Physical Asset Eco-Management Practices in Ugandan Local Governments

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Abstract

Despite the importance of physical asset management (PAM) in improving effectiveness, the literature reveals that PAM neglect exists in Ugandan local governments (LGs). This study aimed to advance the understanding of optimizing factors affecting PAM practices in Ugandan LGs. Within a positivistic framework, this research employed a survey-based methodology to collect quantitative data on physical asset management (PAM) practices in Ugandan local governments (LGs). The survey, distributed to managerial PAM employees in LGs, provided data that was analysed using descriptive and inferential statistical methods, allowing for the testing of hypotheses, identification of patterns, and exploration of relationships, all of which are characteristic of the positivistic research paradigm. The results show that PAM significantly improves value-for-money processes. Still, LGs in Uganda fall short of value creation expectations due to the disregard of optimizing factors such as internal control systems, organizational culture, IT, personnel competence, and regulations. The study highlights the need for LGs to properly utilize optimising elements to generate value for money in physical assets. The findings provide insights for administrators and policymakers to improve the state of physical assets in Uganda. Future research should adopt a mixed-methods and longitudinal approach to improve the understanding of PAM practices and their effectiveness in Ugandan LGs.

1.0   Introduction

In a country where operational Physical Asset Management (PAM) is practiced (Maletič et al., 2020), local governments (LGs) play a crucial role in the public value-generation process. Neglected physical assets (Syed & Lawryshyn, 2020) can pose a significant obstacle to achieving this goal, a concern that has been noted by managers in developed economies, who recognize that such neglect can have a detrimental effect on public value generation (Ratnayake & Markeset, 2012). In contrast, developing countries, including Uganda, often emphasise dynamism in technical approaches while neglecting physical assets (Msongole et al., 2022). This necessitates alternative PAM routes and initiatives that incorporate optimizing factors to improve the current physical assets (Obeng & Tuffour, 2020).

PAM is defined as the coordinated activity of an organization to realize value from physical assets, where value realization entails balancing costs, risks, opportunities, and performance benefits (ISO, 2014a). According to the Institute of Asset Management (IAM, 2004), PAM is accountable for the systematic and coordinated activities that enable an organization to achieve its organizational strategic plan by managing its physical asset systems, performance, risk, and expenses optimally and sustainably. Simply put, PAM guarantees that physical assets and other technical systems support an organization's operations through the use, maintenance, renewal, and disposal of physical assets (Haider et al., 2016). It manages and handles support services to meet the needs of the organization, its employees, and its core operations (El-Akruti et al., 2013). A well-organized and structured PAM can enhance a physical asset's appearance and performance, as well as its system's and users' level of satisfaction and efficiency in maintenance and operation (Maletič et al., 2018).

The current state of PAM practices in Ugandan LGs is criticised for being inadequate and largely detached from effectiveness expectations (OAG and PPDAA, 2020, 2021, 2022), which underscores the need for improvement in this area, given the significance of PAM in achieving organizational objectives. The ineffective PAM practices have been reported to affect service delivery, efficiency, client happiness, and the LGs' reputation, in addition to putting a financial and social strain on them. Previous research has highlighted the need for effective management of physical assets, considering key elements such as internal control systems, organizational culture, IT, personnel competence, and regulations (Maletič et al., 2022; Cavka et al., 2017; Urmetzer et al., 2015). However, there is a lack of research on the factors influencing PAM practices in Ugandan LGs, particularly about the optimization of PAM practices (Esmailikia & Nadalinejad, 2023; Emmanouilidis & Komonen, 2013). Furthermore, no study has examined the relationship between optimization and LGs' effective PAM (Aghabegloo et al., 2023; Tajudin et al., 2021; Nateque Mahmood et al., 2024).

This study aimed to address this research gap by investigating the factors that affect the effectiveness of PAM within LGs in Uganda. The research sought to understand the optimizing

factors that can have a significant impact on PAM practices, ultimately contributing to the improvement of physical assets and public service delivery in Ugandan LGs. By exploring the relationship between optimization and effective PAM, this study provides valuable insights for policymakers, administrators, and practitioners, enabling them to develop strategies to enhance PAM practices and achieve better outcomes in Ugandan LGs.

The remainder of this article is structured as follows: Section 2 outlines the conceptual and theoretical frameworks that underpin the study, providing a foundation for the research. A detailed description of the data collection and analysis procedures is presented in Section 3, which explains the methodological approach used to gather and examine the data. The key findings of the study, along with their analytical interpretation, are outlined in Section 4, providing a clear understanding of the research outcomes. Section 5 then examines the broader implications of these findings, discussing their potential consequences, applications, and significance with the study's objectives. Finally, the paper concludes in Section 6, followed by a set of recommendations that outline potential avenues for future research and practice.

2.0   Literature review

This study's examination of physical asset eco-management practices in Ugandan local governments is informed through a thorough review of existing literature, providing the foundation for conceptualization and theorization. Agency theory offers a valuable framework for understanding physical asset management dynamics, exploring relationships between principals and agents. Leveraging agency theory, this research uncovers incentives, motivations, and behaviours driving physical asset managers' decision-making, impacting the effectiveness of physical asset eco-management practices, synthesizing knowledge by the literature review section.

