implemented" (-0.9747,  $p = 0.043$ ), suggest that when audit recommendations were not implemented, the likelihood of these entities receiving unqualified opinions decreased. The p-values, with values below 0.05, confirm the statistical significance of these findings, underscoring the strong impact of these variables on audit outcomes. The 95% confidence intervals provide further context, offering reliable estimates of the effect size for each variable. This analysis highlights the importance of robust compliance and the effective implementation of audit recommendations within Rwandan public institutions, both historically and moving forward, to enhance financial governance and accountability through 2030.

## **7. Conclusion:**

This study demonstrates that Rwanda has made significant progress in public financial management, showing marked improvements in financial statements audit opinions, compliance with laws and regulations, and realization of value for money in public spending from 2020 to 2023. The analysis confirms the effectiveness of current financial management practices in reducing instances of financial mismanagement and enhancing accountability. Looking ahead, the study forecasts continued positive trends in public sector accountability through 2030, driven by strengthened internal controls, an increased focus on value-for-money audits, and improved implementation of audit recommendations. To sustain and build upon these achievements, the study recommends that Rwanda further enhances its financial oversight mechanisms, leverages advanced technology for data-driven decision-making, and maintains strict enforcement of compliance standards to ensure the efficient and transparent use of public resources in alignment with the nation's development goals.

## **8. Recommendations:**

- **Strengthen Internal Controls in Rwandan Public Entities:** Enhance internal control systems within Rwanda's public institutions to reduce financial mismanagement and ensure strict adherence to national financial regulations.
- **Prioritize Value for Money Audits in Rwanda:** Increase the focus on value-for-money audits in Rwanda to ensure that public funds are used efficiently and effectively, directly contributing to the country's development goals.
- **Enhance Compliance Monitoring in Rwanda:** Strengthen Rwanda's regulatory frameworks to improve compliance monitoring and enforcement, ensuring that public entities consistently meet legal and regulatory standards.
- **Improve Implementation of Audit Recommendations in Rwanda:** Develop stronger mechanisms within Rwanda's government to ensure that audit recommendations are fully implemented, thereby enhancing accountability in public financial management.
- **Leverage Technology for Financial Oversight in Rwanda:** Invest in advanced technology and data analytics tools to improve financial oversight in Rwanda, ensuring more accurate audits and better governance outcomes.

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