2.1   Conceptual Framework

The conceptual foundation for this investigation is depicted in Figure 1. Regulations, information technology, organization culture, reconciliation, employee competence and internal control system are the optimizing factors (independent variables) that affect PAM (the dependent variable) in LGs in Uganda as illustrated in the Figure.
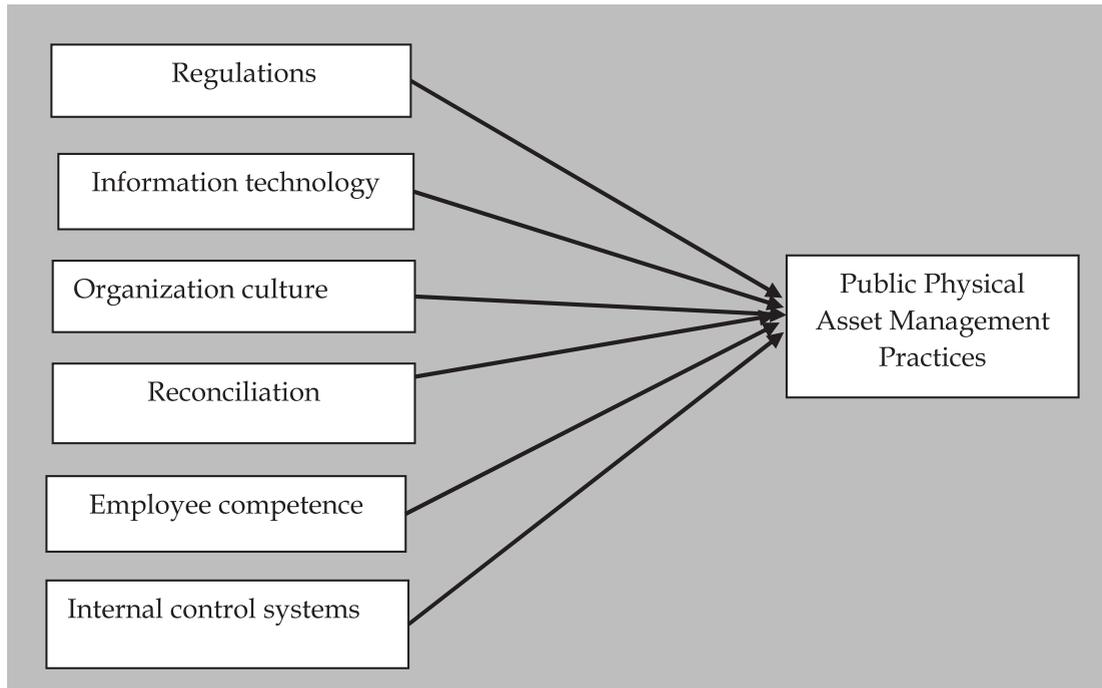
Figure 1: Factors Influencing the physical Asset Management in Local Government

Source: Author's conceptulisation

From Figure 1, it is suggested that the independent variable factors of regulations, information technology, organization culture, reconciliation, employee competence and internal control system may be positively correlated with the dependent variable of PAM.

Because it will clarify how the principal and agent interact for the advantage of LGs, the current study is applying agency theory. The key strategy employed by the LGs to increase public trust in their accountability is seen to be improving PAM.

2.2   Theoretical review and hypotheses development

2.2.1   Principal-Agent Theory

The principal-agent theory, commonly referred to as Agency theory was used to examine how optimizing factors affect the PAM of the LGs in Uganda. As stated by Mrabure and Abhulimhen-lyoha (2020), an organization may be made up of several interconnected agreements between the principals or owners of economic resources, and the managers or agents. The impact of optimizing factors on the PAM of the significant LGs in the Acoliland region of mid-northern Uganda was investigated using the agency theory. Essentially, the theory served as the backdrop for a significant amount of study on this subject.

In the light of the theory, an agency relationship exists when one party, the principal, delegates tasks to another party, the agent. Due to the agent's opportunism or self-interest, this relationship may have several drawbacks. As an illustration, the agent may not act in the

principal's best interests or may only partially act in that interest (Davis et al., 2021; Chrisman, 2019). This can take a variety of forms, such as the agent abusing his/her position to gain financial or other advantages, or the agent failing to take the necessary risks to further the interests of the principal.

The public, who own the LG's PAM outcomes, has delegated the day-to-day management of the PAM to the employees who act as their agents. This highlights the critical need for strong internal control practices for adequate safeguarding of the public's interests. In consequence, the agency theory was very applicable to this study, particularly with the aspects that optimize PAM.

2.2.2   Physical asset management

PAM, which relates to LGs' physical assets, is the application of scientific methodologies to the general administration of an LG's physical environments to actualize the goals and objectives of PAM (Ekayanti et al., 2018). Managing support services to satisfy the demands of the organization, its core purpose and its workforce is the main responsibility of PAM. Additionally, Syaifudin et al. (2020) demonstrate that a well-organized and structured PAM can enhance an LG's physical performance and appearance as well as its system's ability to satisfy users and carry out its intended function more efficiently. As physical assets become more complex in terms of utilization, maintenance, renewal and disposal, the trend towards improved management of physical assets is expected to continue (Giglio et al., 2018). PAM is becoming more and more integrated into LGs' basic management strategy and operations, encompassing both physical assets and related services. Using data from their study, Haron et al. (2015) claim that ineffective PAM and abuse of physical assets are two causes that could result in the loss of public revenue.

Effective PAM is often influenced by enough resources, individuals with the necessary skills, the right practices, connection with other service providers and a healthy work environment. In contrast to LG culture and information system, research by Ismail et al. (2019) found that internal control and employee knowledge are vital to PAM practices in a government agency. A successful PAM optimizes resource utilization, delivers good customer service and maximizes resource utilization by a well-balanced financial goal (Too, 2010). According to Hastings (2015), effective PAM can only be achieved when physical asset managers have a plethora of expertise and quick access to accurate, relevant and timely physical asset information. What core factors make up PAM's best practices? They can be found in some of the most important standards or PAM systems of today (Maletič et al., 2020, 2017; Naief, 2017; Emmanouilidis, C., & Komonen, 2013; Zuashkiani et al., 2011), which are found in the systems for regulations, information technology, organization culture, reconciliation, employee competence and internal control systems. These are extensively explored and matching hypotheses are developed in the sections that follow.

2.2.3 Regulations

In PAM, a regulation is a clause intended to control how people interact with one another in a society or a nation while managing physical assets (Lima & Costa, 2019). On the establishment of regulations, it was claimed that the law was written rules comprising binding legal norms generally and that it was established or designated by the institution or the responsible authority through methods provided in the legislation. LGs ought to assign themselves responsibility for managing public physical assets. In the context of decentralization, as in the case of Uganda, LGs are granted the power to enact their laws, provided they do not clash with higher laws (LGA, 1997) and PAM guidelines under the Ministry of Finance Planning and Economic Development (AAPG, 2023). Regarding the policy and accounting system of LGs concerning the recognition, measurement and presentation of the physical assets in the balance sheet, is another rule that is also used as a reference in the area of physical asset administration.

To satisfy the public's demand for effective legislation, it is necessary to create rules governing the creation of laws that are carried out in a predictable and well-established manner as well as standards that compel the adoption of a particular type of legislation by all relevant organizations. Local law, regulation or decision region head and head area are the three levels of the hierarchy of laws that are in effect in the LGs. According to Mardiasmo and Liyanage, (2015) analysis of the impact of legislation on public PAM, each 100 percent increase in regulation will have a sizeable beneficial impact on PAM relative to the current level of legislation. Hypothesis 1 is put forth in the light of the ideas and empirical data from earlier studies, thus,

H_1: Regulations have a positive effect on PAM.

2.2.4 Information Technology

In their study, Panegossi et al. (2022) sought to investigate the function of information in PAM, the reasons behind the importance of manufacturing organizations, and the implications of the introduction of 4.0 machines for information management. As a result, this study implies that quality data can be gathered using ISO 55001 information requirements guidelines and appropriate training. However, this research also shows that firms are not ready for this kind of disruption, even if they may presently rely on real-time information with the advent of 4.0 machines. The effective execution of ISO 5001 regulation is closely linked to organizational culture. Similarly, organizational factors play a role in the acquisition of new technologies and the utilization of data.

The study conducted by Diop et al. (2021) centres on the identification and analysis of strategic asset management (SAM) components. It was discovered that the challenges faced by upper management, including technological, methodological and managerial ones, could be reduced by implementing maintenance 4.0 through the use of technological solutions like cloud computing, cyber-physical systems (CPS), big data analytics and the industrial internet of things (IIOT). Gumelar (2015) created a framework for municipal asset management by concentrating on an information technology-based asset inventory system. It was discovered that

information technology utilization can aid in the development of municipal asset management. However, without employee cooperation, the tools are insufficient. Following Hanis et al.'s (2011) study, which found that the use of information technology had a favourable impact on the quality of reporting of regional assets, research by Azhar et al. (2008) demonstrated that the use of information technology had a considerable impact on PAM. The second hypothesis is put forth on the ideas and empirical data from earlier studies, hence, hypothesis 2 is proposed:

H$_2$: Information technology has positive effects on PAM.

2.2.5   Organization culture

The nature and extent of culture, particularly in terms of working culture and employee behaviour were thought to be associated with organizational performance. According to research by Brunetto et al. (2013), the organizational asset management culture was significantly influenced by the public-sector workers' attitudes toward change and their perceptions of autonomy. The impact of organizational culture on the morale of employees in the Sector Akunta nsi and on reporting to the Financial Management Board and Asset Ogan Ulu was determined by Yansahrita (2019). Utilizing field research, questionnaires, interviews, documentation and observation, data management and collecting are accomplished through literature reviews and field investigations. It has been discovered that at the Ogan Komweing Ulu Regional Financial and Asset Agency, organizational culture has a minor impact on staff morale in the accounting and reporting departments.

Xerri et al. (2015) investigated how Australian asset managers, engineers and technicians involved in PAM felt about organizational transformation, affective commitment and psychological well-being of their workplace relationship (POS and LMX). The theoretical framework for the study was derived from social exchange theory, and 255 asset managers, asset management engineers and asset management maintenance staff were asked to self-report. It was discovered from a structural equation model that supervisor-subordinate relationships and perceived organizational support was positively correlated with an employee's emotional attachment to the organization and that perceived organizational support was positively correlated with an employee's attitude toward organizational change. Asset managers' leadership could encourage a proactive organizational culture, and boosting the supervisor's culture can affect the effectiveness of PAM practices (Ismail et al., 2019). The following supposition is made, though;

H$_3$: Organizational culture may influence the PAM.

2.2.6   Reconciliation

To make financial statements believable, the Treasury Instructions (2017) state that reconciliation is one of the essentials. This is because it plays a crucial role in minimizing the influence that disparities in recording have on the veracity and correctness of the data shown in financial statements. Reconciliation is carried out as part of an LG's management of its physical assets to determine the true value of those assets. In their analysis of the impact of

asset management, Nurdiansyah et al. (2020) looked at the planning requirements, inventory, identification, legal audit, asset valuation, utilization and monitoring of asset optimization in personnel in charge of assets in the Denpasar High Court Regional Work unit. Asset optimization is positively and significantly impacted by asset valuation, according to the study.

Asset managers all across the world are vying for coveted and valued investor cash and working to differentiate their alpha delivery from that of other companies. Merell (2016) studied the reconciliation procedure and the significance of putting in place a scalable reconciliation solution that can support development. He concluded that having a high-quality reconciliation procedure should be regarded as crucial to any comprehensive operations ecosystem because it is highly valued by both operations executives and investors. Therefore, attention should be directed to creating a reconciliation process of institutional calibre that satisfies both internal and external requirements. This needs to boost internal controls and better overall risk management. Reconciliation in PAM checks the fixed asset sub-ledger with the general ledger regularly to confirm the accuracy of the statistics. When an account is reconciled, it may be determined whether depreciation is appropriately charged, asset disposal is effectively recorded, and the addition of a new physical asset is justified. It is thus proposed that;

H_4: Reconciliation influence PAM positively.

2.2.7   Employee competence

Inadequate, inadequately trained and inexperienced employees operate against efficient, effective and high-quality asset management services in the public sector (Hanis et al., 2011). This is because there are no supporting databases, which forces decision-makers to rely on guessing. While the findings of other studies indicate that more knowledge is needed to produce higher-level benefits in the maintenance management information system in PAM, this is not necessarily the case. In Shah et al.s' (2017) study, the difficulties and opportunities of implementing AMP in a department or agency responsible for highway maintenance are examined. A thorough literature study and an industry survey was conducted as part of an exploratory research approach. The findings showed that the AMP is only being applied inefficiently to the upkeep of roadways; therefore, a strong commitment is needed to enhance asset management capabilities to make efficient use of asset data.

To guarantee that employees have the proper perspective of knowledge, managers must strengthen their asset management capabilities (Hanis, 2010). This idea that knowledgeable employees will result in an efficient asset management practice in government departments is backed by Hanis et al. (2011). Effective asset management procedures in the government department are the result of knowledgeable employees. Therefore, this study looks at how information can influence how motivated public sector employees are to improve their practices. Hypothesis 5 is proposed based on ideas and empirical data from prior studies, thus;

H_5: Employees' competence may influence the PAM.

2.2.8   Internal control system

The internal control system of government is a procedure that is essential to the actions and activities regularly carried out by the management and all employees to offer reassuring evidence that organizational objectives have been met. This is accomplished through effective and efficient operations, the accuracy of financial reporting, the security of physical assets owned by the government and adherence to laws and regulations (Chen et al., 2020). The goal of a yearly inspection is to make sure that assets are used appropriately, are in excellent condition, and that asset records are updated when modifications are made to the assets (Treasury Instructions, 2017). Organizations with effective internal control systems perform financially better than those with ineffective systems.

Internal control, according to Cuomo (2005), will aid in safeguarding an organization's assets that are essential to the achievement of its objectives. The organization will be able to achieve its goals, including delivering professional services to the community, while using resources effectively and reducing the risk of fraud if the internal control system is implemented correctly (Fauziah & Mediawati, 2024). A comparable internal control system is anticipated to increase the efficacy of asset management procedures in this study. Consequently, the following theory is put forth,

H_6: *Internal control system may influence PAM.*

3.0   Methodology

The methodology for this study on physical asset eco-management practices in Ugandan local governments is rooted in a positivistic philosophy, which emphasises the use of scientific methods to investigate phenomena. A survey methodology was chosen for its ability to collect quantitative data from a large sample size, allowing for generalizability and reliability of findings. The exclusive use of structured questionnaires was justified due to their cost-effectiveness, reduced bias error, and ability to maintain respondent anonymity. This data collection method is also simple to code and enables quick gathering of data from a large sample (Creswell & Creswell, 2018; Sekaran & Bougie, 2016). The Acoli sub-region was selected as the study area due to its unique context of recovering from a brutal twenty-year war, which has resulted in significant physical asset resource support from governments and donors. This setting provides a rich environment to investigate physical asset eco-management practices. The sub-region's history of conflict has led to challenges in managing local governments, with the region facing difficulties in effectively utilising the massive influx of physical assets and resources (Acholi Sub-Region Reconstruction Report). Additionally, managing massive physical assets has become a critical concern in the region, with the need for effective physical asset management practices being a significant challenge, particularly in ensuring the sustainable use and maintenance of these assets (Physical Asset Management in Post-Conflict Regions). Based on earlier work, suitable questions were designed to quantify the variables, using a 5-point Likert scale to measure the variables in the questionnaire (Taherdoost, 2021). The sample of 283 public sector employees in Acoliland, specifically in

the districts of Gulu, Kitgum, Pader, and Amuru, can be considered representative of local governments in Uganda for several reasons. Firstly, Acoliland is a unique sub-region that has undergone an intense 20-year period of brutal civil war, resulting in significant destruction of physical assets and subsequent rebuilding efforts. This experience has led to an influx of physical assets and resources into the region, making it an ideal setting to study physical asset management practices.

As one of the regions in Uganda with twelve local governments, Acoliland's experiences and challenges in managing physical assets are likely to be reflective of those faced by other local governments in the country. The region's history of conflict and subsequent reconstruction efforts have necessitated the development of physical asset management practices that are tailored to the unique needs and challenges of post-conflict environments.

Furthermore, the sample of public sector employees who were familiar with the physical asset management procedure and worked with local governments in Acoliland provides a rich source of data on the practices and challenges of physical asset management in local governments. The fact that the sample was drawn from four districts in Acoliland (Gulu, Kitgum, Pader, and Amuru) adds to the representativeness of the sample, as it captures the experiences and perspectives of multiple local governments in the region. Given that Acoliland is the only sub-region in Uganda that has experienced such intense and prolonged conflict, it is likely that the region has received more physical assets and resources than any other sub-region. This makes the region an ideal setting to study physical asset management practices, as it provides a unique opportunity to examine the challenges and opportunities associated with managing large amounts of physical assets in a post-conflict environment. Therefore, the sample of 283 public sector employees in Acoliland can be considered representative of local governments in Uganda, particularly in terms of their experiences and challenges in managing physical assets in post-conflict environments. The findings of this study are likely to have implications for physical asset management practices in other local governments in Uganda, particularly those that are recovering from conflict or experiencing significant influxes of physical assets and resources.

A total of 282 questionnaires were returned, yielding a high response rate. A pre-test of the questionnaire was conducted in Omoro district, which is also part of Acoliland but not included in the main study, to improve the questionnaire's comprehension and validity. The input from the pre-test research was used to refine the questionnaire, ensuring that it effectively captured the necessary data.

4.0   Results and Data Analysis

This section presents the findings of the study on physical asset eco-management practices in Ugandan local governments.

4.1   Response Rate and Demographic Profiles of the Respondents

The response rate for this study on physical asset eco-management practices in Ugandan local governments was exceptionally high, with 282 out of 283 distributed questionnaires being returned, representing a response rate of 99.6%. However, upon closer examination, it was determined that only 261 of the returned questionnaires were valid for this study, resulting in a response rate of 92.2%. This high response rate is a testament to the effectiveness of the data collection method and the willingness of the respondents to participate in the study.

The high response rate can be attributed to several factors, including the careful selection of respondents, who were familiar with the physical asset management procedure and worked with local governments in Acoliland. Additionally, the use of a self-administered questionnaire allowed respondents to complete the survey at their convenience, which may have contributed to the high response rate. The validity of the returned questionnaires was assessed based on the completeness and consistency of the responses. A total of 21 questionnaires were deemed invalid due to incomplete or inconsistent responses, which is a relatively small percentage of the total number of returned questionnaires. The high validity rate of 92.2% suggests that the respondents took the survey seriously and provided thoughtful and accurate responses. The findings on the response rate and demographic profiles of the respondents provide a solid foundation for the analysis of the data. The high response rate and validity rate suggest that the data is reliable and representative of the population of public sector employees in Acoliland. The demographic characteristics of the respondents are also consistent with the population of public sector employees in Acoliland, which provides further evidence of the representativeness of the sample. Overall, the response rate and demographic profiles of the respondents suggest that the data collected for this study is of high quality and can be used to draw meaningful conclusions about physical asset eco-management practices in Ugandan local governments. The findings of this study will provide valuable insights into the practices and challenges of physical asset management in local governments and will inform the development of strategies for improving physical asset eco-management practices in Ugandan local governments. The study's respondents' profile is shown in Table 1.

Table 1: Summary of Demographic Profiles of Respondents

Demographic item	Categories	Frequency	Percentage
Sex	Male	149	59.9
	Female	100	40.1
Age	20-30years	21	8.4
	31-41 years	87	34.9
	42-52 years	116	46.6
	53-64 years	21	8.4
	65+	4	1.6
Education	Masters	42	17
	Post Graduate Diploma	104	42
	Bachelor	69	28
	Diploma	24	10
	Others	7	3
Experience	0-5 years	31	12.4
	6-11 years	57	22.9
	12-16 years	106	42.6
	17-22 years	33	13.3
	23+ years	22	8.8

Source: Field Data

From Table 1 above, the demographic analysis of the respondents in the study on physical asset eco-management practices in Ugandan local governments reveals a fascinating insight into the characteristics of the sample. *Males* constituted the majority, making up 59.9% of the population, while *females* accounted for 40.1%. The age distribution of the respondents shows that the bulk of participants were between the ages of 42 and 52, comprising 46.6% of the sample, followed by those between 31 and 41 years old, who made up 34.9%. The remaining age groups were represented by smaller percentages, with 9.5% of respondents between 20 and 30 years old, 6.4% between 53 and 64, and 1.6% aged 65 and above. In terms of educational backgrounds, the respondents demonstrated a high level of education, with 42% holding *post-graduate diplomas*, 28% having *Bachelor's degrees*, 17% having *Master's degrees*, 10% having *diplomas*, and a small percentage (1.14%) having *other qualifications*. The experience years of the respondents also show a significant amount of time in their respective fields, with 42.6% having between 12 and 16 years of experience, 22.9% having between 6 and 11 years, and 13.3% having between 17 and 22 years. A smaller proportion of respondents had less than 5 years of experience (12.4%), while 8.8% had more than 23 years of experience. These findings are consistent with previous studies on physical asset management practices in local governments in Uganda, which have highlighted the importance of effective management of physical assets in delivering quality services to citizens. [1] [2]. The demographic profiles of the respondents in this study provide a solid foundation for understanding the physical asset eco-management practices in Ugandan local governments, and the findings have implications for policymakers and practitioners seeking to improve the management of physical assets in local governments.

4.2   Validation of the Instruments

4.3.1   Reliability Test

The study used a variety of statements to assess respondents' perceptions of the six dimensions: regulations (15 statements), information technology (12 statements), organization culture (13 statements), reconciliation (5 statements), employee competence (14 statements), internal control system (10 statements) and PAM (16 statements). To quantify how individuals, see something (a dimension), assertions must be trustworthy or consistent. The researcher used Cronbach's alpha to test for the reliability of these dimensions with the results presented in Table 2. A scale is generally considered to have high reliability if its alpha score is over 0.75, moderate reliability if it is between 0.5 and 0.75, and low reliability if it is below this number (Alkharusi, 2022).

Table 2: Cronbach's Alpha by Construct

Construct	Number of statements	Cronbach's Alpha
Regulations	15	0.910
Information technology	12	0.838
Organization culture	13	0.972
Reconciliation	05	0.876
Employee competence	14	0.903
Internal control systems	10	0.962
Physical asset management practices	16	0.914

Table 2 lists the Cronbach's alpha values for the seven constructs, which range from 0.838 (information technology) to 0.876 (reconciliation) to 0.903 (employee competence), 0.910 (regulations), 0.914 (PAM), 0.962 (internal control system), and 0.972 (organization culture). The different Cronbach's alpha scores above 0.8 show that the statements employed can accurately gauge respondents' perceptions of the seven constructs.

4.2.2   Normality Test

The results of the normality test indicate that all of the variables' skewness and kurtosis values fall between -0.875 and 1.040. According to George and Mallery (2010), a normal distribution has values for skewness and kurtosis in the range of -2 to +2. This shows that the mean score for regulations, information technology, organizational culture, reconciliation, employee competency, internal control systems and PAM is normally distributed. The study then conducted the subsequent analysis using the parametric statistical method in the light of this finding. In this normalcy test, there is a tiny discrepancy between the mean of PAM practices and the trimmed mean, which is determined by 0.0210. The negligence difference is not relevant to this investigation and has no impact on the data's normal distribution. Therefore, it can be assumed that there was no deviation from normality.

4.3 Regression Analysis

To examine how important it is to optimize parameters for PAM practices, multiple regression results were used. The following tables display the multiple regression analyses' findings.

Table 3: Regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.211	0.302		4.316	0.000
	Regulations	0.225	0.071	0.247	3.105	0.001
	Information technology	0.457	0.051	0.541	6.410	0.000
	Organization culture	0.322	0.070	0.130	4.716	0.000
	Reconciliation	0.421	0.067	0.121	3.657	0.000
	Employees' competence	0.331	0.065	0.057	3.673	0.000
	Internal control systems	0.297	0.047	0.160	5.016	0.001

Table 3 illustrates a linear regression between the dependent variable and at least one independent variable, with a significant value of 1% (F=27.362, p=.000). Table 3 demonstrates how internal control systems, staff competency, organizational culture, information technology and regulations affect PAM.

H_1 claimed that the regulations would affect the PAM. The outcomes indicated that beta=0.247, t=3.105, indicating that strict adherence to rules would result in effective PAM. The regulations' p-value is 0.000 to 0.01. At a 0.05 level of significance (=0.05), there is evidence that rules have an impact on PAM. H_1 is thus supported.

H2 predicted that the PAM will be impacted by information technology. The outcome showed that beta= 0.457, t=6.410, indicating that effective information technology use will improve PAM practice's quality. Information technology is demonstrated to have a significant impact on PAM with a p-value of 0.000 and a significance level of 0.01 significant level (=0.05). H_2 is therefore supported.

As per H_3, the PAM will be influenced by the organizational culture. The association between organizational culture and PAM is indicated by the coefficient of organizational culture, which has a beta value of 0.322 and a t-value of 4.716. PAM and organizational culture are significantly correlated, as shown by the p-value=0.000>0.01 significant level (=0.05) for organizational culture. Based on the outcome, PAM is impacted by changes in organizational culture. H_3 is therefore supported and can be maintained further.

H_4 predicted that the reconciliation would affect the PAM. Reconciliation correlates with PAM, according to the coefficient of reconciliation with beta = 0.42, t=3.657. There is a substantial correlation between reconciliation and PAM, as shown by reconciliation with a p-value of 0.000>0.01 significant level (=0.05). The outcomes suggest that PAM is impacted by the changes in reconciliation. H_4 is therefore supported and can be maintained further.

H5 proposed that the PAM will be influenced by the employee competence level. The outcome indicated that strong employee competence would result in effective PAM with beta =0.331 and t=3.673. The employee's p=value for competence is 0.000>0.01. At a significance level of 0.05, there is evidence that employee competence has an impact on PAM.

H_6 proposed that the PAM will be affected by the internal control systems. Internal control systems and PAM are significantly correlated, according to the coefficient of the internal control system with beta =0.297, t=5.016. Internal control systems with a p-value of 0.000>0.01 significance threshold ((=0.05) show a significant correlation with PAM. The positive association suggests that an increase in internal control mechanisms will lessen PAM's efficacy. Consequently, H_6 is supported.

The multiple linear regression model's summary is presented in Table 4. For linear regression models, the quality of fit metric R^2 is used (Ali & Younas, 2021).

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703[a]	.795	.685	.47383

Table 4 demonstrates that the independent variable's strength of effect on the dependent variable is measured by R2, which has a value of 0.095. This suggests that differences in the extent of regulations, IT, organizational culture, reconciliation, employee competence and internal control mechanism account for 79.5 percent of the diversity in PAM practices. The adjusted R2 is 0.685 support this.

My findings, which are shown in Table 5, indicate how optimizing factors affected PAM practices in the LGs in Acoliland based on an ANOVA test.

Table 5: ANOVA results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.573	6	6.145	27.362	.000[b]
	Residual	40.784	246	.227		
	Total	69.356	250			

a.   Dependent Variable: Overall means for public physical asset management

b.   Predictors: (Constant), Overall means for regulations, Overall means for information technology, Overall means for organization culture, Overall means for reconciliation, Overall means for employees' competence, Overall means for internal control systems.

A substantial association exists between the independent and dependent variables, as indicated by Table 5's F-statistics value of 27.362 and F-statistics probability of 0.000. This suggests that differences in PAM practices in the chosen LGs in Acoliland can be explained by a combination of factors, including regulations, IT, organizational culture, reconciliation,

employee competence, and internal control mechanisms.

5.0   Discussion

The primary goal of this study was to examine the impact of results on physical asset management (PAM) in Uganda's local governments (LGs). The findings of the hypothesis test (H1) reveal a substantial and favourable connection between regulations and PAM in Ugandan LGs, which lends weight to earlier studies (Maletïc et al., 2018). Previous research has shown that a PAM framework can be conceptualized using physical asset strategy and policy, which can positively impact sustainability performance (Maletïc et al., 2018). This conclusion is further supported by the fact that regulations can play a crucial role in shaping PAM practices in local governments. The study's findings are also informed by the work of Nurdiansyah et al. (2020), who examined the impact of asset management on asset optimization in the Denpasar High Court Regional Work Unit. Their research covered a range of aspects, including planning requirements, inventory, identification, legal audit, asset valuation, utilization, and monitoring of asset optimization, and found that the legal audit does not significantly improve asset optimization (Nurdiansyah et al., 2020). This highlights the importance of considering the specific context and organizational setting when designing and implementing PAM practices. The policy implications of this study are significant, as they suggest that regulations can be a powerful tool for improving PAM practices and promoting sustainability in Ugandan local governments. Strengthening regulations and ensuring that they are enforced effectively is critical, as is developing PAM frameworks that are tailored to the specific needs and context of local governments (Maletïc et al., 2018). Additionally, capacity building and monitoring and evaluation are essential for effective PAM practices, and policymakers should prioritize providing training and capacity-building programmes for local government officials and employees responsible for managing physical assets. The findings of this study provide valuable insights into the policy implications of physical asset eco-management practices in Ugandan local governments and highlight the need for a nuanced and context-specific approach to improving PAM practices.

The second goal of this study was to investigate the impact of information technology on physical asset management (PAM) in local governments (LGs) in Uganda. The results of hypothesis (H2) reveal a similar association between information technology and PAM in Ugandan LGs, suggesting that the effectiveness of PAM would increase with the adoption of information technology. This finding is consistent with the study by Meikhati and Wahyuningsih (2022), which examined the effects of implementing management assets on a fixed asset internal control system at Dura Bangsa University Surakarta. They found that the fixed asset internal control system was operating successfully, with supporters in management asset implementation through management assets already having orderly procedures, clear flowcharts, sufficient human resources, and device supporters in the form of SINAPRA (system infrastructure) integrated from request fixed assets, procurement fixed assets, and placement fixed assets, all via SINAPRA. However, the study's findings also highlight the challenges associated with the adoption of information technology in PAM. A study by Ossai and Degoke (2014) found that a lack of computer skills was a crucial obstacle and major

difficulty in the development of information systems, which supports the findings of this study. The lack of basic computer skills among staff members, particularly senior workers, can have a significant detrimental effect on the ability of the organization to function. Alshehri and Drew (2010) also point out that organizational, social, financial, and cultural barriers can prevent the successful implementation of government systems. The outcomes of this study could be a result of the government employees' lack of information system training and the fact that the majority of them are familiar with the computerised asset management system. To ensure that a computerised system is usable, the government must take the necessary steps, such as increasing training and knowledge of the system. This is critical to addressing the challenges associated with the adoption of information technology in PAM. The findings of this study provide valuable insights into the policy implications of physical asset eco-management practices in Ugandan local governments and highlight the need for a nuanced and context-specific approach to improving PAM practices. The study's results suggest that the adoption of information technology can have a positive impact on PAM, but that this requires careful consideration of the challenges and barriers associated with its implementation. By addressing these challenges and providing the necessary training and support, the government can ensure that information technology is used effectively to improve PAM practices in Ugandan local governments, as noted by Meikhati and Wahyuningsih (2022) and Alshehri and Drew (2010).

The third goal of this study was to investigate the impact of organizational culture on physical asset management (PAM) in a local government (LG) of Uganda. The results of the hypothesis (H3) test indicate a significant association between organizational culture and PAM in LG of Uganda, suggesting that organizational culture has a minimal effect on PAM in a Ugandan LG and that the relationship could be further strengthened. This finding is corroborated by the study of Hanim et al. (2017), which demonstrated that organizational culture, such as honesty, did not have a significant impact on asset misappropriation. Phelps (2010) also concurs that despite the presence of a supportive organizational culture, it is challenging to define and characterize the traits of organizational culture, and that individual behaviour patterns and cultural variances are significant factors in determining the effectiveness of a political system. The study's findings also highlight the importance of workplace culture in driving PAM practices, as noted by Mason (2006). Septarini and Manuhutu (2018) examined the implementation of a fixed asset management model in the local administration of Merauke Regency and found that the development of the model prioritized organizational culture and commitment while emphasising the planning, acquisition, utilization, and oversight processes. The study demonstrated that human resources' organizational commitment to managing fixed assets raises awareness of the need to manage assets in line with relevant rules and that a strong controlling function requires a culture that regards leader behaviour as an example for subordinates, adds a supervisory process from top-level leadership elements, and implements regional regulations that manage the sanction of fixed assets. The elements that determine the occurrence of asset misappropriation in a corporation were examined by Ghani et al. (2021), who found that leadership style, organizational culture, and internal control all have considerable impact. Frimansyah and Kuntadi (2023) mapped the impact of asset inventory, legal audit, and control oversight on asset optimization and discovered that control supervision has an impact on asset optimization. These findings provide valuable insights into the policy

implications of physical asset eco-management practices in Ugandan local governments and highlight the need for a nuanced and context-specific approach to improving PAM practices. The study's results suggest that organizational culture plays a significant role in shaping PAM practices and that a strong controlling function is essential for effective asset management, as noted by Septarini and Manuhutu (2018) and Ghani et al. (2021).

The fourth goal of this study was to examine the impact of reconciliation on physical asset management (PAM) in Uganda's local governments (LGs). The outcome of the study reveals a strong connection between reconciliation and PAM, which is reinforced by earlier studies. For instance, asset managers worldwide are competing for investor cash and seeking to differentiate their alpha delivery from that of other companies. Merrell (2016) studied the reconciliation procedure and emphasised the importance of implementing a scalable reconciliation solution that can support growth. He concluded that having a high-quality reconciliation procedure is crucial to any comprehensive operations ecosystem, as it is highly valued by both operations executives and investors. Therefore, attention should be directed towards creating a reconciliation process of institutional calibre that meets both internal and external requirements, which in turn can enhance internal controls and improve risk management. This is consistent with the findings of Sriastiti et al. (2020), who analysed the impact of asset management on asset optimization in the Denpasar High Court Regional Work Unit. Their study found that asset valuation has a positive and significant impact on asset optimization, highlighting the importance of accurate and reliable asset valuation in achieving optimal asset management. The study's findings have significant policy implications for Ugandan local governments, as they highlight the need for effective reconciliation processes to support physical asset management. By implementing a scalable and institutional-grade reconciliation process, local governments can enhance their internal controls, improve risk management, and ultimately achieve better asset optimization. This is critical in ensuring that physical assets are managed efficiently and effectively, which can have a positive impact on the delivery of public services and the overall well-being of citizens. As Merrell (2016) noted, a high-quality reconciliation procedure is essential to any comprehensive operations ecosystem, and its importance cannot be overstated in the context of physical asset management in Ugandan local governments.

The fifth goal of this study was to investigate the impact of staff competence on physical asset management (PAM) in local governments (LGs) in Uganda. The outcome of the study reveals a significant association between employee competence and PAM, suggesting that competent workers would result in efficient asset management procedures in a government department. This finding is supported by Hanis et al. (2011), who hypothesized that asset management practices in government departments would be impacted by staff with low levels of knowledge due to inadequate training and experience. Employees are considered the most valuable assets to organizations, as they possess the necessary knowledge, experience, and skills for asset management practices (Shardy et al., 2011). Therefore, government workers must receive sufficient training to equip them with the knowledge and skills necessary to support the department (Norhidayah et al., 2015). Protecting the government's physical assets is crucial, and every employee has a significant role to play in this regard. However, without

competent guardians, these efforts can be in vain, and the situation can give rise to the possibility of fraud. To make fraud unacceptable, perhaps long-term education is required (Rosmawari et al., 2015). As a result, staff knowledge reflects asset management procedures, and managers must enhance their asset management capabilities to ensure that employees have the proper sense of knowledge (Shah et al., 2017). To effectively manage assets, the right knowledge, skills, experience, behaviour, attitudes, and qualities are necessary (Hastings, 2010). The study's findings are also consistent with the research of Maletič et al. (2021), who proposed a methodology for selecting and evaluating managers in the asset management industry based on an analytical hierarchy process (AHP). The AHP is an effective and trustworthy strategy for choosing the best asset manager, and it confirms the standards of proficiency for asset management personnel. Additionally, Gunawan et al. (2017) researched and analysed the impact of organizational commitment, competence, and governance on worker performance and good asset management at the regional work units (SKPD) of the Makassar city government. The study found that the various outcomes on competence, good governance, and employee performance have a favourable and considerable impact on quality asset management and that the effectiveness of LGs' asset management is significantly influenced by organizational commitment and competence indirectly.

The sixth goal of this study was to investigate the impact of internal control on physical asset management (PAM) in local governments (LGs) of Uganda. The results of the hypothesis (H6) test reveal a substantial and positive connection between internal control and PAM in LGs of Uganda, lending support to earlier literature. The findings show that PAM effectiveness increases with internal control levels, highlighting the importance of internal control in ensuring the effective management of physical assets. An organization's internal control system refers to the effective control procedures put in place to safeguard its assets (Badara & Saidin, 2013). Internal controls, such as physical asset control, can have a significant impact on the financial accountability of government agencies. The application of internal control can also influence the performance of the government sector (Cecilia, 2017). Ekayanti et al. (2018) employed a quantitative approach to test and gather empirical data on the impact of local human resources personnel of varying quality, asset management information systems, internal control systems of government, and organizational commitment on the effectiveness of fixed asset management. The findings demonstrated that these variables have positive and significant effects on the effectiveness of fixed asset management, although these effects are not statistically significant. Ismail et al. (2019) investigated the factors that influence the asset management procedures used by Malaysian government agencies and found that internal control and staff understanding have a strong positive impact on asset management methods. The study's findings also show that there is no meaningful correlation between organizational culture and information systems about asset management procedures, highlighting the need for further research in this area. The results of this study have significant policy implications for Ugandan local governments, as they highlight the importance of internal control in ensuring the effective management of physical assets. By implementing effective internal control procedures, local governments can improve the accountability and transparency of their asset management practices and ultimately enhance the delivery of public services. As Badara and Saidin (2013) noted, an effective internal control system is essential for safeguarding

an organisation's assets, and this is particularly important in the context of physical asset management in local governments.

6.0   Conclusion and Recommendations

Creating successful physical asset management practices within Uganda's local governments requires a thorough examination of key variables that impact their effectiveness. These variables include regulations, information technology, organizational culture, reconciliation, employee competence, and internal control systems. It is essential to understand that these elements have a substantial impact on physical asset management in local governments. To successfully manage their assets, local governments must prioritize these six factors, ensuring that each has a performance measurement in place. This is crucial for delivering public services and achieving sustainable development goals. Developing regulations, information technology, organizational culture, reconciliation, employee competence, and internal control systems is vital for supporting effective physical asset management practices in local governments. Future research should explore the relationship between these variables and the effectiveness of physical asset management, as well as develop a roadmap and implementation plans for optimizing aspects of physical asset management. Additionally, research can focus on creating practical tools and guidelines for local governments to implement effective physical asset management practices, including performance measurement frameworks, asset management information systems, and training programmes for employees. In Uganda's local government system, a comprehensive strategy that considers the unique needs and challenges of each local government is necessary for effective physical asset management. The administration of assets and human resource competence are critical factors in enhancing the capacity of asset management. A well-formulated physical asset management policy and strategy, backed by plans, is essential for maintaining a balance between service levels, risk, and cost while supporting local governments in connecting with their communities.

Local governments should develop tailored strategies that address their specific needs and challenges, involving thorough asset assessments, identifying areas for improvement, and developing targeted plans to address these gaps. Effective physical asset management practices require a combination of technical expertise, organizational capacity, and stakeholder engagement. By developing comprehensive strategies, building capacity, and engaging with stakeholders, Uganda's local governments can improve their ability to manage physical assets, deliver quality services, and support the needs of their communities.

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